

Poole and Christchurch Bays Shoreline Management Plan 2:

Habitat Regulation Assessment – Appropriate Assessment Stage 3



August 2010 Appropriate Assessment Stage 3 Report 9T8801



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1 INTRODUCTION

1.1 Background

- 1.1.1 The need for an 'Appropriate Assessment' (AA) arises under the requirements of the EC Habitats Directive (92/43/EEC) and its implementation in the UK under the Conservation (Natural Habitats &c.) Regulations, 1994. Under Regulation 48(1), Appropriate Assessment is required for a plan or project, which either alone or in combination with other plans or projects, is likely to have a significant effect on a European site, and is not directly connected with or necessary for the management of the site. A European site, or *Natura 2000* site, is either a Special Area of Conservation (SAC) or a Special Protection Area (SPA), and form part of an EU wide suite of such sites referred to as the *Natura 2000* network. Government policy as outlined in Planning Policy Statement 9 (PPS 9) states that Wetlands of international importance under the Ramsar Convention (Ramsar sites) should also be subject to the provisions of the Habitats Regulations. Ramsar sites, SPAs and SACs, are collectively referred to hereafter as 'international sites'.
- 1.1.2 Appropriate Assessment or Habitats Regulations Assessment (HRA) is the process to support a decision by the 'Competent Authority', as to whether the proposed plan or project will not have an adverse effect on the integrity of any International site. One of the first steps in addressing Shoreline Management Plan 2 (SMP2) under the Habitats Regulations is identification of the Competent Authority. In this instance, Royal Haskoning is undertaking the technical analysis that forms the basis of the Appropriate Assessment, but the ultimate responsibility for signing off the Appropriate Assessment and ensuring compliance with the Habitats Regulations falls to the Competent Authority. In this instance, the Competent Authority is the Local Authorities (Borough of Poole, Bournemouth Borough Council, Christchurch Borough Council, New Forest District Council, and Purbeck District Council) within the SMP2 Study Area.
- 1.1.3 Circular 06/2005 Biodiversity and Geological Conservation defines a Site's integrity as "the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified".
- 1.1.4 The favourable conservation status of the Site is defined through the Site's conservation objectives and it is against these objectives that the effects of the plan or project must be assessed. Conservation objectives set out the physical, chemical and biological thresholds, and limits of anthropogenic activity and disturbance that are required to be met to achieve the integrity of the Site. Conservation objectives serve both as criteria against which Site condition can be assessed and reported against, and also as a basis for assessing plans or projects which may affect the Site. Conservation objectives for European Marine Sites are set out in the Relevant Regulation 33 documents (so called as their production is a requirement of Regulation 33 (2) of the Habitats Regulations) for each site, which is the responsibility of Natural England.
- 1.1.5 Only where the plan or project can be determined as not having an adverse effect on any European site can it be approved by the Competent Authority. Where it is not possible to determine that a plan or project under consideration will not have an adverse effect on the integrity of a European or Ramsar Site, then alternative solutions which avoid harming site integrity must be sought. If alternatives are not possible, then the plan or project can only proceed on the basis of imperative reasons of over-riding public importance (IROPI). If IROPI is agreed by the Secretary of State, then compensatory



measures must be secured to offset damage caused by the plan or project, such that the overall coherence of the SAC/SPA network is maintained.

1.2 Shoreline Management Plans (SMPs)

SMP Aims and Objectives

- 1.2.1 A Shoreline Management Plan (SMP) is a large-scale assessment of the risks associated with coastal processes and aims to reduce the risks to the social, economic, natural and historic environment. A SMP aims to manage risk by using a range of methods which reflect both national and local priorities (Defra, 2006) to:
 - Reduce the threat of flooding and erosion to people and their property; and
 - Benefit the environment, society and the economy as far as possible, in line with the Government's 'sustainable development principles'.
- 1.2.2 The first generation of SMPs were produced for the coastline of England and Wales in the late 1990s and were based on sediment cell boundaries which related to the movement of sand and shingle along the coast. The boundaries of these cells were originally set at locations where the net 'along shore' movement of sand and shingle changed direction. In some instances, the area covered by a SMP differed from these sediment cell boundaries, due to different requirements, such as the area covered by a coastal authority. However, for the SMP reviews, a behavioural systems¹ approach was recommended, leading to slightly different boundaries compared to the first generation (Defra, 2006). The objectives of a SMP must be in line with the Government's strategy for managing risks from floods and coastal erosion and should (Defra, 2006):
 - Set out the risks from flooding and erosion to people and the developed, historic and natural environment within the SMP area;
 - Identify opportunities to maintain and improve the environment by managing the risks from floods and coastal erosion;
 - Identify the preferred policies for managing risks from floods and erosion over the next century;
 - Identify the consequences of putting the preferred policies into practice;
 - Set out procedures for monitoring how effective these policies are;
 - Inform others so that future land use, planning and development of the shoreline takes account of the risks and the preferred policies;
 - Discourage inappropriate development in areas where the flood and erosion risks are high; and
 - Meet international and national nature conservation legislation and aim to achieve the biodiversity objectives.

¹ The current programme of SMPs around the coast is a review of the first generation of reports produced in the 1990s and reflects the availability of new coastal processes information, new considerations (site designations etc) and less uncertainty about climate change.

1.2.3 The most appropriate option for shoreline management will depend on the section of coastline in question and on technical, environmental, social and economic circumstances. The four options considered for shoreline management in the second generation SMPs are presented in **Table 1.1**.

Table 1.1 Options Used in SMP Development

SMP Option	Description of Option			
Hold the line (HTL)	Hold the existing defence line by maintaining or changing the standard of protection. This policy will cover those situations where work or operations are carried out in front of the existing defences (such as beach recharge, rebuilding the toe of a structure, building offshore breakwaters and so on), to improve or maintain the standard of protection provided by the existing defence line. This should include other policies that involve operations to the back of existing defences (such as building secondary floodwalls) where they form an essential part of maintaining the current coastal defence system.			
Advance the line (ATL)	Advance the existing defence line by building new defences on the seaward side of the original defences. Using this policy should be limited to those policy units where significant land reclamation is considered.			
Managed realignment (MR)	Managed realignment by allowing the shoreline to move backwards or forwards, with management to control or limit movement (such as reducing erosion or building new defences on the landward side of the original defences).			
No active intervention (NAI)	No active intervention, where there is no investment in coastal defences or operations.			

1.2.4 Within the development of an SMP, an epoch (time periods) based approach is used for planning purposes, with the three epochs being 0-20 (2005 -2025), 20-50 (2025 -2055) and 50-100 (2055 -2105) years hence.

Implications of SMP Policy on the Natural Environment

1.2.5 Each of the SMP policies presented in **Table 1.1** has the potential to impact the natural environment in one or more ways. **Table 1.2** presents potential implications of each option.



Table 1.2 Potential Generic Implications of Each SMP Option

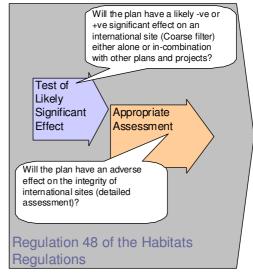
SMP Option	Positive Impacts	Negative Impacts		
Hold the line (HTL) Advance the line (ATL)	 Protection of habitat landward of defences. Provides stability to areas of coastline, within a wider management context. Protection of habitat landward of defences. 	 Coastal squeeze (loss of habitat). Interruption of coastal processes. Alteration to cliff succession and associated habitats and species. Reduction in extent of coastal habitat. Change in functionality of habitat. 		
		 Increased coastal squeeze. Interruption of coastal processes. Effect on marine habitat. May increase rate of coastal erosion either side of the advanced line. Alteration to cliff succession and 		
Managed realignment (MR)	 Coastal habitats allowed to move landwards under rising sea levels. Habitat created for juvenile fish and other aquatic organisms (benefits to environment and fishing communities). Promotes natural coastal processes. Contributes towards a more natural management of the coast. Creation of high tide roosts and feeding areas. 	 Alteration to cliff succession and associated habitats and species. Reduction in extent of habitat landwards of defences. Change in nature of habitat to landward of defence. 		
No active intervention (NAI)	 Coastal habitats allowed to move landwards under rising sea levels. Promotes natural coastal processes. Contributes towards a more natural management of the coast. 	Increased risk of inundation to landward habitats under rising sea levels.		

1.3 Appropriate Assessment Guidance

- 1.3.1 The Office of the Department for Communities and Local Government (DCLG) has produced draft guidance on how to determine the need for an Appropriate Assessment for a given plan and the provision of an assessment if one is considered to be required. Additionally, Natural England has provided an internal draft document relating to the provision of Appropriate Assessments for Regional Spatial Strategies and Sub-Regional More specific guidance (currently draft) on assessing Shoreline Management Plans in terms of the Habitats Regulations is available from the Environment Agency. The following documents: "Planning for the Protection of European Sites: Appropriate Assessment' (DCLG, 2006), "The Assessment of Regional Spatial Strategies under the Provisions of the Habitats Regulations - Draft Guidance" (English Nature, 2006) and "Appropriate Assessment of Flood Risk Management Plans Under the Habitats Regulations" (Environment Agency, Draft document) currently provide the most cohesive source of guidance relating to the provision of Appropriate Assessments for Shoreline Management Plans, along with the overarching guidance provided by the European Commission (2000, 2001, and 2007) on the assessment of plans and projects affecting Natura 2000 Sites, and the provisions of Article 6 of the Habitats Directive. Although these documents relate explicitly to land use plans, given that SMPs have the potential to influence the development of land, this guidance has been applied in this report to SMP policy. In this respect, there are clear parallels between Regional Spatial Strategies (RSSs) and SMPs, and the relevant elements of quidance relating to RSSs have therefore been adapted here for SMP use.
- 1.3.2 In 2006 Royal Haskoning provided Defra with a guidance note relating to Appropriate Assessment provision for SMPs, following the completion of an Appropriate Assessment for the River Tyne to Flamborough Head SMP2, with this guidance having been a fundamental consideration in establishing the scope of this particular Appropriate Assessment. Accordingly, these documents have been used as a guide in establishing the scope of the Appropriate Assessment for The Poole and Christchurch Bays SMP2. However, the draft Environment Agency work instruction "Appropriate Assessment of Flood Risk Management Plans under the Habitats Regulations" provides specific advice on undertaking appropriate assessments of SMPs and as such, the approach and methodology adopted here is compliant with this guidance.
- 1.3.3 This assessment is also structured with regard to the existing suite of guidance which is pertinent to the provision of Appropriate Assessment and also SMP production. Key source documents are therefore:
 - Managing Natura 2000 Sites The provisions of Article 6 of the Habitats Directive (EC, 2000);
 - Environment Agency work instructions and guidance on SMPs, Catchment Flood Management Plans (CFMPs) and Appropriate Assessment;
 - Natural England's Habitats Regulations Guidance Note series; and
 - Assessing Projects under the Habitats Directive A Guide for Competent Authorities (CCW, 2008).
- 1.3.4 Appropriate Assessment is a mechanism to establish the actual scale and implications of impacts and to provide a determination on whether a course of action is acceptable or unacceptable, in terms of its impacts on the integrity of International sites.

1.4 Requirement for an Appropriate Assessment for SMP2

1.4.1 Due to the integrated nature of the SMP process, the opportunity to develop the Poole and Christchurch Bays SMP2 in accordance with the Habitats Regulations at a policy level has allowed the selection of policy based on likely significant effects to International sites. However, it should also be remembered that the requirement to have regard to effects on designated habitat is only one of the drivers which shapes the policy of the SMP, with other factors including impacts on agriculture, tourism and the local economy. The potential therefore exists for a preferred policy to emerge which has the potential to have an adverse effect on the integrity of an International site. The



Habitats Regulations require that any plan or project which (either alone or in combination) is considered **likely to have a significant effect** on an International site will need to provide an appropriate assessment of the implications on International sites. Simply, if the plan either alone or in combination with other plans and projects, is considered likely to have a significant effect (either positive or negative) then an Appropriate Assessment will be required.

The determination of whether the Poole and Christchurch Bays SMP would have a likely significant effect on the International sites

- 1.4.2 The determination of likely significant effect requires a coarse filter approach to be taken in establishing the likely effects of the SMP in relation to the sensitivity of the features on International sites and their conservation objectives (collectively, the integrity of the site). This can be addressed via a series of structured questions:
 - Q. Does Poole and Christchurch Bays and the coastal hinterland contain any sites designated under the Ramsar convention or Habitats or Birds Directives (International sites)?
 - A. The Poole and Christchurch Bays coastal zone contains a wide variety of coastal, intertidal and marine sites (as outlined in **Section 3** of this report).

Q. What are the sensitivities of the International sites?

A. The sites are sensitive to changes in their morphology as a result of coastal processes and sea level fluctuations. For example:

Intertidal sites are located seaward of existing defences within areas such as Poole Harbour frontage. Intertidal habitat (saltmarsh and mudflat) are sensitive to the effects of sea level rise leading to loss of intertidal habitat or shifts in the composition of habitat type. Within the mosaic of habitat required for SPA bird species, features need to be present which offer the range of ecological function required for each designated species. A loss of mudflat has the potential to impact populations of species which feed on these areas.



Coastal sites, such as the sand dunes at Studland, are sensitive to shifts in foreshore management practice. Changes to the sediment processes that enable the dunes to continue to develop can result in the eventual loss of the dunes as the successional ecological habitats are no longer offset by the dune creation, thus leading to a loss of this habitat type.

Extents of vegetated sea cliffs are present around the Poole and Christchurch Bays, and they are sensitive to alteration to the ecological succession that occurs from the ongoing erosion of these cliffs. For example, placement of sea defences can result in the cessation of the cliff erosion, which results in the loss of the specific vegetation communities for which these cliffs are designated.

It should be noted that Poole and Christchurch Bays contains a wide range of designated coastal and marine habitats, as well as areas that are soon to be designated (reefs and sea caves). It is considered that on the basis of the understanding of the location of these and the likely hydrodynamic effects of the SMP policies, no potential effects of SMP policy on these sub-tidal features is expected.

Q. Does the SMP have the potential to effect (either positively or negatively) the integrity of International sites?

A. The SMP has four policy options, which have the potential to lead to changes in the form and function of intertidal habitat, levels of inundation and management regimes. Collectively, the SMP has the potential to alter the structure and function of Poole and Christchurch Bays, through holding the line which may lead to intertidal habitat being lost through coastal squeeze, or indeed managed realignment policy which may lead to the loss of heathland habitat in the areas to landward. Additionally, the SMP may alter the structure of features which are critically linked to sediment supply, such as Hurst Spit and Hengistbury Head. It is important to remember that the question here relates to either positive or negative effects, and relate to the plan as a whole and not as individual policies.

Q. Is the SMP likely to have a significant effect on the International sites within Poole and Christchurch Bays?

A. Given that there are features on the International sites within Poole and Christchurch Bays which may be affected by matters which the SMP addresses, a likely significant effect cannot be ruled out. This effect may be positive or negative as SMP policy responds to Habitats Regulations or other drivers. It therefore follows that an Appropriate Assessment is required for the Poole and Christchurch Bays SMP.

1.5 Scoping Stage

1.5.1 A Habitats Regulations Assessment Scoping Report was submitted to the CSG and specifically to Natural England for comment in relation to scoping in or out of *Natura 2000* sites depending on a number of physical factors (distance, lack of pathway from source to site, etc). The revised HRA Scoping Report, along with comments received on the HRA draft Scoping Report and response to them, is presented in **Appendix A**.

- 1.5.2 For these reasons the following *Natura 2000* sites are not considered further in this report, as there is no likelihood of significant effects occurring on the specific sites. The following sites were scoped out:
 - 1. Isle of Wight Downs SAC;
 - 2. South Wight Maritime SAC;
 - 3. New Forest SPA, SAC and Ramsar;
 - 4. St Albans Head to Durlston Head SAC.

1.6 Report Structure

- 1.6.1 The remainder of this report is set out as follows:
 - Section 2: Methodology.
 - Section 3: Sites and Features for Consideration in the Appropriate Assessment.
 - Section 4: Other Plans and Projects.
 - Section 5: Policy Options Assessment.
 - Section 6: Consideration of Mitigation Measures, Alternative Solutions, IROPI, and Compensatory Habitat requirements.
 - Section 7: Conclusions.

2 METHODOLOGY

2.1 Development of Assessment Areas – Policy Development Zones (PDZs)

- 2.1.1 This assessment is undertaken at the Policy Development Zone (PDZ) level. These have been derived during a policy development stage which was submitted to the CSG in May 2009. The PDZs are defined, from east to west, as shown on **Figures 2.1 to 2.4**, as:
 - PDZ 1 Central and Eastern Sections of Christchurch Bay;
 - PDZ 2 Christchurch Harbour and Central Poole Bay;
 - PDZ 3 Poole Harbour and Associated Coastline; and
 - PDZ 4 Swanage.
- 2.1.2 The development of policy within this SMP has been devised in response to a consideration of the environmental, social and economic features of The Poole and Christchurch Bays, and of the coastal processes and systems which shape the coast. Each PDZ has been defined to offer the most appropriate spatial breakdown of the coast, where processes can be managed (as appropriate) at a scale which is driven by wider management objectives. Simply, the PDZ on The Poole and Christchurch Bays, is the level at which the SMP 'makes sense' in regard to the intent of management. As such, it therefore follows that this assessment of SMP policy is undertaken at the PDZ scale.

2.2 Assessment Methodology

- 2.2.1 As has been stated previously, the methodology developed for this exercise has been developed in accordance with the guidance of DCLG (2006), Natural England (1999 and 2006), the Environment Agency, as well as that of the RSPB (2007). Additionally, Appropriate Assessment methodologies devised for large scale developments have been evaluated to ensure that the approach provided is based on actual practical implementation of the Habitats Regulations. Equally, the methodology has been devised to ensure that the approach taken meets the requirements of the Habitats Regulations and is specific to the particulars of an SMP, with the intent of offering a level of assessment which is appropriate for policies of this type.
- 2.2.2 The need to ensure that the assessment is in fact appropriate to the evaluation of policy has also been recognised. It should be clearly understood that the actual development required to implement coastal defence options, which may occur as policy is implemented, would itself be likely to require an Appropriate Assessment, and it is therefore not the intent of the policy level assessment here to provide a level of detail that would duplicate a site-specific Appropriate Assessment.
- 2.2.3 The process has been broken down into a series of clearly defined steps that will provide a transparent and accountable assessment of the SMP polices. These steps are outlined below and where necessary references are provided to the specific guidance or the contents of Circular 06/2005 Biodiversity and Geological Conservation. A summary of the methodology is illustrated in **Figure 2.5**, which shows the manner in which the overall assessment has progressed and how key tasks relate to one another.

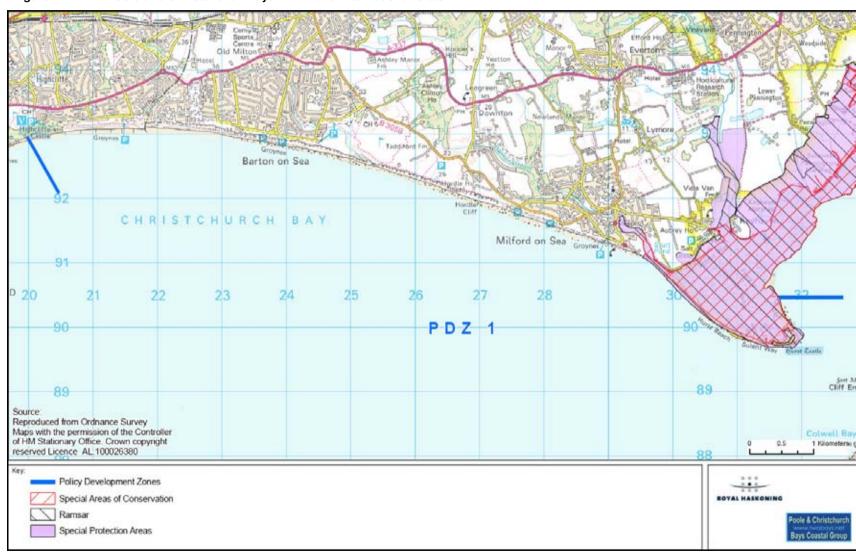


Figure 2.1 Poole and Christchurch Bays PDZ 1 and International Sites



Figure 2.2 Poole and Christchurch Bays PDZ 2 and International Sites

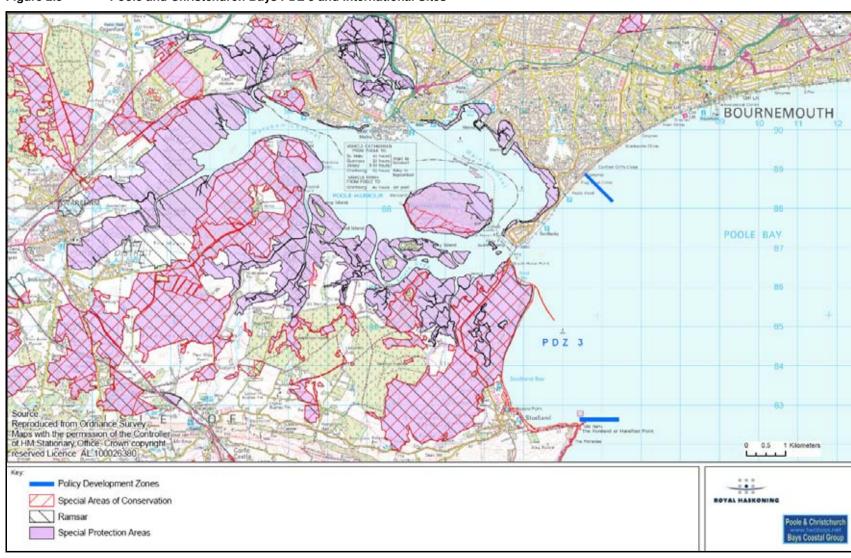


Figure 2.3 Poole and Christchurch Bays PDZ 3 and International Sites



Figure 2.4 Poole and Christchurch Bays PDZ 4 and International Sites

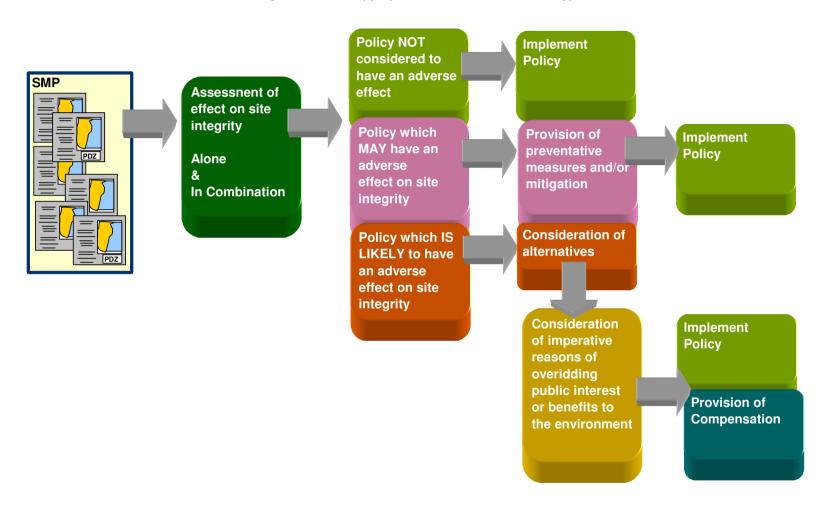


Figure 2.5 Appropriate Assessment Methodology

2.3 Assessment of the SMP Policies

- 2.3.1 The assessment of the SMP policies has been supported by a tabulated account based on an adaptation of the Favourable Condition tables for the SSSIs, which underpin the European Sites. Appendix B presents the key features of the SSSIs that relate to the Natura 2000 Sites, the attributes relevant to such features, the identified management targets for the Site and known sensitivities or management issues. The key interests and features for the European Sites, which are presented in Appendix C. Each policy unit within the assessment has then been evaluated and tabulated against each feature with regard to the potential impacts of the policy, preventative measures that could be taken, mitigation and a commentary on the impacts of the policy on the Site features and targets. On the basis of this exercise, a cumulative assessment has then been provided with regard to the overall impacts of the SMP on the integrity of the European Site. This exercise has been recorded at the Policy Development Zone (PDZ) level. Policy units have been devised to provide discreet, spatial areas for policy assessment though ultimately they will be combined to assess the affects at the PDZ level; however, if a policy may affect a neighbouring PDZ, this has been included in the in-combination assessment.
- 2.3.2 The assessment has used the findings of the SMP2 study of shoreline erosion for the three epochs, along with sea level rise change, to ascertain the likely extent and quantity of change to the physical character of the Site area, and from that determine likely effects. In addition, as no specific modelling has been undertaken at this strategic level, qualitative information on the hydrodynamic and coastal processes has been drawn out from the SMP2 study and through discussions with the coastal engineers and geomorphologists has been used where appropriate.
- 2.3.3 Although Ramsar features and sites do not have favourable condition tables, it should be stressed that conservation objectives set out in the Regulation 33 package have been produced to broadly protect the underlying habitat and environmental conditions required by Annex 1 and 2 habitats and species. Given the close correlation between Ramsar Site and European Site features, the conservation objectives within the Regulation 33 package is generally adequate to protect Ramsar Site features. Nonetheless, where Ramsar Site features need consideration over and above those of European features, the high level generic conservation objective for International sites have been applied to Ramsar Sites and their features, subject to natural change to maintain in favourable condition the Ramsar Site features and their supporting habitats.
- 2.3.4 The provision of tables to record the appropriate assessment has been recommended in the numerous HRA guidance documents. For PDZs, a commentary and determination has been provided which will clearly express the likely impacts of the policies on each International Site (over three epochs) and illustrate the measures which could be taken to avoid any adverse impacts identified. The level of assessment has been provided at an 'appropriate' level commensurate with a policy based assessment and in recognition of the fact that further detailed assessment would be provided at the Strategy and then the specific scheme stages. This acknowledges the need to provide a level of assessment that is 'appropriate' and refers to the European Court of Justice (ECJ) ruling where the Advocate General's opinion was that the assessment for policy should be as rigorous an assessment as can reasonably be undertaken. We have provided the assessment to consider the policy provided. **Table 2.1** presents the format of the assessment for the preferred policy options.

Table 2.1 Suggested Table to Record the Appropriate Assessment

Policy -							
Sub Feature	Attribute	Target	Potential effect of policy	Preventative Measures	Mitigation	Implications for the integrity of the site	
Site Featu	re - E.g.	Ringed Pl	lover				

2.4 Assessment of Impacts over Different SMP Epochs

2.4.1 The complications of applying the Habitats Regulations at the policy level are further enhanced by the different timescales (or epochs), over which they apply (20 years, 50 years and 100 years). The possibility exists whereby SMPs or their policies will result in short-term adverse impacts, but that in the longer-term the SMP will enable site integrity to be maintained. On the basis of the assessment provided here however, no issues have been identified relating to temporal adverse effects for longer term benefit.

2.5 Provision of an 'In Combination' Assessment

- 2.5.1 The 'in combination' assessment builds on the assessment of policy and the summary tables provided in the 'alone assessment' stage and then considers the impacts of SMP policy in combination with all other SMP policies, the other plans identified as being relevant to this assessment, or approved projects yet to be implemented. The specific focus of this stage relates to the consideration of those plans and projects which are likely to have the same effect as the policies of the SMP. In the context of the SMP, this is relates to other plans or projects which may have effects on coastal habitat or processes that support designated habitats or species. The plans and projects which are considered relevant to this study are presented in **Section 5** of this document. An assessment for each SMP PDZ has been provided which accounts for the 'in combination' effects of other plans or projects (from the list provided in **Section 5**) that have similar impacts to that of the specific policy within the PDZs. An accompanying rationale has been provided to support this.
- 2.5.2 The 'in combination' assessment has been summarised in regard to the overall conclusions that can be drawn to provide a clear summary for each SMP Management Unit so that the impacts of the policies within the unit alone, and 'in combination' with other plans and projects is clearly expressed.

2.6 Consideration of Preventative Measures and Mitigation

2.6.1 If it has been concluded that all of the SMP policies alone or 'in combination' with other plans or projects, would not have an adverse effect on the international sites in question, then the assessment can be concluded at this stage, with a recommendation that the SMP be implemented in its current form. If at the conclusion of the above stages, policies remain where it cannot be shown that the impacts of policy would not have an adverse effect on the integrity of any of the international sites, consideration will then need to be given to how such effects could be avoided in regard to preventative measures and mitigation.

- 2.6.2 The determination of feasible measures would be refined in consultation with the SMP2 Client Steering Group; to ensure that suggested measures are acceptable in the shoreline management context and in regard to the impacts of policy. Following this collaborative process, a series of measures have been specified which clearly demonstrate how adverse impacts can be mitigated or avoided for the relevant policy. It should be recognised at this stage, that at a policy level, preventative measures can be provided simply, for example by the provision of additional supporting policy to offset adverse impacts. If policies are still identified as having an adverse effect even with any feasible preventative measures or mitigation measures, then such policies will be taken forward for further consideration of alternatives and Imperative Reasons of Overriding Public Interest (IROPI).
- 2.6.3 Within this SMP2, a need for preventative and mitigation measures has been identified during the preparation of this appropriate assessment. These measures will have been identified as a means or method of ensuring that no adverse effect on the integrity of a Site would occur. These preventative and mitigation measures also entail the requirement for the provision and undertaking of Managed Realignment policies within a certain timescale.

Determination of Alternative Solutions and Imperative Reasons of Overriding Public Interest

- If policies have been identified for which preventive measures or mitigation do not avoid their adverse impacts on the integrity of the Site(s), these policies are then assessed to determine how these policies are addressed within the Appropriate Assessment and within the SMP2. This consideration follows a two stage process. Firstly, the assessment of alternative solutions would be considered; can the policy in question be replaced by a policy which will meet the requirements of the wider SMP2 and yet avoid any impacts on international sites? The consideration of policy alternatives requires the combined efforts of the Appropriate Assessment project team and the policy officers within the SMP2 Client Steering Group. If policies are found to lack any viable alternative, the matter of whether the policy is required in the interests of overriding public interest will need to be considered.
- 2.6.5 Claims for policy adoption on the grounds of imperative reasons of overriding public interest (IROPI) are considered in regard to Regulation 62 (The Conservation of Habitats and Species, 2010). The procedure for pursuing policy on the grounds of IROPI is well defined in the Regulations and in guidance. The particulars are dependent on the actual reasons for the IROPI claim (for example is the policy required on the grounds of social or economic factors, or is it a public health and safety issue?) and the priority attached to the species or habitat in question. Finally claims for IROPI will need to be submitted to the Secretary of State with clear reasoning provided.
- 2.6.6 Provision of compensatory measures under Regulation 53 is a necessary element in selecting policies on the basis of IROPI, and the availability of acceptable compensatory measures under Regulation 53 would need to be provided alongside presentation of the case for IROPI, such that the case can be fully considered.

2.7 Conclusions

- 2.7.1 The assessment provided will offer a simple breakdown of policy (at the Policy Development Zone (PDZ level) as follows:
 - PDZs which are not considered to have an adverse effect on International sites;
 - PDZs where an adverse effect cannot be ruled out depending on the details at scheme level or other avoidance measures; and
 - PDZs which are considered to have an adverse effect on the integrity of sites.
- 2.7.2 This classification has been provided for effects that are either due to the policies within the PDZ alone, or 'in combination' with other policy, plans or projects. Each PDZ will be summarised in terms of the effects considered and the result of the assessment, and any preventative measures, mitigation measures will be summarised.
- 2.7.3 If an adverse effect on integrity remains, a brief description of the alternative options assessment and its findings will be followed by a brief description of the IROPI findings. If the policy within a PDZ continues to show an adverse effect and passes the alternatives and IROPI tests, compensatory habitat will be identified and summarised..



3 SITES AND FEATURES FOR CONSIDERATION WITHIN THE APPROPRIATE ASSESSMENT

3.1 Introduction

3.1.1 The Poole and Christchurch Bays SMP2 includes all, or part of nine *Natura 2000* sites (SACs and SPAs) designated under the Birds Directive and Habitats Directive along with four sites designated under the Ramsar Convention. These areas are considered within this Appropriate Assessment with regards to the potential impacts of the SMP2 policy options, as noted in **Section 1.1.1**. The sites are as follows:

Sites Designated under the Birds Directive (Council Directive 79/409/EEC on the conservation of wild birds):

Solent and Southampton Water SPA

Avon Valley SPA

Dorset Heathlands SPA

Poole Harbour SPA

Sites Designated under the Habitats Directive (Council Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora):

Solent Maritime SAC

River Avon SAC

Dorset Heaths SAC

Dorset Heaths (Purbeck & Wareham) & Studland Dunes SAC

Isle of Portland to Studland Cliffs SAC

Sites Designated under the Ramsar Convention (The Convention on Wetlands of International Importance especially as Waterfowl Habitat):

Solent and Southampton Water Ramsar Site

Avon Valley Ramsar Site

Dorset Heathlands Ramsar Site

Poole Harbour Ramsar Site

- 3.1.2 **Figure 2.1** presents PDZ1, which encompasses the Solent and Southampton Water SPA and Ramsar, and Solent Maritime SAC.
- 3.1.3 **Figure 2.2** presents PDZ2, which encompasses part of the Dorset Heathlands SPA and SAC, the Avon Valley SPA and Ramsar, and the outfall of the River Avon SAC.
- 3.1.4 **Figure 2.3** encompasses the Dorset Heathlands SPA and Ramsar, the Poole Harbour SPA and Ramsar, the Dorset Heaths SAC, the Dorset Heaths (Purbeck and Wareham) & Studland Dunes SAC, and part of the Isle of Portland to Studland Cliffs SAC.
- 3.1.5 **Figure 2.4** encompasses part of the Isle of Portland to Studland Cliffs SAC.



3.2 Sites and their Features

3.2.1 Details of the site's qualifying features are designated are presented in **Appendix C**, whilst the following text describes the site's features in general, along with the current factors affecting their condition, their conservation objectives, and key site sensitivities.

Solent Southampton Water SPA

3.2.2 This site qualifies under Article 4.1 of the Birds Directive (79/409/EEC) by supporting populations of European species of importance including Common Tern (*Sterna hirundo*), Little Tern (*Sterna albifrons*), Mediterranean Gull (*Larus melanocephalus*), Roseate Tern (*Sterna dougallii*), and Sandwich Tern (*Sterna sandvicensis*) during the breeding season, and Black-tailed Godwit (*Limosa limosa islandica*), Dark-bellied Brent Goose (*Branta bernicla bernicla*), Ringed Plover (*Charadrius hiaticula*), and Teal (*Anas crecca*) over winter. The site also qualifies under Article 4.2 by regularly supporting at least 20,000 waterfowl. **Figure 3.1** shows the area of the SPA within or near to the SMP study area, which is bordered by the red line.



Figure 3.1 Solent Southampton Water SPA within and near to the SMP Study Area

- 3.2.3 Based on the various SSSI unit components of the Solent Southampton SPA, the key reasons for the continued impact on the site condition are related to water pollution/agricultural runoff, inappropriate scrub control, coastal management, ditch management, scrub control, water levels, weed control, overgrazing, coastal squeeze, drainage, and undergrazing.
- 3.2.4 The conservation objectives of the Solent Southampton Water SPA are to maintain in favourable condition, subject to natural change, coastal grazing marsh, terrestrial grassland, vegetated shingle, standing water, sand and shingle, saltmarsh, intertidal mud and sandflats, shallow coastal waters, and lagoons for the internationally important populations of regularly occurring Annex I birds species of European importance, including the assemblage of waterfowl.



3.2.5 Key site sensitivities include activities or developments resulting in physical loss of the supporting habitats which are likely to reduce the availability of feeding and roosting habitat for such species as Common Tern, Little Tern, Mediterranean Gull, Roseate Tern, Sandwich Tern, Black-tailed Godwit, Dark-bellied Brent Goose, Ringed Plover, and Teal, and increased disturbance (e.g. sudden noise, movements) can also have an effect by displacing the birds from their feeding grounds, and affect their survival.

Solent Maritime SAC

3.2.6 The site contains various primary habitats under Annex I of the Habitats Directive including estuaries, Spartina swards (Spartinion maritimae), and Atlantic salt meadows (Glauco-Puccinellietalia maritimae). Figure 3.2 shows the area of the SAC within or near to the SMP study area, which is bordered by the blue line.

Figure 3.2 Solent Maritime SAC within and near to the SMP Study Area



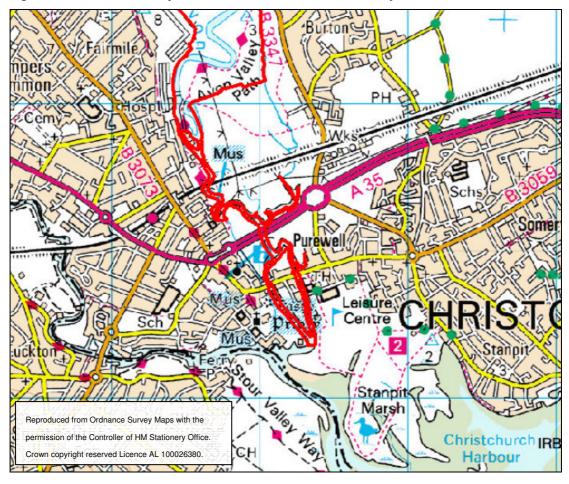
3.2.7 The primary factors influencing the condition of the Solent Maritime SAC are existing and proposed flood defence and coast protection works, coastal squeeze of intertidal habitats due to coastal erosion/ sea level rise and sea-walls/ development in the hinterland, developments pressures including ports, marinas, jetties, proposals often involve capital/ maintenance dredging to provide/ improve deep water access, and land-claim of coastal habitats, potential accidental pollution from shipping, oil/chemical spills, heavy industrial activities, former waste disposal sites and waste-water discharge, and the introduction of non-native species such as through shipping activity.

- 3.2.8 The conservation objectives of the Solent Maritime SAC are to maintain in favourable condition, subject to natural change, annual vegetation of drift lines, perennial vegetation of stony banks, shifting dunes along the shoreline with *Ammophila arenaria* (`white dunes`), the shingle, saltmarsh, intertidal mudflat, subtidal sediment and sandflat communities; and to maintain in favourable condition, subject to natural change the Atlantic salt meadows in particular low marsh, mid marsh, upper marsh and transitional high marsh communities.
- 3.2.9 Key site sensitivities include activities or developments such as new coastal protection works resulting in the physical loss or reduction in primary habitat extent and degradation of physical characteristics of the habitats.

Avon Valley SPA and Ramsar Site

3.2.10 This site qualifies under Article 4.1 of the Birds Directive (79/409/EEC) by supporting populations of European species of importance of the following species listed on Annex I of the Directive including Bewick's Swan (*Cygnus columbianus bewickii*) and Gadwall (*Anas strepera*). The site also includes Ramsar criterion 1, 2 and 6, in that the site shows a greater range of habitats than any other chalk river in Britain, including fen, mire, lowland wet grassland, and small areas of woodland (criterion 1); supports a diverse assemblage of wetland flora and fauna including several nationally-rare species (criterion 2); and supports the following species as future considerations (criterion 6), Northern Pintail (*Anas acuta*), and Black-tailed Godwit. **Figure 3.3** shows the area of the SPA nearest to the SMP study area, and is bordered by the red line.

Figure 3.3 Avon Valley SPA within and near to the SMP Study Area

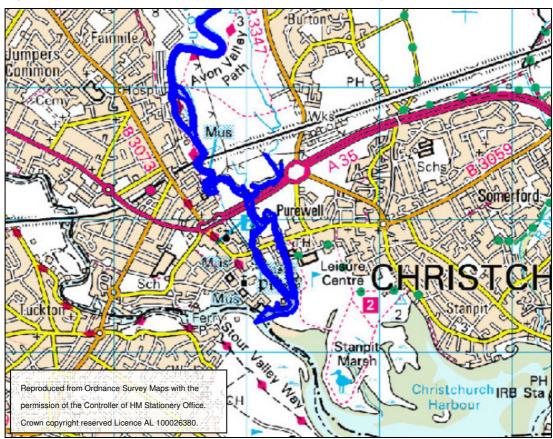


- 3.2.11 Based on the SSSI component of the Avon Valley SPA, the primary factors influencing the condition of the site is related to inappropriate ditch management, water levels, and undergrazing.
- 3.2.12 The conservation objectives of the Avon Valley SPA are to maintain, in favourable condition, subject to natural change, the supporting habitats for the populations of Annex I bird species (Bewicks' Swan and Gadwall) of European importance, with particular reference to open water, standing water, and floodplain grazing marsh.
- 3.2.13 Key site sensitivities include activities or developments resulting in physical loss of the intertidal supporting habitats, which are likely to reduce the availability of food and roosting habitat for the Bewick's Swan and overwintering Gadwall; increased disturbance (e.g. sudden noise, movements) to overwintering birds can also have an effect of displacing the birds from their feeding grounds, and affect their survival.

River Avon SAC

3.2.14 The site contains various primary habitats under Annex I of the Habitats Directive including watercourses of plain to montane levels with *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation. Annex II primary species associated with the site include Desmoulin's Whorl-Snail (*Vertigo moulinsiana*), Sea Lamprey (*Petromyzon marinus*), Brook Lamprey (*Lampetra planeri*), Atlantic salmon (*Salmo salar*), and Bullhead (*Cottus gobio*). The site covers the River Avon from its outfall into Christchurch Harbour, upstream of Stanpit Marsh. **Figure 3.4** shows the area of the SAC nearest to the SMP study area, and is bordered by the blue line.

Figure 3.4 River Avon SAC within and near to the SMP Study Area



- 3.2.15 The primary factors influencing the condition of the River Avon SAC are: historical modifications for mills, water meadows and more recently land drainage, land use in the catchment, abstraction of water for public supply and agricultural uses, disposal of sewage effluents, management of the water courses for fishery, and agricultural and other uses. Currently much of the system is considered to be at risk from reduced flows, elevated nutrient levels and changes to sediment processes resulting from previous channel modifications.
- 3.2.16 The conservation objectives of the River Avon SAC are to maintain, in favourable condition, the river and adjoining land as habitat for populations of Desmoulin's Whorl-Snail; to maintain, in favourable condition, the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation, and the river as a habitat for populations of Atlantic Salmon and Bullhead; and to maintain in favourable condition the river as a habitat for Bullhead, populations of Brook Lamprey and Sea Lamprey.
- 3.2.17 Key site sensitivities include activities or developments such as land use changes resulting in the physical loss or reduction in primary habitat extent and degradation of physical characteristics of the habitats.

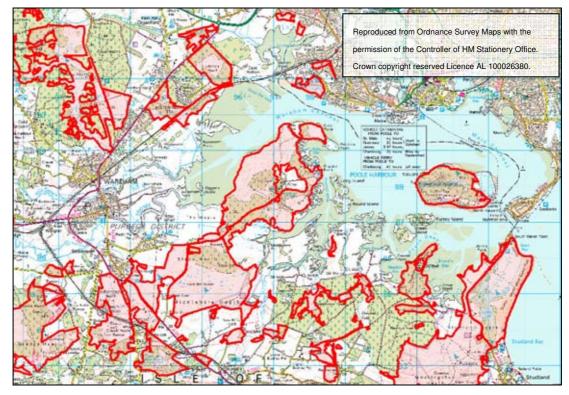
Dorset Heathlands SPA and Ramsar Site

- 3.2.18 This site qualifies under Article 4.1 of the Birds Directive (79/409/EEC) by supporting populations of European species of importance including Dartford Warbler (*Sylvia undata*), Nightjar (*Caprimulgus europaeus*), and Woodlark (*Lullula arborea*) during the breeding the season, and Hen Harrier (*Ircus cyaneus*) and Merlin (*Falco columbarius*) over winter. The site also includes Ramsar criterion 1, 2 and 3, in that the site contains particularly good examples of northern Atlantic wet heaths, acid mire and contains the largest example in Britain of southern Atlantic wet heaths (criterion 1); supports 1 nationally rare and 13 nationally scarce wetland plant species, and at least 28 nationally rare wetland invertebrate species (criterion 2); and has a high species richness and high ecological diversity of wetland habitat types and transitions (criterion 3). **Figures 3.5** and **3.6** show the area of the SPA nearest to the SMP study area, with the site bordered by the red line with light red shading showing the area covered by the SPA.
- 3.2.19 Past losses of the heathland have left the remaining heaths in a highly fragmented state. Despite this decline and fragmentation, the heaths show a high degree of ecological cohesion. The primary reasons for the continued impact on the site condition associated with the various SSSI unit components of the Dorset Heathlands SPA include inappropriate scrub, weed control and ditch management, undergrazing, coastal squeeze, drainage, and water pollution discharge.
- 3.2.20 The conservation objectives of the Dorset Heathlands SPA are to maintain, in favourable condition, subject to natural change, the geological features and supporting habitats for the populations of Annex I bird species (Nightjar, Woodlark, Dartford Warbler, Hen Harrier, and Merlin) of European importance, with particular reference to their lowland heathland, fen, marsh and swamp, sand dune, woodland, open standing water, and grassland habitat.

Figure 3.5 Dorset Heathlands SPA (Hengistbury Head) within and near to the SMP Study Area



Figure 3.6 Dorset Heathlands SPA (Poole Harbour) within and near to the SMP Study Area





3.2.21 Key site sensitivities include activities or developments resulting in physical loss of the supporting habitats which are likely to reduce the availability of food and roosting habitat for the Dartford Warbler, Nightjar, Woodlark and Hen Harrier; increased disturbance (e.g. sudden noise, movements) can also have an effect by displacing the birds from their feeding grounds, and affect their survival.

Dorset Heaths SAC

3.2.22 The site contains various primary habitats under Annex I of the Habitats Directive including Northern Atlantic wet heaths with *Erica tetralix*, European dry heaths and depressions on peat substrates of the *Rhynchosporion*, and Annex II primary species including southern damselfly (*Coenagrion mercuriale*). **Figures 3.7** and **3.8** show the areas covered by the Dorset Heaths SAC within Christchurch Harbour and Poole Harbour respectively, outlined in blue.

Figure 3.7 Dorset Heaths SAC (Christchurch Harbour) within or near to the SMP Study

Area



- 3.2.23 The primary factors influencing the condition of the Dorset Heaths SAC is mainly related to existing and proposed flood defences and coastal protection works, coastal squeeze of intertidal habitats due to coastal erosion, development pressures, and maintenance including dredging.
- 3.2.24 The conservation objectives of the Dorset Heaths SAC are to maintain in favourable condition, subject to natural change, the mires, fens, *Molinia* meadows, oak woodlands, and heaths including their component vegetation types.

The first of the second of the

Figure 3.8 Dorset Heaths SAC (Poole Harbour) within or near to the SMP Study Area

3.2.25 Key site sensitivities include activities or developments such as new coastal protection works resulting in the physical loss or reduction in primary habitat extent and degradation of physical characteristics of the habitats.

Poole Harbour SPA and Ramsar Site

- 3.2.26 This site qualifies under Article 4.1 of the Birds Directive (79/409/EEC) by supporting populations of European species of importance including Common Tern, and Mediterranean Gull during breeding, Aquatic Warbler (*Acrocephalus paludicola*), Little Egret (*Egretta garzetta*), and Avocet (*Recurvirostra avosetta*) on passage and over winter. The site also qualifies under Article 4.2 by supporting Black-tailed Godwit and Shelduck (*Tadorna tadorna*) over winter, and regularly supporting at least 20,000 waterfowl. **Figure 3.9** shows the area of the SPA, with the site bordered by the red line with light red shading showing the area covered.
- 3.2.27 In addition the site also includes Ramsar criterion 1, 2, 3, 5, and 6 in that the site contains the largest example of a bar-built estuary with lagoon characteristics (criterion 1); supports two species of nationally rare plant and one nationally rare alga and at least three British Red data book invertebrate species (criterion 2); includes examples of natural habitat types of community interest and supports nationally important populations of breeding waterfowl and supports a nationally important population of Avocet (criterion 3 & 5); and supports the following species Shelduck and Black-tailed Godwit and Avocet (criterion 6).

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Figure 3.9 Poole Harbour SPA within the SMP Study Area

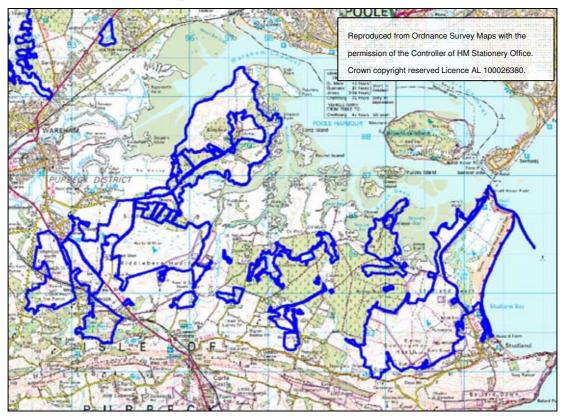


- 3.2.28 The conservation objectives of the Poole Harbour SPA are to maintain in favourable condition, subject to natural change, the littoral sediment (sheltered muddy shores and saltmarsh), lowland fens (including basin, flood-plain, open-water transition and valley fens, springs and flushes), lowland wet and dry heath, lowland neutral grassland, coastal lagoon habitats in particular Brownsea Lagoon, and woodland for the internationally important populations of regularly occurring Annex I birds species of European importance including the assemblage of waterfowl.
- 3.2.29 Based on the various SSSI unit components of the Poole Harbour SPA, some key reasons for the continued impact on the site condition are related to water pollution/agricultural runoff, inappropriate scrub control, coastal management, ditch management, scrub control, water levels, weed control; overgrazing, coastal squeeze, drainage, and undergrazing.

Dorset Heaths (Purbeck & Wareham) & Studland Dunes SAC

- 3.2.30 The site contains various primary habitats under Annex I of the Habitats Directive including dunes, oligotrophic waters, Atlantic wet heaths with *Erica ciliaris* and *Erica tetralix*, European dry heaths, depressions on peat substrates of the *Rhynchosporion*, and bog woodland. Annex II primary species associated with the site include southern damselfly. **Figure 3.10** shows areas covered by the Dorset Heaths (Purbeck & Wareham) & Studland Dunes SAC outlined in blue.
- 3.2.31 The Dorset Heathlands have become a fragmented heathland area through extensive losses to agriculture, forestry, and urban development. The heaths are also affected by the decline in the use of traditional agriculture has resulted in a successional trend to scrub and woodland together with invasion by conifer and introduced scrub species, especially *Rhododendron*. The key threats to dune habitats are associated with erosion and scrub invasion.

Figure 3.10 Dorset Heaths (Purbeck & Wareham) & Studland Dunes SAC within or near to the SMP Study Area



- 3.2.32 The conservation objectives of the Dorset Heaths (Purbeck & Wareham) & Studland Dunes SAC are to maintain in favourable condition, subject to natural change, the dunes, geological features associated with the cliffs, the freshwater body known as Little Sea, mires, fens, wet and oak woodlands, *Molinia* meadows, and heaths including their component vegetation types.
- 3.2.33 Key site sensitivities include activities or developments such as land use changes resulting in the physical loss or reduction in primary habitat extent and degradation of physical characteristics of the habitats.

Isle of Portland to Studland Cliffs SAC

- 3.2.34 The site contains various primary habitats under Annex I of the Habitats Directive including vegetated sea cliffs of the Atlantic and Baltic coasts and semi-natural dry grasslands and scrubland facies on calcareous substrates. Annex II primary species associated with the site include Early Gentian. Figure 3.11 shows areas covered by the Isle of Portland to Studland Cliffs SAC as well as those of the St Albans Head to Durlston Head SAC, outlined in blue, with the Isle of Portland to Studland Cliffs Site running along the coast from Studland Bay to north of Swanage, as well as within Durlston Bay.
- 3.2.35 The primary factors influencing the condition of the Isle of Portland to Studland Cliff SAC are inappropriate coastal defences reducing natural coastal processes, inappropriate grazing regimes, and recreational pressures.

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The Pinnades

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Figure 3.11 Isle of Portland to Studland Cliffs SAC within or near to the SMP Study Area

- 3.2.36 The conservation objectives of the Isle of Portland to Studland Cliffs SAC are to maintain in favourable condition, subject to natural change, the vegetated sea cliffs, annual vegetation of drift lines, heaths and grassland including their component vegetation types and geological features associated with the cliffs.
- 3.2.37 Key site sensitivities include activities or developments such as new coastal protection works resulting in changes of natural processes and the physical loss or reduction in primary habitat extent and degradation of physical characteristics of the habitats.

3.3 New Sites Within or Adjacent to SMP2 Management Units

- 3.3.1 Potential new designations that are currently being reviewed by Natural England include the Poole Bay to Lyme Bay (SAC), which lies off the counties of Dorset and Devon. The site comprises a mosaic of four areas containing Annex I 'reef' and 'sea cave' habitat. The areas are described as (from east to west):
 - Studland Bay to Ringstead Bay Reefs;
 - Portland Reefs;
 - Lyme Bay Reefs; and
 - Watcombe to Dartmouth Reefs.

- 3.3.2 The reason the site is potentially being designated is that the reefs exhibit a large amount of geological variety ranging from chalk bedrock through to exposed shales, clays, limestone and cementstone ledges, and boulders. The reef habitats contain such species as Ross Coral (*Pentapora fascialis*), soft coral (e.g. *A. digitatum*), stony coral (e.g. *C. smithii*) recorded extensively along with other sponges, including *Axinella* sp, bryozoans, hornwrack, *Flustra foliacea* dominant deadmans fingers, hydroids and tunicates (including large patches of *Stolonica socialis*). Colonies of the nationally scarce Pink Sea Fan (*Eunicella verrucosa*) and various biotopes have also been widely recorded.
- 3.3.3 The primary factors influencing the condition of the Poole Bay to Lyme Bay (SAC) site are mainly related to fishing activity, which has occurred extensively within the SAC in particular scallop dredging has resulted in the degradation of reef structure as well as biota. The physical structure of the majority of the reef habitat within the SAC is considered to be in relatively good condition. However, in areas where scallop dredging has coincided with softer bedrock and areas of boulder / pebble reef, degradation to the structure has occurred.

3.4 Conservation Objectives

- 3.4.1 Conservation objectives are Natural England's interpretation of the detailed habitat and environmental conditions necessary to maintain favourable conservation status and site integrity. Conservation objectives thus serve as basis for evaluating plans and projects under the Habitats Regulations. Conservation objectives for Poole and Christchurch Bays provide a detailed and comprehensive account of the conditions which comprise favourable conservation status/site integrity and the acceptable limits of impacts compatible with site integrity. Conservation objectives are currently being reviewed by Natural England, primarily such that they can be made more quantitative. This process will run along similar timescales to the SMP. However, it is not felt that this will pose problems for the SMP and its appropriate assessment, as the fundamental principles of the conservation objectives are unlikely to change.
- 3.4.2 For qualifying **species**, the conservation objectives can be generalised as follows:
 - To avoid deterioration of the Habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and
 - To ensure for the qualifying species that the following are maintained in the long term:
 - Populations of the species as a viable component of the site
 - Distribution of the species within site
 - Distribution and extent of habitats supporting the species
 - Structure, function and supporting processes of habitats supporting the species
 - No significant disturbance of the species

- 3.4.3 For qualifying **habitats** the conservation objectives can be generalised as follows:
 - To ensure for the qualifying habitats the following are maintained in the long term:
 - Extent of habitat on the site
 - Distribution of habitat within site
 - Structure and function of habitat
 - o Processes supporting the habitat
 - Distribution of typical species of the habitat
 - Viability of typical species as components of the habitat
 - No significant disturbance of typical species of habitat

3.5 Current Condition Assessment

- 3.5.1 The majority of SPA, SAC and Ramsar Sites are 'underpinned' by Sites of Special Scientific Interest (SSSI) designation, and on such SPA/SAC sites, condition monitoring is undertaken by Natural England at the SSSI level according to JNCC common standards.
- 3.5.2 The relevance of SSSI condition status to those of SAC, SPA and Ramsar features is dependent on the correspondence of SSSI features with SAC/SPA/Ramsar Features. SSSI features are based on BAP broad habitat classifications. These are comprehensive categories, and can be considered to encompass all qualifying features (or supporting features in the case of the SPAs), at least to the extent of providing habitat information at a more detailed level than the Sites' boundaries alone.
- 3.5.3 This is the case for the Poole and Christchurch Bays SMP study area, where there is a close correspondence between SSSI features and SAC, SPA and Ramsar features, meaning that condition assessments, and more importantly reasons for unfavourability can be considered reliable indicators of the conservation status, and impacts on site integrity with respect to SAC, SPA and Ramsar features.
- 3.5.4 SSSIs are typically divided into a series of units for the purposes of management and monitoring. Analysis of Condition data for SSSI units along Poole and Christchurch Bays indicates that one unit has been identified as being in unfavourable condition due to inappropriate coastal management issues in Poole Harbour SPA (SSSI unit 33). The reasons provided for unfavourable condition throughout the *Natura 2000* Sites carried forward to detailed appropriate assessment are: coastal squeeze, inappropriate coastal management, drainage, inappropriate ditch management, inappropriate water levels, siltation, water pollution agriculture/run off, water pollution discharge, undergrazing, overgrazing, inappropriate stock-feeding, inappropriate scrub control, inappropriate weed control, inappropriate cutting/mowing, forestry and woodland management, fire other, public access/disturbance, planning permission other mineral and waste, and invasive freshwater species.

- 3.5.5 **Appendix B** presents tables showing the condition of units within the relevant *Natura 2000* sites. Not every SSSI unit for the whole site is provided in this appendix, as we have selected those within the likely area of influence of the SMP2 policies (including sea level rise and effects on river estuaries). Where the SMP2 policies would not have a direct or indirect effect (such as through elevating water levels) the units have not been included. Site units have been excluded in order to provide a clearer indication of what is happening and what the condition is, within the Sites that may be affected by SMP2 policies. Omission will not affect the assessment of the potential impacts of the SMP2 policies.
- 3.5.6 It is noted that coastal squeeze is identified as an issue affecting condition at a number of sites, in particular:
 - Solent and Southampton Water SPA (Hurst Castle & Lymington River Estuary SSSI units 2, 3, 4, 5 and 34) where saltmarsh erosion is occurring, and where reverse succession (upper saltmarsh being colonised by lower saltmarsh) is taking place (Natural England, 2009). However, some erosion of saltmarsh is also being attributed to boat movements (Natural England, 2009). It is expected that habitat currently being affected by coastal squeeze will be remedied by the end of 2010 as part of the Regional Habitat Creation Programme.
 - Solent Maritime SAC (Hurst Castle & Lymington River Estuary SSSI units 2, 3, and 4) where saltmarsh erosion is occurring, and where reverse succession (upper saltmarsh being colonised by lower saltmarsh) is taking place. It is expected that habitat currently being affected by coastal squeeze will be remedied by the end of 2010 as part of the Regional Habitat Creation Programme.
 - Dorset Heathlands SPA (Studland and Godlingston Heaths SSSI unit 10) where the shoreline appears to be rapidly retreating and resulting in dune loss.
 - Dorset Heaths (Purbeck and Wareham) and Studland Dunes SAC ((Studland and Godlingston Heaths SSSI unit 10) where the shoreline appears to be rapidly retreating and resulting in dune loss.

3.6 Consultation

- 3.6.1 Consultation was initiated with the submission of a draft HRA Scoping Report to the CSG, which included Natural England and the Environment Agency. Comments received on the draft Scoping Report were edited into a Final HRA Scoping Report (presented in **Appendix A**) and carried through to this document. **Appendix D** presents the listing of comments received and the response to these comments, which includes edits to the final Scoping Report that are carried through into the HRA Report.
- 3.6.2 A draft HRA Report was submitted to the CSG and for public consultation, and a revision to it was also submitted to the RSPB. Comments received on the draft and revised HRA reports are presented in **Appendix D**, along with a response including notification of any relevant edits within this HRA Report.



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4 OTHER PLANS AND PROJECTS

4.1 Introduction

4.1.1 A range of envisaged or ongoing plans or projects have been considered in combination with the Shoreline Management Plan policies.

4.2 Land Use Plans

- 4.2.1 Land use plans are produced by local authorities, and set out the broad framework for planning and development in the local authority area. The area potentially affected by the Poole and Christchurch Bays SMP2 policies is covered by five local authorities:
 - Purbeck District Council;
 - Borough of Poole;
 - Bournemouth Borough Council;
 - Christchurch Borough Council; and
 - New Forest District Council.
- 4.2.2 The main issue for land use plans in the context of shoreline management plans and their compatibility with the Habitats Regulations is where land is allocated for housing, employment or other uses, development of which may prejudice SMP2 policies. For example, housing allocations in areas currently prevented from flooding by flood defence structures or practices would make it more difficult to undertake managed retreat or abandon existing defences. Managed realignment or no active intervention options may be preferred, or necessary in response to coastal squeeze, which may be adversely affecting international sites.
- 4.2.3 Planning Policy Statement (PPS) 25 sets out government policy on development in relation to flood risk. Broadly speaking this seeks to avoid development in flood prone areas, or undertaking development which will enhance flood risk. PPS 25 requires local authorities to undertake Strategic Flood Risk Assessments to assist in developing local plans such that they achieve these objectives.
- 4.2.4 Adherence to PPS 25 guidance will ensure that the likelihood of development occurring which will prejudice SMP2 policies, is minimised. It does not however completely preclude these possibilities, and individual local plans thus need to be examined to identify any constraints which may act "in combination" with SMP2 policies. Furthermore, the draft coastal change policy is out for public consultation and is expected to supplement PPS25, with potentially significant implications for planning policy at the local level.

4.3 Activities Regulated and Consented by the Environment Agency

4.3.1 At the present time, the RoC process remains to be finalised, and it is considered that, on the basis of the work completed to date, an assessment of in combination effects with the SMP is not possible at this time.

4.4 Dredging and Coastal Works

- 4.4.1 A number of coastal protection works have been carried out in recent years, including the following:
 - Dredging of the navigation channel in Christchurch Harbour was carried out during winter 2005/2006. The dredged material was placed at Grimbury Point on Stanpit Marsh, and on the inside of Mudeford Sandbar.
 - Poole Harbour approach channel deepening and widening was carried out from 2005 to 2007. Some 450,000m³ of material was used to replenish the beach at Sandbanks, 650,000m³ was used to replenish the beach between Alum Chine and Warren Hill (Bournemouth), and 90,000m³ was used to replenish the beach at Swanage.
 - 5 rock groynes were built along Branksome Chine Dene beach in Poole, during the winter 2008/9.
 - Replenishment of Boscombe and Southborne Beach was carried out by dredging off the Isle of Wight in winter 2007/8.
 - Southborne Beach was replenished by dredging off the Isle of Wight in spring 2009.
- 4.4.2 Inappropriate coastal management is identified as one of the reasons for unit 33 of Poole Harbour SSSI from achieving favourable condition. This unit lies within the Poole Harbour SPA.

5 POLICY OPTIONS ASSESSMENT

5.1 Introduction

- 5.1.1 The section presents the assessment of the preferred policy options on the European Sites within or around Poole and Christchurch Bays, the sensitivity of the features, the effects of policy and the need for preventative measures. This transparent approach to the assessment ensures that the actual level of assessment remains appropriate and that the assessment is critically focussed on the effects of policy on the integrity of the sites (and not on wider ecological considerations unrelated to designated features).
- The level of assessment has been provided with the intent to provide a level of detail that is commensurate with the nature of SMP policy. SMP policy is relatively abstract (relating to a simple statement of intent for areas) and the actual level of impact and effects will be largely determined by the particulars of subsequent strategies and schemes. It is at this stage that extremely detailed levels of assessment are possible and required. At the SMP stage the assessment should consider the anticipated effects of a policy action, not the specific details of measures to enable this.
- 5.1.3 The first stage of the assessment (presented in the Scoping Report in **Appendix A**) provided an initial appraisal of SMP policy within each assessment unit, with a view to establish those where shoreline policy would not have a likely significant effect on International sites.
- The appropriate assessment of effects on International sites in this report follows the reverse burden of proof paradigm, where if any doubt exists as to the effect of policy, then "no adverse effect on integrity" (NAEOI) cannot be concluded. As such, only those sites where NAEOI can be empirically proven can be assessed as "passing" the appropriate assessment test. The detailed assessment tables for the SMP policies follow this requirement.

5.2 Summary of Poole and Christchurch Bays SMP Policy under Assessment

- 5.2.1 For a detailed description of the policy for each PDZ, and the context for such management, the SMP should be referred to. A summary of the preferred SMP policies is provided in **Table 5.1 and Figures 5.1 and 5.2**, and this policy suite constitutes the plan under consideration in this assessment.
- 5.2.2 For the coastal process and policy development for PDZ1, refer to the Poole and Christchurch Bays SMP2 Sub-cell 5f: Section 4. Policy Development Zone 1 (Royal Haskoning, 2009c).
- 5.2.3 For the coastal process and policy development for PDZ2, refer to the Poole and Christchurch Bays SMP2 Sub-cell 5f: Section 4. Policy Development Zone 2 (Royal Haskoning, 2009d).
- 5.2.4 For the coastal process and policy development for PDZ3, refer to the Poole and Christchurch Bays SMP2 Sub-cell 5f: Section 4. Policy Development Zone 3 (Royal Haskoning, 2009e).
- 5.2.5 For the coastal process and policy development for PDZ4, refer to the Poole and Christchurch Bays SMP2 Sub-cell 5f: Section 4. Policy Development Zone 4 (Royal Haskoning, 2009f).

Table 5.1 Summary of Preferred SMP Policies

					Policy Plan
Policy De	evelopment Zone	Now - 2025	2025 - 2055	2055 - 2105	Comment
	ntral and Eastern Se				
CBY.A.1	Hurst Spit	HTL	HTL	HTL	Maintain the overall integrity of the geomorphological feature through beach management and maintenance of rock revetment to west and in front of Hurst Castle. North Point would be allowed to develop naturally while continuing to provide a source of sediment for recycling under an agreed management plan.
CBY.A.2	Milford Seafront	HTL	MR	MR	Investigate options for developing a continuous beach between Rook Cliff and Hurst Spit, subject to funding.
CBY.A.3	Rook Cliff	HTL	HTL	HTL	Local realignment controlled by hard points.
CBY.A.4	Cliff Road	MR	MR	MR	Intent to maintain road and property but with possible future need for further realignment beyond the period of the SMP.
CBY.B.1	Hordle Cliff to Barton	NAI	NAI	NAI	Allow natural rollback.
CBY.B.2	Barton-on-Sea Marine Drive East	HTL	HTL	HTL	Maintaining defence and improve drainage.
CBY.B.3	Barton-on-Sea Marine Drive and Marine Drive West	MR	MR	MR	Initially maintain those areas with defence and drainage allowing this to adapt to provide a transitional defence to Naish Cliff.
CBY.B.4	Naish Cliff	MR	MR	MR	Potential limited intervention with recharge to allow adaption of use.
CBY.C.1	Highcliffe to Friars Cliff	HTL	HTL	HTL	Detailed consideration of need for defence to Highcliffe Castle in the long term.
Zone 2 - Ch	ristchurch Harbour a	nd Centra	I Poole Ba	ay	
CBY.D.1	Avon Beach	HTL	HTL	HTL	Maintain integrity of beach through controls structures and recharge.
CBY.D.2	Mudeford Quay	HTL	HTL	HTL	
CBY/PBY. E.1	Mudeford Sandbank, Harbour Side	HTL	MR	MR	Allow gradual rollback in line with sea level rise.
CBY/PBY. E.2	East of Hengistbury Head	MR	MR	MR	Managed retreat of cliff line.
CBY/PBY. E.3	Hengistbury Head Long Groyne	HTL	HTL	HTL	Maintain position and influence of the Head on sediment transport.
CBY/PBY. E.4	Solent Beach	MR	MR	MR	Maintain beach levels as principal defence linked to intent to HTL at Hengistbury Head and potentially extend the influence of Long Groyne. Intent to provide a robust defence of isthmus.
CBY/PBY. E.5	Southbourne	HTL	HTL	MR	Manage to allow transition between main Bournemouth Frontage and Solent Beach.



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					Policy Plan
Policy De	evelopment Zone	Now - 2025	2025 - 2055	2055 - 2105	Comment
CHB.F.1	Mudeford	HTL	MR	HTL	Manage flood risk initially through local protection and flood warning. Potential need for a combination of set back defences to compliment existing foreshore structure. Decisions in this area will be influenced by further investigation of the landfill site.
CHB.F.2	Stanpit Marshes	HTL	MR	MR	Maintain opportunity for roll back of marshes with Sea level rise subject to investigation of landfill.
CHB.F.3	Christchurch	HTL	HTL	HTL	Maintain and improve flood defence.
CHB.F.4	Wick	HTL	HTL	HTL	Local improvement to defences in line with sea level rise.
CHB.F.5	Southside of Christ-church Harbour	NAI	NAI	NAI	
CHB.F.6	Rear of Mudeford Spit	MR	MR	MR	Allow managed roll back of Spit as for CBY/PBY.E.1.
PBY.G.1	Southbourne	HTL	HTL	HTL/A	Maintain foreshore through control and recharge/ consider potential need for increased control of coastline.
PBY.G.2	Boscombe	HTL	HTL	HTL/A	Maintain foreshore through control and recharge/ consider potential need for increased control of coastline.
PBY.G.3	Bournemouth Central	HTL	HTL	HTL/A	Maintain foreshore through control and recharge/ consider potential need for increased control of coastline.
PBY.G.4	West Cliff and Poole	HTL	HTL	HTL/A	Maintain foreshore through control and recharge/ consider potential need for increased control of coastline.
Zone 3 - Po	ole Harbour and Ass	ociated C	oastline		
PBY/STU. H.1	Flag Head Cliff to Sandbanks Head	HTL	HTL	HTL/A	Maintain amenity and opportunity for habitat enhancement.
PBY/STU H.2	Sandbanks Village	HTL	HTL	HTL	Private and public collaboration.
PBY/STU. H.3	Sandbanks Inner Face	HTL	HTL	HTL	Need to maintain low use of foreshore with the potential opportunity for Habitat management.
PBY/STU. H.4	South Haven Pt.	HTL	HTL	HTL	Maintain access to Ferry.
PBY/STU. H.5a	Training Bank	HTL	HTL	HTL	Managed as part of overall unit PBY/STU. H.5 within which this sub-unit sits.
PBY/STU. H.5	Studland Dunes	NAI	NAI	NAI	Managed adaption to naturally functioning shoreline. This would not preclude local management. For example the buildings at risk in the southern section of this cell will need to be either removed or at least relocated by the commencement of the second epoch.



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					Policy Plan
Mana	agement Unit	Now - 2025	2025 - 2055	2055 - 2105	Comment
PBY/STU. H.6	Studland Village	MR	NAI	NAI	Maintain existing defences within the context of longer term no active intervention.
PBY/STU. H.7	The Warren to Handfast Point	NAI	NAI	NAI	
PHB. I.1	Luscombe Valley to Parkstone Bay	HTL	HTL	HTL	Private and Public collaboration, further examination of potential habitat adaption.
PHB.I.2	Poole Quay	HTL	HTL	HTL	
PHB.I.3	Holes Bay	HTL	HTL	HTL	Possible investigation of barrier and adaption through development framework.
PHB.I.3a	North-west Holes Bay	NAI	NAI	NAI	Opportunity to gain additional intertidal habitat.
PHB.I.4	Port Area	HTL	HTL	HTL	Adaptation through development framework.
PHB.I.5	Lower Hamworthy	HTL	HTL	HTL	Private and Public collaboration.
PBH.J.1	Ham Common	MR	MR	NAI	The policy would allow local management and maintenance by the Caravan park's owners on the existing defences. However it is important to note that this option would not be supported by government funding. If the caravan park ceases to exist or the owners no longer undertake the maintenance of the defences it should be made clear the government will not fill the funding gap. In long term the intent would be to gradually removing influence of management.
PBH.J.2	Lytchett Bay	NAI	NAI	MR	Set back defence subject to impact of sea level rise.
PBH.J.2a	Eastern Lytchett Bay	MR	HTL	HTL	Establish new defence line to hold into future epochs.
PBH.J.3	Holton Railway Line	HTL	HTL	HTL	
PBH.J.4	Wareham	MR	MR	MR	Subject to strategy study outcome.
PBH.J.5	Arne Peninsula	NAI	NAI	NAI	
PHB. K.1	Poole Harbour South	NAI	NAI	NAI	This would not preclude local management.
PHB. K.2	Furzey, Round, Long and Green Islands	NAI	NAI	NAI	This would not preclude local management.
PBH.L.1	Western Island	NAI	NAI	NAI	Local management to remove defences.
PBH.L.2	Brownsea Lagoon	NAI	NAI	NAI	This would not preclude local management.
PBH.L.3	Brownsea Quay	HTL	MR	MR	Subject to discussions with the private landowners (National Trust).

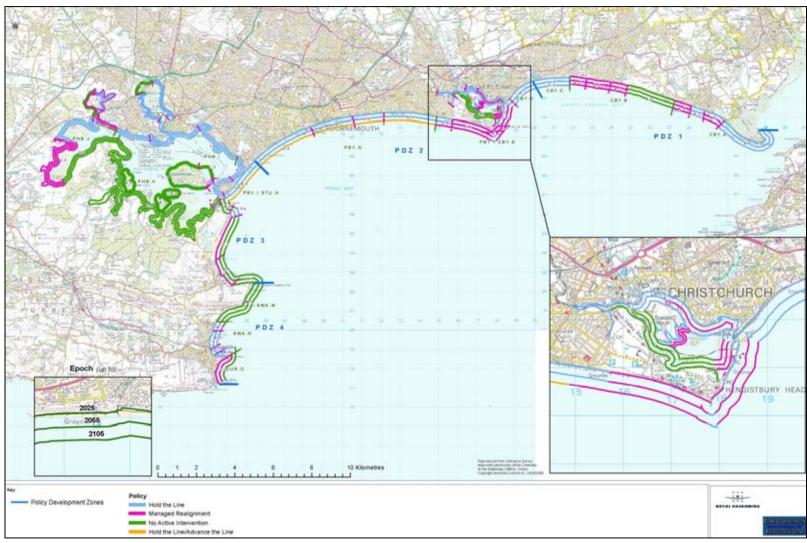


ROYAL HASKONING

					Policy Plan
Mana	agement Unit	Now - 2025	2025 - 2055	2055 - 2105	Comment
Zone 4 - Sw	/anage				
SWA.M.1	Handfast to Ballard Estate	NAI	NAI	NAI	
SWA.N.1	New Swanage	HTL	HTL	MR	Approach to provide suitable transition to NAI in policy unit SWA.M.1
SWA.N.2	Promenade	HTL	HTL	HTL	
SWA.N.3	Town Centre	HTL	HTL	HTL	Potential need to raise defences
SWA.N.4	Town Centre to Peveril Point	HTL	HTL	HTL	Potential opportunity to reinforce local headlands
DUR.O.1	Durlston Bay	MR	MR	NAI	This policy would not preclude local drainage improvements.

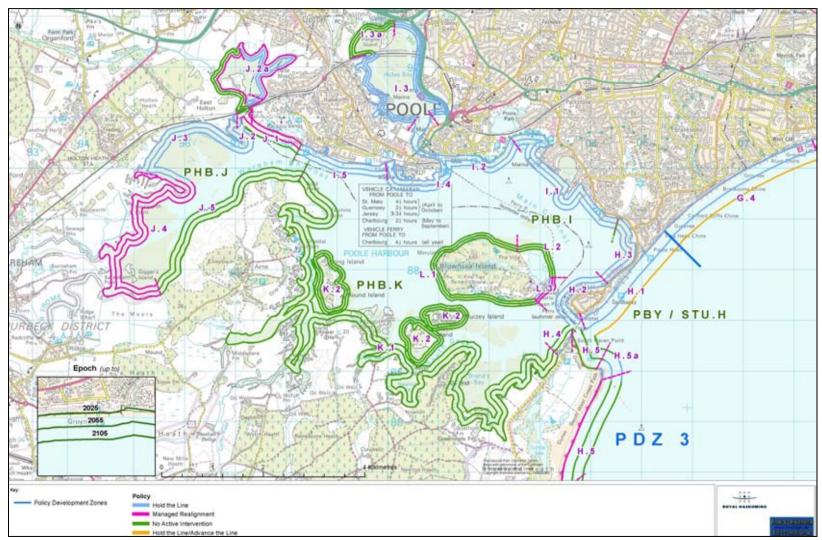












Summary of SMP Policy and Intentions for PDZ1

5.2.6 The underlying intent of the plan for this area is to maintain the core values of Milford-on-Sea but in such a way as to provide continuity with the management of Hurst Spit and allowing some increased exposure of the designated geology, while maintaining control of the development of the shoreline. Management of the Spit would be controlled by holding the line at Hurst Castle and through maintaining the eastern end of the rock revetment and the groyne. Although the spit beyond the Castle would be allowed to develop naturally, the intent would be to recycle material from that section back on to the central section of the spit. Hurst Spit is considered important as a defence to the area behind as well as being an important feature in its own right, by maintaining the Spit, the intertidal habitats to the north and north-east.

Summary of SMP Policy and Intentions for PDZ2

5.2.7 The intent is to sustain the overall influence of this section of the coast, ensuring that over the period of the SMP2 neither the Solent Beach isthmus nor Mudeford Spit breach. Specifically, the aim is to maintain the position of the Long Groyne, with the potential for this structure to be extended and reshaped to allow better management of adjacent sections of the coast. To the east of the headland, the aim is to maintain the integrity of the spit, maintain the position of the Run but also facilitate continued exposure of the cliff face. The intent is initially to restore the alignment of the overall section of the coast. The spit would be allowed to roll back in response to increased pressure due to sea level rise, matching erosion of the cliff. This will require development of a management plan allowing continued use of the area, supported by defence and recharge. The intention would be to maintain the position of the Spit head, thereby maintaining the navigation channel. To the west of the headland, the intent would be to maintain the integrity of the isthmus, whilst as far as possible the continuity of shoreline processes between the main section of Poole Bay and those of Solent Beach.

Summary of SMP Policy and Intentions for PDZ3

- 5.2.8 To the north and south of the Harbour mouth, the intent is to maintain the defence of the Sandbanks peninsula and maintain control of the Harbour entrance at the head of this peninsula and on the southern side at South Haven Point. Over the northern half of the area the more local intent is to maintain Sandbanks through control of the drift locally to the shore and to provide recharge as necessary. Along Studland Peninsula, the long term aim is to restore the natural functioning of coast. It is accepted that this function is modified by the control of the entrance channel, particularly in relation to the training banks. The aim or intent of the plan is to adapt use of the frontage so that there is no requirement for hard management of the coast. This will mean that existing defences are allowed to fail or are actively removed and the local fixed assets such as beach huts, car parks are moved. Maintaining the training bank does influence the frontage providing a degree of control to the northern end. This is seen as an important structure in providing a transition between the harder control of the Harbour entrance and the natural management of the main beach area.
- The Sandbanks to Ham Common stretch along the northern boundary of Poole Harbour includes the core residential, commercial and heritage centre of Poole. 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 built and recreational assets. Therefore, 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 of these defences. Specific areas that would need further consideration would be within Parkstone Bay. Within Holes Bay, the main defence is along the southern and eastern side of the bay. There is little anticipated risk to the area of the Upton Country Park and this area has, therefore being included within the overall policy unit. Locally the aim would be not to intervene in this specific area. Similarly, no defences are anticipated on Pergins Island.

- 5.2.10 The Ham Common stretch the aim is to increasingly manage defences to allow a more natural response of the coast in keeping with the designated value of the area, under Managed Realignment, the shoreline will evolve and migrate backwards in line with erosion and sea level rise. In the Wareham area the intent would be to allow increased inundation of land currently defended, with the aim to restore a more naturally functioning system. However, there would still be the intent to defend core areas of Wareham and Stoborough. The overarching aim for the Ham Common to Arne Peninsula would be to maintain defences to the railway lines.
- 5.2.11 For South Poole Harbour (from Arne Peninsula to South Haven Point), it is noted that this area is the most natural of the main frontages within the Poole Harbour system, due to the relatively steeply rising hinterland. The overall intent within this area is to allow natural processes to dominate and for maximum adjustment of the coastal fringe. However, it is recognised that there are important oil field installations in the area and that there are local jetties and, in some areas, local sections of defence. The long term intent would be that where such features impact on coastal processes or on the natural development of the shoreline, these man-made features would be removed or their impact reduced. For example, the causeway at Wytch Moor will eventually be removed at the end of the oilfield's life.
- The overall intent for management of Brownsea Island is to reduce the influence and impact of defences. Over much of the island local defences are deteriorating and the intent would be not to intervene in this process. This is in line with the landowner's intent to allow the continuation of natural processes wherever possible. The general intent is continued through to the area of the Lagoon and the Quay, while recognising that these areas do pose issues to such an approach. The Lagoon defence is a strong influence on the Lagoon, however, preventing coastal squeeze outside the Lagoon (and within Poole Harbour) is one of the key objectives of the SMP, and as such the decision has been made that No Active Intervention would be preferred. This will enable habitats inside and outside the lagoon to evolve naturally.

Summary of SMP Policy and Intentions for PDZ4

- 5.2.13 The overriding intent of the plan for Handfast Point to and including Ballard Common is to maintain the important nature conservation, and geological and exceptional landscape quality of the area. The policy for the frontage is for No Active Intervention.
- 5.2.14 The intent of the plan for Ballard Common to Peveril Point is to reduce flooding and provide protection to the town centre of Swanage, maintaining access along and use of the coastal road, promenade and beach and sustaining important local use of the headland to Peveril Point. However, the intent is to limit further extension of defences, particularly further north along the shore, and as such the recommendation is that the northern section of the existing defence line is managed more as a transitional area between a firmer policy to Hold the Line of defence to the south and the No Active Intervention policy within Ballard Common.

5.2.15 The overriding intent of the plan between Peveril Point and Durlston Head is to allow natural coastal evolution. Property will be at risk in the medium to long term along the frontage, and the plan includes the opportunity to undertake minor intervention works with respect to drainage management in slowing the recession of the cliff line. This would only be recommended under the overall plan if it could be demonstrated that it did not impact significantly on the opportunity to maintain the natural coastal change. The intent of the plan would not be to remove existing defences or slope stabilisation measure but to allow such works to deteriorate over time. The long term aim is to be in a position during the final epoch to adopt more fully a policy of No Active Intervention.

5.3 The Present and Future Physical Environment to Inform the Appropriate Assessment

- 5.3.1 In order to undertake the appropriate assessment of the preferred policy options, details of the physical changes to the environment are required. In the context of the Shoreline Management Plan this should include details of changes to the tidal range and average sea levels, as well as the likely physical effects of the preferred policies. At this strategic level it is rare for absolute data to be available, predominantly as the policies are there to provide a range of possible actions (that then are developed to ascertain which is the most appropriate). Consequently, it must be understood and accepted that the data and scenarios used in this assessment are themselves 'high level' in terms of the simplistic tools that are used, and based on many assumptions.
- 5.3.2 Where no previous detailed modelling studies, or other studies into the long-term physical processes and how they will change, are available for particular units (specifically PDZ 1, PDZ 2, and PDZ 4) we have used the information provided by the GIS and coastal process work undertaken for this SMP. As a result, not all of the assessment can be purely quantitative in nature, but based on qualitative understandings of what the change to the physical environment will be and, subsequently, how that interacts and affects the natural environment.
- 5.3.3 On the other hand, for Poole Bay and Harbour, there have been a range of studies and strategies that looked at the coastal environment and future change. These have been examined in detail to determine their suitability for the informing the appropriate assessment. One key document is the *Poole Bay and Harbour Strategy Study* (Poole Bay and Harbour Strategy Group, 2004), which looked at coastal strategy within Poole Bay. However, due to a number of key points it was considered that the information in the Strategy is out of date and does not cover all appropriate and relevant coastal habitats, and consequently, following the summary of some aspects of the Strategy, up to date baseline information used in this AA is presented

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Impacts of the changes within Poole Harbour on SPA and SAC features

- 5.3.4 The Strategy identified that between 1993 and 2053, between 170 ha to 231 ha of saltmarsh would be lost due to a range of causes including sea level rise, Spartina dieback, invasion by other species, wave erosion, and other anthropogenic causes. These ranges were based on the studies of saltmarsh loss from 1947 to 1993, which observed that 215 ha of saltmarsh had been lost during this period. The Strategy also notes that between 1946 and 1993, sea level rise was responsible for between 2 ha and 9 ha of saltmarsh lost in this period. However, the Strategy then predicted that saltmarsh loss as a result of sea level rise will account for between 76 ha to 150 ha between 1993 and 2053. An increase in the rate of loss from 0.2 ha/yr between 1947 and 1993, to up to 3 ha/yr between 1993 and 2053. This implies that sea level rise will account for 44% to 65% of the saltmarsh losses between 1993 and 2053, whereas between 1947 and 1993 it accounted for between 4% and 6% of the saltmarsh lost. Although a link between sea level rise and saltmarsh loss is proven, the wildly different levels of influence on saltmarsh loss within the old Strategy are questionable. Furthermore, the Strategy used a sea level rise scenario of 26.3cm over 50 years (1993 to 2053), which is far less than that used in this SMP review, which does not extend up to the sea level rise increase examined for this SMP (i.e. to 2105 with 0.93m of sea level rise). Furthermore, the Strategy did not measure or calculate the intertidal mudflats and changes to it resulting from sea level rise.
- 5.3.5 The historic losses of saltmarsh for Poole Bay from the Poole Bay and Harbour Strategy Study are presented in **Table 5.2**, and the losses for specific areas within Poole Bay are presented in **Table 5.3**.

Table 5.2 Summary of Historic Saltmarsh Loss in Poole Bay

Criteria	1947	1972	1993	Rate of loss
Saltmarsh area (ha)	634	549	389	-
Area reclaimed by 1993	30	17	0	-
Area of saltmarsh less reclaimed areas	604	532	389	-
Saltmarsh loss between 47-72	-	72	-	2.88 ha/yr
Saltmarsh loss between 47-93	-	-	215	4.67 ha/yr
Saltmarsh loss between 72-93	-	-	143	6.81 ha/yr

Source: Poole Bay and Harbour Strategy Study (Poole Bay and Harbour Strategy Group, 2004).

Table 5.3 Summary of Historic Saltmarsh Loss in Specific Areas in Poole Bay*

Location	Salt	marsh area	(ha)	Rate of loss of saltmarsh (ha/yr)			
Location	1947	1972	1993	47 - 72	72 - 93	47 - 93	
Inner Harbour	77	69	61	-0.32	-0.38	-0.35	
Lytchett Bay	23	24	21	+0.04	-0.14	-0.04	
Middle Harbour	250	251	212	+0.04	-1.86	-0.83	
Holes Bay	80	67	52	-0.52	-0.71	-0.61	
Outer Harbour North	11	4	2	-0.28	-0.10	-0.20	
Outer Harbour South	146	119	35	-1.08	-4.00	-2.41	
Total	587	534	383	-2.12	-7.19	-4.43	

^{*} Based on data extracted from Figure 3.4 in Technical Annex 4 of the Strategy.

- 5.3.6 In order to provide the baseline scenario against which the SMP preferred policy can be assessed, the existing area between particular tidal elevations has been extracted from Lidar and Bathymetric data for Poole Bay and Harbour. These elevations are based on existing tide levels, with future areas extracted based on the increases anticipated as a result of sea level rise within the different Epochs as covered in the SMP. The data was extracted using the zones identified in the Strategy to provide some cross comparison; however, of greater use for this assessment, the data was also extracted based on the WeBS low tide count sectors, presented in **Figure 5.3**.
- 5.3.7 The data extraction has assumed a straight sea level rise increase, whereby both the upper and lower elevations increase in parallel. These recent sea level rise scenarios have no supporting modelling or detailed investigations with respect to the rate of accretion of sediments or changes in the range of saltmarsh within Poole Bay as sea levels rise; nor has there been any modelling to ascertain whether the tidal range within Poole Bay will remain the same.
- 5.3.8 In order to determine the most suitable elevations for saltmarsh habitat within this dataset, it appears that saltmarsh within Poole Bay is linked to the neap high tide level (+0.3mOD) for the low elevation, and the spring high tide level (+0.8mOD) for the high elevation. It is also evident that saltmarsh communities are established throughout Poole Bay and Harbour between the elevations of -0.9m OD to +2.5m OD. However, the 5th and 95th percentile elevation of saltmarsh are +0.2m OD and +0.9m OD. This level was used in the area measurements.
- 5.3.9 Table 5.4 presents the summary areas of saltmarsh zones, saltmarsh (based on the percentage of colonisation within each sector from the Strategy Study – as no saltmarsh data layers have been provided), and intertidal (broken down between LAT-HAT or extreme tide and MLWS-MHWS or spring tide) zones for the with current management scenario based on the GIS extraction of areas of habitats as described and presented in more detail in Appendix E. These areas are based on the 1993 tide levels and the low tide count sectors presented in Figure 5.3. The area of saltmarsh identified from this exercise is similar to (within 10%) the figure presented in the Poole Strategy (Poole Bay and Harbour Strategy Group, 2004) and **Table 5.3**. **Appendix E** presents further data for predicted saltmarsh extents based on recent tide data (2009) and the topographic and bathymetric of Poole Harbour collated as part of the SMP2. This indicates that there has been a slight increase in the saltmarsh zone since 1993, but this may not necessarily equate to a slight increase in saltmarsh habitat presented in Appendix E, due to the Spartina die back. However, at present no up to date saltmarsh extent mapping is available (though this will resolved in the current Poole Harbour Strategy that has recently commenced.
- 5.3.10 **Table 5.5 to 5.8** present the current areas of intertidal habitats within the Dorset Heaths SAC, the Dorset Heathlands SPA, Dorset Heaths and Studland Dunes SAC, and the Poole Harbour SPA based on 1993 tide levels. Detailed area tables are presented in **Appendix F**. The tables show the area of the designated site within each of the low tide count sectors presented in **Figure 5.3**.
- 5.3.11 These tables all provide the quantitative habitats against which the assessment is undertaken. They also indicate that around half of the total intertidal habitat within Poole Harbour is designated, though this will include areas that are not defended but are located within the extreme tide zones.

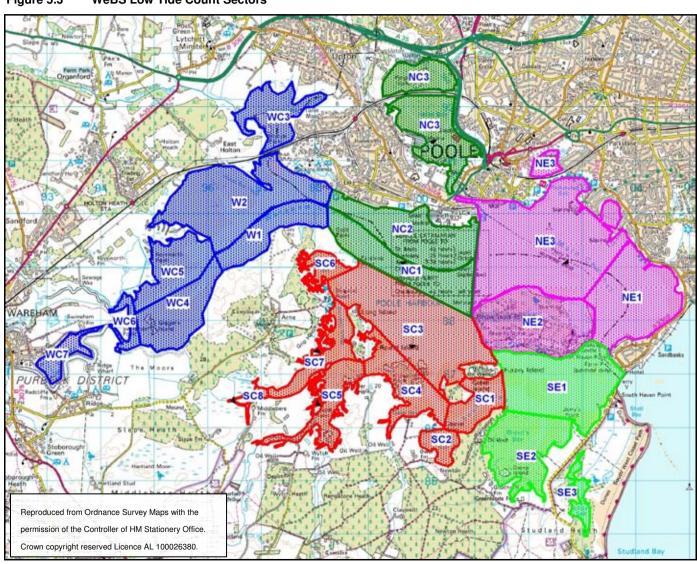


Figure 5.3 WeBS Low Tide Count Sectors

Table 5.4 Area of Habitats within Poole Harbour (1993)

Sector	Saltmarsh Zone (ha)	Saltmarsh (ha)	Intertidal Habitat (ha)	Extreme Intertidal Habitat (ha)
	1993	1993	1993	1993
NC1	32.3	23.3	137.0	12.5
NC2	10.1	7.3	111.7	22.4
NC3	80.2	43.9	125.2	51.1
NE1	52.7	0.8	90.0	38.7
NE2	22.4	6.7	48.4	15.2
NE3	61.4	1.0	288.8	43.5
SC1	14.6	4.3	31.5	22.2
SC2	2.6	0.8	8.6	2.8
SC3	142.9	103.0	279.6	52.1
SC4	28.5	20.6	33.1	28.5
SC5	32.3	23.3	25.8	65.2
SC6	8.7	6.3	8.5	5.1
SC7	22.9	16.5	39.0	26.5
SC8	29.0	20.9	23.1	28.0
SE1	76.9	22.9	172.6	37.1
SE2	42.2	12.5	59.9	32.7
SE3	1.9	0.6	40.3	3.2
W1	25.2	8.3	62.2	28.8
W2	143.7	47.4	229.0	78.0
WC3	30.7	9.3	116.1	9.4
WC4	40.7	13.4	40.5	71.7
WC5	65.2	21.5	83.9	53.7
WC6	14.9	4.9	37.8	15.3
WC7	7.3	3.3	18.0	3.9
Total	989.4	422.7	2111.0	747.6

Table 5.5 Area of Habitats within Dorset Heaths SAC (1993)

Sector	Saltmarsh Zone (ha)	Saltmarch (ha)		Extreme Intertidal Habitat (ha)
	1993	1993	1993	1993
NC1	0.0	0.0	0.3	0.2
NE2	3.5	1.1	2.6	2.4
SC3	2.0	1.4	2.9	0.1
SC5	0.0	0.0	0.0	2.1
W1	0.3	0.1	0.9	0.3
W2	1.6	0.5	1.5	0.8
WC3	0.5	0.2	1.0	0.3
Total	8.0	3.3	9.2	6.1

Table 5.6 Area of Habitats within Dorset Heaths and Studland Dunes SAC (1993)

Sector	Saltmarsh Zone (ha)	Saltmarsh (ha)	Intertidal Habitat (ha)	Extreme Intertidal Habitat (ha)
	1993	1993	1993	1993
SC1	0.3	0.1	0.1	3.4
SC2	0.0	0.0	0.0	0.0
SC4	0.0	0.0	0.0	0.0
SC5	1.6	1.2	1.2	1.8
SC6	0.0	0.0	0.0	0.4
SC8	0.4	0.3	0.3	0.9
SE1	2.3	0.7	2.8	6.1
SE2	5.0	1.5	3.9	11.3
SE3	1.9	0.6	40.3	3.2
W1	3.9	1.3	3.6	9.1
WC4	1.3	0.4	1.2	19.5
Total	16.7	6.0	53.4	55.7

Table 5.7 Area of Habitats within Dorset Heathlands SPA (1993)

Sector	Saltmarsh Zone (ha)	Saltmarsh (ha)	Intertidal Habitat (ha)	Extreme Intertidal Habitat (ha)
	1993	1993	1993	1993
NC1	0.0	0.0	0.4	0.3
NE2	11.5	3.4	9.4	8.3
NE3	5.4	0.1	6.8	0.7
SC1	0.8	0.2	0.5	4.8
SC2	0.0	0.0	0.0	0.2
SC3	1.1	0.8	1.6	0.1
SC4	0.0	0.0	0.0	0.0
SC5	1.8	1.3	1.4	3.9
SC6	0.0	0.0	0.0	0.4
SC8	0.1	0.1	0.0	0.7
SE1	3.4	1.0	2.9	7.1
SE2	6.2	1.8	4.8	12.7
SE3	1.9	0.6	40.3	3.3
W1	6.6	2.2	7.2	12.1
W2	0.6	0.2	0.6	0.1
WC3	0.4	0.1	0.6	0.3
WC4	2.4	0.8	2.1	20.7
WC5	0.0	0.0	0.0	0.0
Total	42.4	12.7	78.9	75.6

Table 5.8 Area of Habitats within Poole Harbour SPA (1993)

Sector	Saltmarsh Zone (ha)	Saltmarsh (ha)	Intertidal Habitat (ha)	Extreme Intertidal Habitat (ha)
	1993	1993	1993	1993
NC1	4.1	3.0	6.7	2.9
NC2	0.5	0.4	1.4	0.7
NC3	56.9	31.1	85.2	34.4
NE1	7.4	0.1	4.4	21.9
NE2	9.0	2.7	27.7	5.8
NE3	19.7	0.3	35.8	8.1
SC1	7.7	2.3	13.1	12.0
SC2	2.4	0.7	7.8	2.5
SC3	27.2	19.6	30.0	19.1
SC4	16.4	11.9	18.0	19.8
SC5	25.1	18.1	19.5	43.9
SC6	8.5	6.2	8.4	4.6
SC7	18.3	13.2	32.8	17.5
SC8	16.2	11.7	12.8	22.1
SE1	36.3	10.8	45.0	9.5
SE2	30.2	9.0	46.8	18.0
SE3	0.2	0.1	17.4	0.4
W1	8.0	2.6	15.1	5.9
W2	55.7	18.4	132.5	46.1
WC3	25.9	7.9	90.7	8.2
WC4	37.3	12.3	35.4	49.1
WC5	29.6	9.8	50.6	42.8
WC6	12.4	4.1	31.5	13.4
WC7	4.8	2.1	13.0	2.1
Total	460.0	198.2	781.6	410.8

Trend in Intertidal Habitats for the Current Management Scenario

- Table 5.9 presents the predicted change in area of saltmarsh zones, saltmarsh (based on the percentage of colonisation within each sector from the Strategy Study (Poole Bay and Harbour Strategy Group, 2004) as no saltmarsh data layers have been provided), and intertidal (broken down between LAT-HAT or extreme tide and MLWS-MHWS or spring tide) zones for the with current management scenario based on the GIS extraction of areas of habitats presented in more detail in Appendix E. These areas are based on the 1993 tide levels and the low tide count sectors presented in Figure 5.3. Table 5.9 as well as Tables E1, E2, and E3 in Appendix E indicate that with present management there would be a net increase in intertidal habitats of 49ha by 2105 and an increase of extreme tidal habitats (between MLWS-LAT and MHWS-HAT) of up to 534ha, however, a loss of saltmarsh zone is predicted by 2105 of around 222ha, which is predicted to equate to a loss of around 22ha of saltmarsh.
- Table 5.10 to 5.13 present the predicted change in areas of intertidal habitats within the Dorset Heaths SAC, the Dorset Heathlands SPA, Dorset Heaths and Studland Dunes SAC, and the Poole Harbour SPA for the 3 SMP Epochs under the with present management scenario. Detailed area tables are presented in Appendix F. The tables show the area of the designated site within each of the low tide count sectors presented in Figure 5.3. These tables (and the tables in Appendix F) indicate that with present management there would be a net increase of intertidal habitats in the Dorset Heaths SAC (though with losses of saltmarsh zone, saltmarsh, and extreme tidal habitats), and increases for all habitat types by 2105 on 1993 areas for Dorset Heathlands SPA, Dorset Heaths and Studland Dunes SAC, and Poole Harbour SPA. However, these increases will certainly arrive at the expense of terrestrial habitats.
- 5.3.14 **Figure 5.4** presents the topological (i.e. levels that are or could become) zones of saltmarsh, spring tide intertidal habitat, and extreme tidal habitats for the current sea level (2009). **Figure 5.5** presents the topological zones for 2055 as a result of 0.30m of sea level rise, and **Figure 5.6** presents the topological zones for 2105 as a result of 0.93m of sea level rise.
- 5.3.15 It should be noted that in response to the complex nature of the Poole Bay and Harbour system and the strategic nature of the SMP (and HRA), the predictions are based on a conservative approach whereby the values for areas (ha) have been rounded up and alterations to particular aspects such as exposure have been counted as total loss. Furthermore, it has been inherently assumed that whatever the changes that occur, the assumption has been that geomorphological processes would result in a negative influence on the effects, rather than a positive influence of increased or parallel increase in sediment accretion.



Figure 5.4 Current Topological Tide-based Zones within Poole Bay and Harbour



BACK OF A3 FIGURE.



Figure 5.5 2055 Topological Tide-based Zones within Poole Bay and Harbour



BACK OF A3 FIGURE.



Figure 5.6 2105 Topological Tide-based Zones within Poole Bay and Harbour



BACK OF A3 FIGURE.

Table 5.9 Predicted Change in Area of Habitats in Poole Harbour with Present Management Compared to 1993 Habitat Areas

Sector	Change i	n Saltmarsh	Zone (ha)	Chang	ge in Saltmar	sh (ha)	Change in	n Intertidal H	abitat (ha)	Change	in Extreme I Habitat (ha)	ntertidal
	2025	2055	2105	2025	2055	2105	2025	2055	2105	2025	2055	2105
NC1	-4.8	-17.6	-31.0	-3.5	-12.7	-22.3	0.6	-0.4	-93.9	-1.2	-12.1	81.4
NC2	-1.5	-5.1	-9.0	-1.1	-3.7	-6.5	-2.6	-12.5	-97.4	0.7	-23.6	61.3
NC3	0.1	3.2	-10.7	0.0	1.7	-5.9	8.1	32.3	50.6	2.3	33.5	15.2
NE1	-3.3	-1.0	-29.0	-0.1	0.0	-0.5	4.7	20.5	11.2	-0.7	-13.2	-4.0
NE2	2.3	4.4	-17.1	0.7	1.3	-5.1	3.8	13.4	-11.3	-2.6	-8.0	16.8
NE3	-7.5	-29.2	-45.9	-0.1	-0.5	-0.7	-1.9	-21.2	-197.2	0.2	-29.4	146.5
SC1	1.4	9.4	22.3	0.4	2.8	6.6	0.9	8.9	29.1	3.1	19.9	-0.3
SC2	0.0	1.2	12.9	0.0	0.3	3.8	0.2	1.6	7.3	0.8	33.7	28.0
SC3	-11.4	-46.9	-111.6	-8.2	-33.8	-80.5	9.9	37.1	-56.4	-3.8	-16.3	77.2
SC4	2.6	12.5	79.2	1.9	9.0	57.1	3.8	17.0	113.6	5.4	89.1	-7.5
SC5	11.0	52.2	90.0	7.9	37.7	64.9	7.5	44.2	164.8	13.9	73.5	-47.1
SC6	1.0	1.6	28.1	0.7	1.2	20.3	0.8	4.2	32.3	1.1	45.1	17.0
SC7	0.9	14.7	28.2	0.7	10.6	20.4	2.1	15.7	46.2	3.9	29.3	-1.3
SC8	5.7	10.0	4.0	4.1	7.2	2.9	4.7	22.5	52.0	-1.3	17.5	-12.0
SE1	-5.4	-30.8	-69.5	-1.6	-9.1	-20.6	2.9	9.4	-65.2	-2.1	-29.6	44.9
SE2	2.4	7.7	47.6	0.7	2.3	14.1	5.6	24.8	83.2	0.1	75.3	16.9
SE3	0.6	2.5	5.9	0.2	0.7	1.7	0.5	2.4	-29.7	0.1	8.5	40.6
W1	0.0	1.3	-13.7	0.0	0.4	-4.5	0.9	7.0	-12.5	-0.7	-16.8	2.8
W2	9.6	11.1	-124.0	3.2	3.7	-40.9	22.0	69.8	-21.1	-20.5	-47.0	43.9
WC3	-0.9	-7.5	-27.9	-0.3	-2.3	-8.5	2.9	8.1	-75.2	-2.4	-6.1	77.2
WC4	5.9	51.2	15.3	2.0	16.9	5.0	5.7	45.3	103.9	10.8	-5.9	-64.5
WC5	7.1	18.9	-55.4	2.4	6.3	-18.3	14.6	44.8	21.9	-11.5	-41.0	-18.1
WC6	1.3	7.1	-6.3	0.4	2.3	-2.1	1.9	11.2	-3.9	0.0	-3.8	11.3
WC7	0.2	-0.7	-4.8	0.1	-0.3	-2.1	0.9	3.1	-5.4	-0.5	-0.7	7.9
Total	17.2	70.1	-222.5	10.4	42.0	-21.6	100.6	409.1	46.9	-5.0	171.7	533.9

Table 5.10 Predicted Change in Area of Habitats in Dorset Heaths SAC with Present Management Compared to 1993 Habitat Areas

Sector	Change i	n Saltmarsh	Zone (ha)	Change in Saltmarsh (ha)			Change in Intertidal Habitat (ha)			Change in Extreme Intertidal Habitat (ha)		
	2025	2055	2105	2025	2055	2105	2025	2055	2105	2025	2055	2105
NC1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.3	0.0	-0.2	0.1
NE2	1.1	1.0	-3.5	-2.5	-7.1	-2.5	0.7	2.4	2.3	-0.7	-2.4	-2.3
NE3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SC3	-0.1	-0.6	-2.0	-2.6	-4.0	-0.6	0.1	-0.1	-0.8	-0.1	-0.1	0.6
SC5	0.6	2.1	2.6	2.0	2.6	0.0	0.0	1.1	4.0	0.6	0.8	-2.1
SC6	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.2	0.0
W1	0.0	0.1	0.7	-0.2	0.4	-0.2	0.0	0.2	0.6	0.1	1.1	0.7
W2	0.1	0.2	-0.5	-1.4	-2.1	-1.1	0.1	0.7	1.5	0.0	1.5	0.6
WC3	0.0	0.0	-0.5	-0.5	-1.0	-0.4	0.0	0.2	-0.3	0.0	-0.2	0.3
WC5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WC6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	1.7	2.8	-3.1	-5.2	-11.1	-4.7	1.0	4.3	7.0	-0.1	0.7	-2.0

Table 5.11 Predicted Change in Area of Habitats in Dorset Heathlands SPA with Present Management Compared to 1993 Habitat Areas

Sector	Change i	n Saltmarsh	Zone (ha)	Change in Saltmarsh (ha)			Change in Intertidal Habitat (ha)			Change in Extreme Intertidal Habitat (ha)		
	2025	2055	2105	2025	2055	2105	2025	2055	2105	2025	2055	2105
NC1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.2	-0.4	0.0	-0.3	0.0
NE2	1.7	3.1	-10.1	0.5	0.9	-3.0	2.1	7.9	8.8	-1.6	-6.7	-7.6
NE3	-0.4	-2.3	-5.4	0.0	0.0	-0.1	0.2	0.3	-0.9	-0.3	-0.7	0.4
SC1	0.5	4.5	7.0	0.1	1.3	2.1	0.2	2.7	10.6	1.5	3.7	-4.2
SC2	0.0	0.2	5.5	0.0	0.1	1.6	0.0	0.0	4.0	0.4	12.4	8.4
SC3	-0.1	-0.3	-1.1	-0.1	-0.2	-0.8	0.1	0.1	-0.4	-0.1	-0.1	0.4
SC4	0.0	0.0	0.5	0.0	0.0	0.3	0.0	0.0	0.4	0.0	0.7	0.4
SC5	1.1	3.5	2.5	0.8	2.6	1.8	0.3	2.5	7.0	0.6	1.9	-2.5
SC6	0.0	0.3	0.9	0.0	0.2	0.6	0.0	0.2	1.0	0.1	2.1	1.3
SC8	0.1	0.6	4.1	0.1	0.4	3.0	0.1	0.5	3.7	0.1	6.8	3.5
SE1	0.8	5.2	3.1	0.2	1.5	0.9	0.6	4.2	11.0	1.3	0.4	-6.4
SE2	2.8	9.2	3.7	0.8	2.7	1.1	2.0	11.3	17.2	-1.0	3.8	-2.2
SE3	0.6	2.5	5.9	0.2	0.7	1.7	0.5	-40.1	-29.7	43.7	94.5	84.1
W1	1.3	8.1	4.8	0.4	2.7	1.6	1.1	8.9	17.4	0.2	0.4	-8.0
W2	0.0	-0.2	0.4	0.0	-0.1	0.1	0.0	0.1	0.7	0.1	1.8	1.2
WC3	0.0	0.1	-0.4	0.0	0.0	-0.1	0.0	0.2	0.1	0.0	-0.2	-0.1
WC4	0.7	19.5	10.8	0.2	6.4	3.6	0.5	11.2	28.3	3.3	-2.6	-19.6
WC5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	9.2	54.1	32.1	3.4	19.4	14.5	7.8	9.8	78.6	48.2	118.0	49.2

Table 5.12 Predicted Change in Area of Habitats in Dorset and Studland Dunes SAC with Present Management Compared to 1993 Habitat Areas

Sector	Change in Saltmarsh Zone (ha)			Change in Saltmarsh (ha)			Change in Intertidal Habitat (ha)			Change in Extreme Intertidal Habitat (ha)		
	2025	2055	2105	2025	2055	2105	2025	2055	2105	2025	2055	2105
SC1	0.2	3.3	7.0	0.1	1.0	2.1	0.1	1.7	8.8	1.4	4.7	-2.4
SC2	0.0	0.0	5.1	0.0	0.0	1.5	0.0	0.0	3.7	0.3	11.6	7.9
SC4	0.0	0.0	0.3	0.0	0.0	0.2	0.0	0.0	0.2	0.0	0.5	0.3
SC5	0.3	1.4	0.3	0.2	1.0	0.2	0.3	1.3	3.1	0.0	1.6	-0.2
SC6	0.0	0.3	0.7	0.0	0.2	0.5	0.0	0.2	0.9	0.1	1.3	0.6
SC8	0.1	0.7	4.3	0.1	0.5	3.1	0.1	0.6	4.2	0.1	7.4	3.8
SE1	0.6	4.8	3.6	0.2	1.4	1.1	0.4	3.5	9.0	1.3	0.7	-4.8
SE2	2.4	8.4	5.9	0.7	2.5	1.7	1.7	9.8	16.6	-0.7	6.0	-0.7
SE3	0.6	2.5	5.9	0.2	0.7	1.7	0.5	2.4	-29.7	0.1	8.5	40.6
W1	1.1	6.6	5.3	0.4	2.2	1.7	0.9	6.9	14.1	0.0	0.6	-6.6
WC4	0.5	18.8	11.0	0.2	6.2	3.6	0.4	10.0	26.2	2.9	-2.4	-18.6
Total	5.9	46.8	49.4	2.0	15.7	17.6	4.5	36.4	57.0	5.5	40.4	19.8

Table 5.13 Predicted Change in Area of Habitats in Poole Harbour SPA with Present Management Compared to 1993 Habitat Areas

Sector	Change in	n Saltmarsh	Zone (ha)	Chang	e in Saltmars	sh (ha)	Change in	n Intertidal H	abitat (ha)	Change	in Extreme I Habitat (ha)	
	2025	2055	2105	2025	2055	2105	2025	2055	2105	2025	2055	2105
NC1	0.7	0.6	-2.8	0.5	0.4	-2.0	0.5	2.4	0.4	-0.4	-1.2	0.8
NC2	0.0	0.3	0.2	0.0	0.2	0.1	0.0	0.4	0.3	0.1	0.1	0.1
NC3	0.2	2.2	3.8	0.1	1.2	2.1	5.7	22.2	49.0	3.3	39.7	13.0
NE1	4.2	17.0	7.6	0.1	0.3	0.1	3.0	16.0	31.1	1.2	-5.4	-20.5
NE2	0.6	1.6	-5.1	0.2	0.5	-1.5	1.2	4.6	-11.2	-0.5	-0.4	15.4
NE3	-0.9	-6.0	-11.8	0.0	-0.1	-0.2	1.3	4.4	-4.4	-1.1	0.8	9.6
SC1	1.2	5.5	11.5	0.4	1.6	3.4	0.7	5.9	19.5	0.9	10.4	-3.2
SC2	0.0	1.1	6.6	0.0	0.3	2.0	0.2	1.5	3.0	0.4	19.6	18.2
SC3	2.0	4.4	-12.4	1.4	3.1	-9.0	3.7	13.4	22.5	-0.9	-3.3	-12.3
SC4	2.1	10.9	66.1	1.5	7.9	47.7	2.6	11.6	86.6	4.5	70.5	-4.5
SC5	6.2	32.6	56.3	4.4	23.5	40.6	6.8	31.5	111.1	6.0	45.1	-34.5
SC6	0.9	1.2	24.1	0.7	0.9	17.4	0.8	3.9	28.0	0.7	39.8	15.6
SC7	0.3	8.0	21.1	0.2	5.8	15.2	1.5	10.6	31.0	1.8	25.2	-81.2
SC8	4.2	11.5	5.0	3.0	8.3	3.6	3.0	17.5	37.7	-0.2	4.1	-16.1
SE1	-1.8	-16.1	-35.5	-0.5	-4.8	-10.5	2.6	8.6	-0.4	-2.4	-8.5	0.5
SE2	-0.1	0.3	37.6	0.0	0.1	11.2	3.2	12.3	56.1	1.2	59.2	15.4
SE3	0.1	0.3	0.7	0.0	0.1	0.2	0.1	0.3	-16.1	0.0	1.0	17.5
W1	0.0	-0.8	-7.1	0.0	-0.3	-2.4	0.7	2.0	-3.3	-0.7	-5.0	0.4
W2	7.9	24.8	-37.7	2.6	8.2	-12.5	8.6	42.7	-28.1	-7.0	-18.0	52.8
WC3	0.2	-5.3	-23.9	0.1	-1.6	-7.3	2.6	7.2	-57.3	-2.2	-5.9	58.6
WC4	5.4	30.7	3.1	1.8	10.1	1.0	5.1	33.0	74.0	7.3	-4.1	-45.1
WC5	6.6	24.2	-20.2	2.2	8.0	-6.7	8.6	34.6	14.7	-5.5	-30.8	-10.9
WC6	1.2	6.5	-5.4	0.4	2.1	-1.8	1.5	9.7	-2.4	0.3	-5.1	6.9
WC7	0.0	-1.1	-3.6	0.0	-0.5	-1.6	0.4	1.7	-5.5	-0.2	-0.6	6.5
Total	41.2	154.4	77.8	19.0	75.4	89.1	64.4	298.0	436.4	6.5	227.3	2.9



Trend in Intertidal Habitats for the SMP Preferred Policy Scenario

- Table 5.14 presents the summary areas of saltmarsh zones, saltmarsh (based on the percentage of colonisation within each sector from the Strategy Study (Poole Bay and Harbour Strategy Group, 2004) as no saltmarsh data layers have been provided), and intertidal (broken down between LAT-HAT or extreme tide and MLWS-MHWS or spring tide) zones for the <u>preferred SMP policy scenario</u> based on the GIS extraction of areas of habitats as presented in **Appendix E**, for the WeBS low tide count sectors.
- Table 5.15 to 5.18 present the current areas of intertidal habitats within the Dorset Heaths SAC, the Dorset Heathlands SPA, Dorset Heaths and Studland Dunes SAC, and the Poole Harbour SPA based on 1993 tide levels for the preferred SMP policy scenario for the WeBS low tide count sectors. Detailed area tables are presented in Appendix F. The tables show the area of the designated site within each of the low tide count sectors presented in Figure 5.3.
- 5.3.18 These tables all provide the quantitative habitats against which the appropriate assessment is undertaken. They also indicate that around half of the total intertidal habitat within Poole Harbour is designated, though this will include areas that are not defended but are located in the extreme tide zones. These areas have been extracted from the SMP topographic and bathymetric data, using altered tide zones based on the sea level rise scenarios for the 3 Epochs examined in the SMP, and the tide levels used are identified in **Table 5.19**.

Table 5.14 Summary of Changes in Saltmarsh and Intertidal Habitats within Poole Harbour for the Preferred SMP Policy Scenario

Sector	Change i	n Saltmarsh	Zone (ha)	Change in Saltmarsh (ha)			Change in	n Intertidal H	abitat (ha)	Change in Extreme Intertidal Habitat (ha)		
	2025	2055	2105	2025	2055	2105	2025	2055	2105	2025	2055	2105
NC1	-4.8	-17.6	-31.0	-3.5	-12.7	-22.3	0.6	-0.4	-93.9	-1.2	-2.2	81.4
NC2	-1.5	-5.1	-9.0	-1.1	-3.7	-6.5	-2.6	-12.5	-97.4	0.7	3.8	61.3
NC3	0.1	3.2	-10.7	0.0	1.7	-5.9	8.1	32.3	50.6	2.3	-1.9	15.2
NE1	-3.3	-1.0	-25.5	-0.1	0.0	-0.4	5.0	20.7	14.8	-0.6	-2.4	-3.7
NE2	2.3	4.4	-17.1	0.7	1.3	-5.1	3.8	13.4	-11.3	-2.6	-10.6	16.8
NE3	-7.5	-29.2	-45.9	-0.1	-0.5	-0.7	-1.9	-21.2	-197.2	0.2	12.4	146.5
SC1	1.4	9.4	22.3	0.4	2.8	6.6	0.9	8.9	29.1	3.1	7.9	-0.3
SC2	0.0	1.2	12.9	0.0	0.3	3.8	0.2	1.6	7.3	0.8	3.5	28.0
SC3	-11.4	-46.9	-111.6	-8.2	-33.8	-80.5	9.9	37.1	-56.4	-3.8	-17.8	77.2
SC4	2.6	12.5	79.2	1.9	9.0	57.1	3.8	17.0	113.6	5.4	54.4	-7.5
SC5	11.0	52.2	90.0	7.9	37.7	64.9	7.5	44.2	164.8	13.9	45.3	-47.1
SC6	1.0	1.6	28.1	0.7	1.2	20.3	0.8	4.2	32.3	1.1	9.4	17.0
SC7	0.9	14.7	28.2	0.7	10.6	20.4	2.1	15.7	46.2	3.9	9.1	-1.3
SC8	5.7	10.0	4.0	4.1	7.2	2.9	4.7	22.5	52.0	-1.3	-8.6	-12.0
SE1	-5.4	-30.8	-69.5	-1.6	-9.1	-20.6	2.9	9.4	-65.2	-2.1	-11.2	44.9
SE2	2.4	7.7	47.6	0.7	2.3	14.1	5.6	24.8	83.2	0.1	15.1	16.9
SE3	0.6	2.5	5.9	0.2	0.7	1.7	0.5	2.4	-29.7	0.1	1.1	40.6
W1	0.6	3.1	-9.0	0.2	1.0	-3.0	2.0	8.6	-7.2	1.8	-4.2	4.6
W2	9.6	11.1	-124.0	3.2	3.7	-40.9	22.0	69.8	-21.1	-20.5	-61.7	43.9
WC3	34.4	22.2	3.1	10.4	6.7	0.9	37.8	52.5	-2.9	15.1	11.4	92.7
WC4	116.7	125.8	30.0	38.5	41.5	9.9	139.1	189.6	255.5	28.2	3.6	-51.5
WC5	52.2	60.2	-43.4	17.2	19.9	-14.3	57.4	94.8	82.5	-0.7	-33.5	-11.4
WC6	30.4	26.2	36.8	10.0	8.6	12.1	65.7	79.2	77.3	10.9	17.4	53.5
WC7	28.2	10.2	-0.2	12.6	4.6	-0.1	92.4	97.2	56.1	3.6	1.4	46.7
Total	266.0	247.4	-108.7	94.9	101.0	14.5	468.5	811.7	483.0	58.2	41.6	652.2

Table 5.15 Summary of Changes in Saltmarsh and Intertidal Habitats within Dorset Heaths SAC for the Preferred SMP Policy Scenario

Sector	Change in Saltmarsh Zone (ha)			Change in Saltmarsh (ha)			Change in Intertidal Habitat (ha)			Change in Extreme Intertidal Habitat (ha)		
	2025	2055	2105	2025	2055	2105	2025	2055	2105	2025	2055	2105
NC1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.3	0.0	0.0	0.1
NE2	1.1	1.0	-3.5	0.3	0.3	-1.1	0.7	2.4	2.3	-0.7	-2.4	-2.3
SC3	-0.1	-0.6	-2.0	-0.1	-0.4	-1.4	0.0	1.1	4.0	-0.1	0.1	0.6
SC5	0.6	2.1	2.6	0.4	1.5	1.9	0.0	0.0	0.1	0.6	0.8	-2.1
SC6	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.2	0.6	0.0	0.1	0.0
W1	0.0	0.1	0.7	0.0	0.0	0.2	0.1	0.7	1.5	0.1	0.4	0.7
W2	0.1	0.2	-0.5	0.0	0.1	-0.2	0.1	0.6	1.5	0.0	-0.5	0.6
WC3	0.3	0.8	1.1	0.1	0.2	0.3	0.0	0.1	0.5	0.9	0.9	1.5
WC5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
WC6	0.2	0.2	0.5	0.1	0.1	0.2	0.0	0.0	0.0	0.2	0.3	0.5
Total	2.2	3.8	-1.0	0.9	1.8	0.0	1.0	4.9	10.1	1.0	-0.3	-0.2

Table 5.16 Summary of Changes in Saltmarsh and Intertidal Habitats within Dorset Heathlands SPA for the Preferred SMP Policy Scenario

Sector	Change in	n Saltmarsh	Zone (ha)	Chang	e in Saltmar	sh (ha)	Change ii	n Intertidal H	abitat (ha)	Change in Extreme Intertidal Habitat (ha)		
	2025	2055	2105	2025	2055	2105	2025	2055	2105	2025	2055	2105
NC1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.2	-0.4	0.0	0.0	0.0
NE2	1.7	3.1	-10.1	0.5	0.9	-3.0	1.7	7.9	8.8	-1.2	-6.9	-7.6
NE3	-0.4	-2.3	-5.4	0.0	0.0	-0.1	0.2	0.3	-0.9	-0.3	-0.3	0.4
SC1	0.5	4.5	7.0	0.1	1.3	2.1	0.2	2.7	10.6	1.5	1.5	-4.2
SC2	0.0	0.2	5.5	0.0	0.1	1.6	0.0	0.0	4.0	0.4	1.8	8.4
SC3	-0.1	-0.3	-1.1	-0.1	-0.2	-0.8	0.1	0.1	-0.4	-0.1	-0.1	0.4
SC4	0.0	0.0	0.5	0.0	0.0	0.3	0.0	0.0	0.4	0.0	0.1	0.4
SC5	1.1	3.5	2.5	0.8	2.6	1.8	0.3	2.5	7.0	0.6	0.0	-2.5
SC6	0.0	0.3	0.9	0.0	0.2	0.6	0.0	0.2	1.0	0.1	0.2	1.3
SC8	0.1	0.6	4.1	0.1	0.4	3.0	0.1	0.5	3.7	0.1	0.6	3.5
SE1	0.8	5.2	3.1	0.2	1.5	0.9	0.6	4.2	11.0	1.3	-0.1	-6.4
SE2	2.8	9.2	3.7	0.8	2.7	1.1	2.0	11.3	17.2	-1.0	-7.5	-2.2
SE3	0.6	2.5	5.9	0.2	0.7	1.7	0.5	2.4	-29.7	43.7	44.7	84.1
W1	1.6	9.4	9.2	0.5	3.1	3.0	1.9	9.9	21.8	2.1	-1.1	-6.5
W2	0.0	-0.2	0.4	0.0	-0.1	0.1	0.0	0.1	0.7	0.1	0.1	1.2
WC3	0.2	0.7	1.3	0.1	0.2	0.4	0.2	0.6	2.0	0.7	0.7	0.5
WC4	7.6	27.7	19.3	2.5	9.1	6.4	7.3	20.4	45.0	8.8	1.4	-14.5
WC5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Total	16.7	64.2	46.6	5.9	22.7	19.2	15.0	62.8	101.8	56.8	35.2	56.4

Table 5.17 Summary of Changes in Saltmarsh and Intertidal Habitats within Dorset and Studland Dunes SAC for the Preferred SMP Policy Scenario

Sector	Change in Saltmarsh Zone (ha)			Change in Saltmarsh (ha)			Change in Intertidal Habitat (ha)			Change in Extreme Intertidal Habitat (ha)		
	2025	2055	2105	2025	2055	2105	2025	2055	2105	2025	2055	2105
SC1	0.2	3.3	7.0	0.1	1.0	2.1	0.1	1.7	8.8	1.4	2.1	-2.4
SC2	0.0	0.0	5.1	0.0	0.0	1.5	0.0	0.0	3.7	0.3	1.8	7.9
SC4	0.0	0.0	0.3	0.0	0.0	0.2	0.0	0.0	0.2	0.0	0.1	0.3
SC5	0.3	1.4	0.3	0.2	1.0	0.2	0.3	1.3	3.1	0.0	-0.5	-0.2
SC6	0.0	0.3	0.7	0.0	0.2	0.5	0.0	0.2	0.9	0.1	0.2	0.6
SC8	0.1	0.7	4.3	0.1	0.5	3.1	0.1	0.6	4.2	0.1	0.8	3.8
SE1	0.6	4.8	3.6	0.2	1.4	1.1	0.4	3.5	9.0	1.3	0.3	-4.8
SE2	2.4	8.4	5.9	0.7	2.5	1.7	1.7	9.8	16.6	-0.7	-5.6	-0.7
SE3	0.6	2.5	5.9	0.2	0.7	1.7	0.5	2.4	-29.7	0.1	1.1	40.6
W1	1.1	7.6	9.3	0.4	2.5	3.1	0.9	7.1	17.7	1.5	-0.6	-5.6
WC4	6.3	25.4	18.0	2.1	8.4	5.9	6.0	17.2	39.5	7.2	0.7	-13.9
Total	11.7	54.4	60.4	3.9	18.3	21.2	10.0	43.9	74.0	11.2	0.4	25.4

Table 5.18 Summary of Changes in Saltmarsh and Intertidal Habitats within Poole Harbour SPA for the Preferred SMP Policy Scenario

Sector	Change in	n Saltmarsh	Zone (ha)	Chang	e in Saltmars	sh (ha)	Change in	n Intertidal H	abitat (ha)	Change	in Extreme I Habitat (ha)	
	2025	2055	2105	2025	2055	2105	2025	2055	2105	2025	2055	2105
NC1	0.7	0.6	-2.8	0.5	0.4	-2.0	0.5	2.4	0.4	-0.4	-2.0	0.8
NC2	0.0	0.3	0.2	0.0	0.2	0.1	0.0	0.4	0.3	0.1	0.0	0.1
NC3	0.2	2.2	3.8	0.1	1.2	2.1	5.7	22.2	49.0	3.3	4.8	13.0
NE1	4.2	17.0	8.0	0.1	0.3	0.1	3.0	16.0	31.5	1.3	-4.7	-20.5
NE2	0.6	1.6	-5.1	0.2	0.5	-1.5	1.2	4.6	-11.2	-0.5	-2.7	15.4
NE3	-0.9	-6.0	-11.8	0.0	-0.1	-0.2	1.3	4.4	-4.4	-1.1	-2.9	9.6
SC1	1.2	5.5	11.5	0.4	1.6	3.4	0.7	5.9	19.5	0.9	2.9	-3.2
SC2	0.0	1.1	6.6	0.0	0.3	2.0	0.2	1.5	3.0	0.4	1.3	18.2
SC3	2.0	4.4	-12.4	1.4	3.1	-9.0	3.7	13.4	22.5	-0.9	-2.6	-12.3
SC4	2.1	10.9	66.1	1.5	7.9	47.7	2.6	11.6	86.6	4.5	10.5	-4.5
SC5	6.2	32.6	56.3	4.4	23.5	40.6	6.8	31.5	111.1	6.0	28.6	-34.5
SC6	0.9	1.2	24.1	0.7	0.9	17.4	0.8	3.9	28.0	0.7	6.3	15.6
SC7	0.3	8.0	21.1	0.2	5.8	15.2	1.5	10.6	31.0	1.8	5.8	4.9
SC8	4.2	11.5	5.0	3.0	8.3	3.6	3.0	17.5	37.7	-0.2	-7.1	-16.1
SE1	-1.8	-16.1	-35.5	-0.5	-4.8	-10.5	2.6	8.6	-0.4	-2.4	-8.3	0.5
SE2	-0.1	0.3	37.6	0.0	0.1	11.2	3.2	12.3	56.1	1.2	16.1	15.4
SE3	0.1	0.3	0.7	0.0	0.1	0.2	0.1	0.3	-16.1	0.0	0.1	17.5
W1	0.1	-0.8	-7.1	0.0	-0.3	-2.4	0.8	2.1	-3.3	-0.7	-2.6	0.4
W2	7.9	24.8	-37.7	2.6	8.2	-12.5	8.6	42.7	-28.1	-7.0	-33.6	52.8
WC3	19.1	14.0	-2.9	5.8	4.3	-0.9	20.1	31.5	-13.6	10.6	6.8	66.6
WC4	15.9	31.8	3.7	5.3	10.5	1.2	21.2	49.5	89.4	7.8	-3.7	-43.3
WC5	50.9	63.2	-11.4	16.8	20.8	-3.8	50.9	83.2	71.0	3.0	-25.6	-5.7
WC6	22.4	18.9	13.3	7.4	6.2	4.4	40.5	50.8	46.9	7.1	6.0	20.6
WC7	19.2	4.8	-2.2	8.6	2.1	-1.0	78.4	81.0	40.0	1.9	0.1	42.0
Total	155.3	232.1	129.0	58.4	101.2	105.4	257.4	508.0	646.9	37.4	-6.3	153.2

Table 5.19 Tide Levels used in Habitat Extent GIS Extraction

Area of Saltmarsh Zone	SLR Rise	5 %-ile	95 %-ile
Poole Harbour 1993	0.00m	+0.20m OD	+0.90m OD
Poole Harbour 2009	+0.04m	+0.24m OD	+0.94m OD
PHB 1st epoch 2025	+0.070m	+0.27m OD	+0.97m OD
PHB 2nd epoch 2055	+0.302m	+0.50m OD	+1.20m OD
PHB 3rd epoch 2105	+0.9255m	+1.13m OD	+1.83m OD
Area of Intertidal	SLR Rise	MLWS	MHWS
Poole Harbour 1993*	0.00m	-0.80m OD	+0.80m OD
Poole Harbour 2009	+0.04m	-0.76m OD	+0.84m OD
PHB 1st epoch 2025	+0.070m	-0.73m OD	+0.87m OD
PHB 2nd epoch 2055	+0.302m	-0.50m OD	+1.10m OD
PHB 3rd epoch 2105	+0.9255m	+0.13m OD	+1.73m OD
Area of Intertidal	SLR Rise	LAT	НАТ
Poole Harbour 1993*	0.00m	-1.40m OD	+1.20m OD
Poole Harbour 2009	+0.04m	-1.36m OD	+1.24m OD
PHB 1st epoch 2025	+0.070m	-1.33m OD	+1.27m OD
PHB 2nd epoch 2055	+0.302m	-1.10m OD	+1.50m OD
PHB 3rd epoch 2105	+0.9255m	-0.47m OD	+2.13m OD

^{*} based on period observed by Admiralty 1995-2000.

Trend in Saltmarsh Habitat for the Preferred SMP Policy Scenario

- 5.3.19 The saltmarsh calculations for all WeBs count sectors within Poole Harbour for the SMP preferred policy scenario, along with the comparisons of areas between scenarios, are presented in **Table 5**.15 and detailed tables presented in **Appendix E**.
- 5.3.20 The preferred SMP policy scenario shows an increase in saltmarsh zone and predicted saltmarsh in Epoch 1, which reduces slightly in Epoch 2 (though still higher at present), whilst by the end of Epoch 3 the saltmarsh zone area is predicted to fall below that of the 1993 area, though the prediction of extent of saltmarsh indicates that this would remain higher than the 1993 area (by 14 ha). Constraints to natural movement arising from HTL policies in specific units occurs in sectors NC1, NC2, NC3, NE1, and NE3, and in these sectors 17 ha, 53 ha, and 139 ha of saltmarsh zone habitat would be lost by 2025, 2055, and 2105 respectively. The predicted extent of saltmarsh that would be lost in these sectors is 5 ha, 17 ha, and 41 ha by 2025, 2055, and 2105 respectively. The movement of the saltmarsh zones as a result of sea level rise by 2025, 2055, and 2105 is shown on **Figures 5.7, 5.8, and 5.9**. These figures include for manmade constraints from HTL policies in sub-units along the coast.

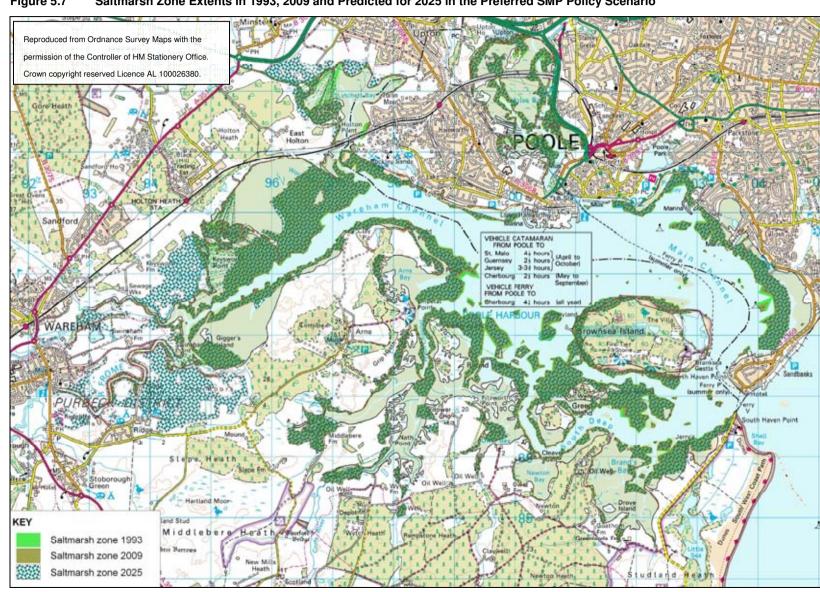
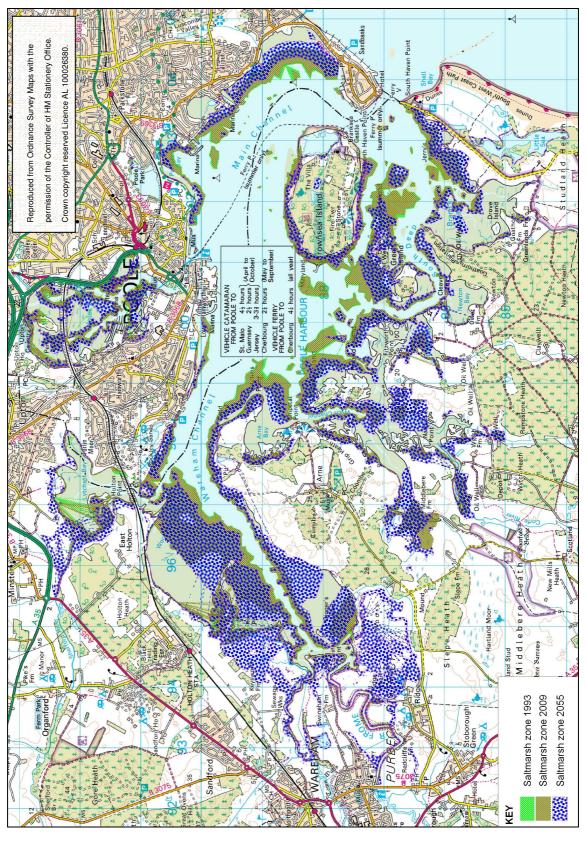


Figure 5.7 Saltmarsh Zone Extents in 1993, 2009 and Predicted for 2025 in the Preferred SMP Policy Scenario

Saltmarsh Zone Extents in 1993, 2009 and Predicted for 2055 in the Preferred SMP Policy Scenario Figure 5.8



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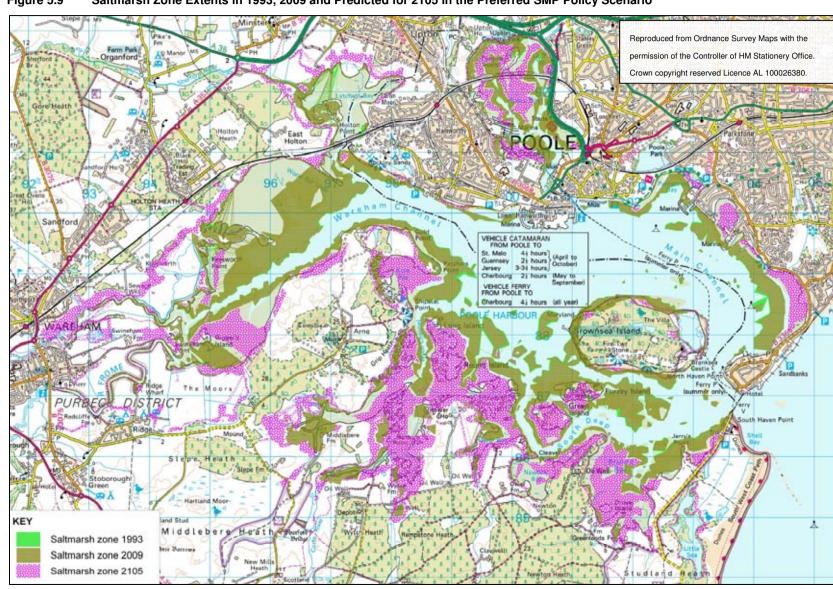


Figure 5.9 Saltmarsh Zone Extents in 1993, 2009 and Predicted for 2105 in the Preferred SMP Policy Scenario

Trend in Spring Tide Intertidal Habitat for the Preferred SMP Policies Scenario

- 5.3.21 The intertidal habitat (measured from MLWS to MHWS and including the majority of the saltmarsh zone) for all WeBs count sectors within Poole Harbour for the SMP preferred policy (constrained) scenarios, along with the comparisons of areas, are also presented in **Table 5.15** and detailed tables presented in **Appendix E**.
- 5.3.22 The preferred SMP policy scenario shows that with sea level rise, between now and Epoch 1 (2025 the intertidal 'zone' within Poole Bay as a whole could increase by 489 ha greater than the current (1993) extent. Constraints to natural movement arising from HTL policies in specific units occurs in sectors NC1, NC2, NC3, NE1, and NE3, and in these sectors 5 ha, 34 ha, and 400 ha of intertidal habitat (including the majority of the 139ha of saltmarsh zone habitat described above) would be lost by 2025, 2055, and 2105 respectively. The movement of the intertidal habitat zone as a result of sea level rise by 2025, 2055, and 2105 is shown on **Figures 5.10, 5.11, and 5.12**. These figures include for manmade constraints from HTL policies in sub-units along the coast.

Trend in Extreme Tide Intertidal Habitat for the Preferred SMP Policies Scenario

5.3.23 The extreme intertidal habitat area measurement and predictions for all WeBs count sectors within Poole Harbour for the SMP preferred policy (constrained) scenario, along with the comparisons of areas, are summarised in **Table 5.15** and in detailed tables in **Appendix E**. The extreme intertidal habitat extents exclude the intertidal habitat between MLWS and MHWS springs, so this habitat is the very low shore or transitional shoreline (i.e. supporting upper saltmarsh communities and transitional communities such as reedbed). Constraints to natural movement arising from HTL policies in specific units occurs in sectors NC1, NC2, NC3, NE1, and NE3, and in these sectors 4 ha, 17 ha, and 4 ha of extreme intertidal habitat (including a minor element of the saltmarsh zone habitat described earlier) would be lost by 2025, 2055, and 2105 respectively. The movement of the extreme intertidal (LAT-HAT) zone as a result of sea level rise for the years 2025, 2055, and 2105 is shown on **Figures 5.13, 5.14, and 5.15**. These figures include for manmade constraints from HTL policies in sub-units along the coast.

- 5.3.24 The prediction of the physical changes to the topology and subsequently habitats is based on the assumed increases of sea level rise over the 3 epochs. The predictions do not take account of any geomorphological pressures, such as increased erosion or accretion, because detailed modelling has not been undertaken given that the sea level rise predictions are recent (after the earlier Poole Harbour Strategy) and the strategic level of the SMP. Furthermore, any model is unlikely to effectively or to any great degree produce an accurate picture of the Harbour beyond the first Epoch. The habitat areas measured by GIS for this work have used conservative boundaries, providing worse case figures of loss. Given that there is more likely to be continued accretion in many areas, particularly if increasing sediment loads enter the harbour from increased storminess and loading in fluvial discharge in the future, it is considered that the position in this assessment is a worst case indication, and that it is likely that the areas lost may actually be lower. In addition, the habitat changes have not taken into account any other pressures that may arise, including the determination of whether Spartina will continue to die-back or whether it will re-colonise as sea level rise provides potentially more habitat. The units within the preferred SMP scenario that have a specific HTL policy that may result in coastal squeeze are expected to influence the intertidal habitats within their count sectors that front each specific unit. However, the assessment of habitats lost is undertaken for the SMP policy scenario for the PDZ as a whole.
- 5.3.25 In summary, as shown in the collation of the changes to habitat areas presented in **Table 5.15** and described above, we can see that on the whole, in the preferred SMP policy scenario, there is an increase in the available habitats in Poole Harbour as a whole in the short- to long-term, with the exception of the saltmarsh zone. However, it is apparent, that during the 3rd Epoch, the Harbour begins to lose its resilience in terms of the available space for habitats to migrate to alongside sea level rise. Although this does not reduce most habitats below present day levels by the end of the 3rd Epoch, there is a potential that after 2105 significant constraints could begin to arise.

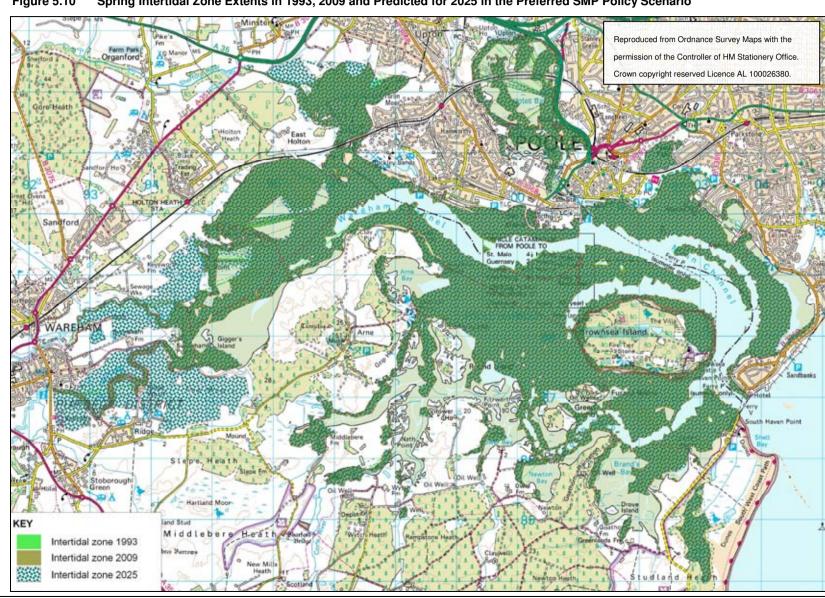


Figure 5.10 Spring Intertidal Zone Extents in 1993, 2009 and Predicted for 2025 in the Preferred SMP Policy Scenario

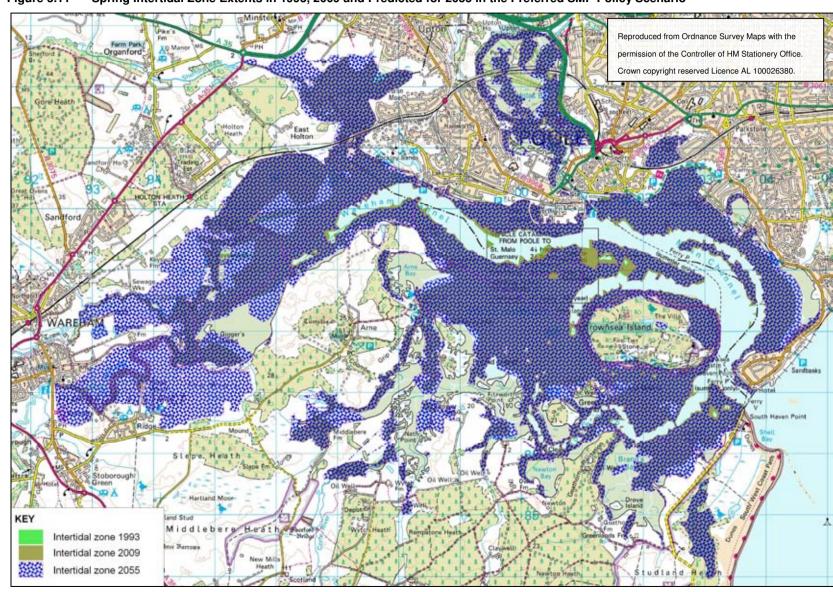


Figure 5.11 Spring Intertidal Zone Extents in 1993, 2009 and Predicted for 2055 in the Preferred SMP Policy Scenario

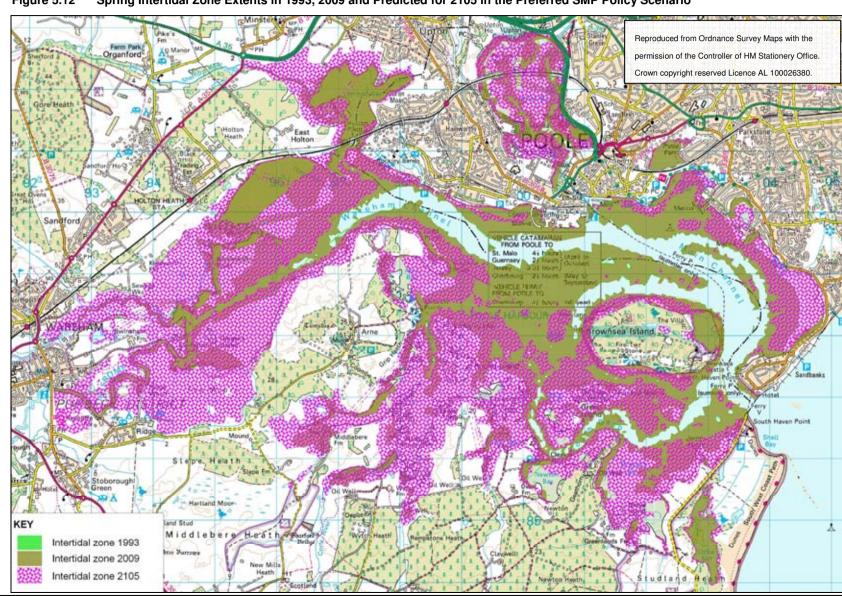


Figure 5.12 Spring Intertidal Zone Extents in 1993, 2009 and Predicted for 2105 in the Preferred SMP Policy Scenario

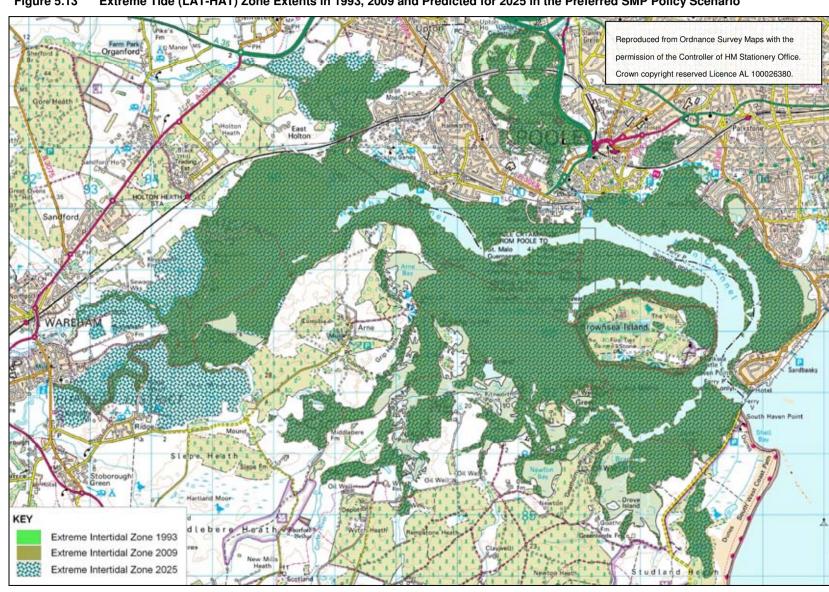


Figure 5.13 Extreme Tide (LAT-HAT) Zone Extents in 1993, 2009 and Predicted for 2025 in the Preferred SMP Policy Scenario

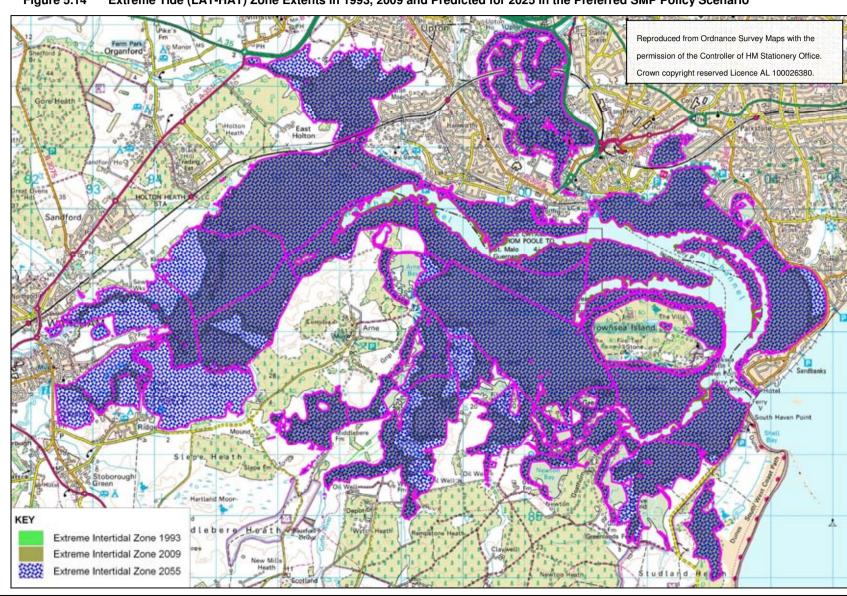


Figure 5.14 Extreme Tide (LAT-HAT) Zone Extents in 1993, 2009 and Predicted for 2025 in the Preferred SMP Policy Scenario

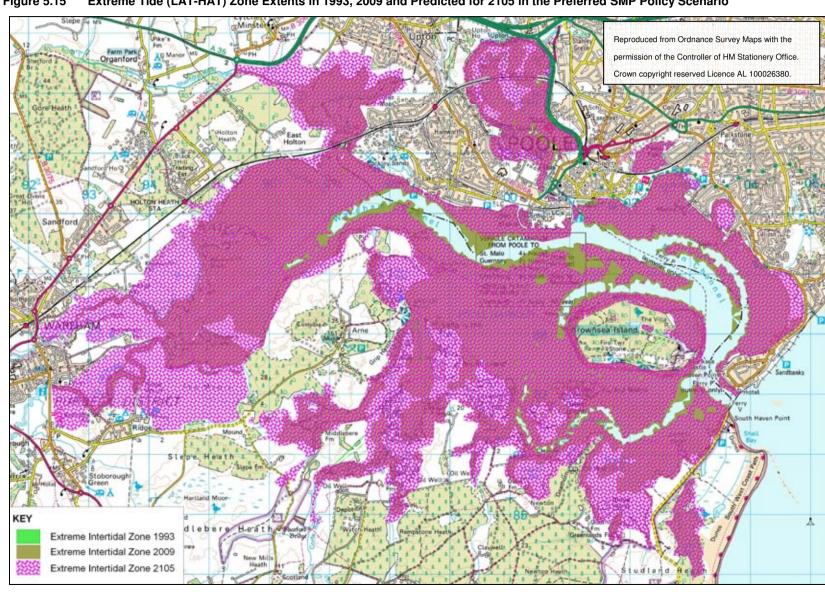


Figure 5.15 Extreme Tide (LAT-HAT) Zone Extents in 1993, 2009 and Predicted for 2105 in the Preferred SMP Policy Scenario

5.4 Detailed Data and Assessment of the Effects on *Natura 2000* Sites in the SMP Study Area

- 5.4.1 The PDZ where significant detailed data on the bird species that exploit the site is required to ensure an appropriate level and accuracy of assessment is the Poole Harbour SPA. Consequently, additional data was obtained in the form of roosting, nesting, and feeding bird data contained in the following reports:
 - Wader and Waterfowl Roost Survey of Poole Harbour Winter 2002/3 (S. J. Morrison on behalf of Poole Harbour Study Group, 2004); and
 - Important Birds of Poole Harbour and their status (1998/9 2004/5) (B. P. Pickess for Natural England, 2007.).
- 5.4.2 The low tide counts undertaken by WeBS and reported in Pickess (2007) are summarised in **Table G1** in **Appendix G**. Whilst the detailed quantitative assessment of the effect of the preferred SMP policy on the low tide feeding sectors is presented in **Table G2** in **Appendix G**.
- The roost counts undertaken and reported in Morrison (2004) are summarised in **Table H1** in **Appendix H**, and the locations of the roosts sites are shown on **Figure 5.16**. The detailed quantitative assessment of the effect of the preferred SMP policy on the roosts is also presented in **Table H1** in **Appendix H**.
- 5.4.4 The nesting bird data reported in Morrison (2004) are summarised in **Table I1** in **Appendix I**. The assessment of the effect of the preferred SMP policy on the roosts is also presented in **Table I1** in **Appendix I**.
- Assessment tables have been used to quantify the effect on habitats and bird species within PDZ1 and the other PDZs, to enable a clear indication of the significance of the impacts on the *Natura 2000* Sites to be identified, alongside the numerous site features and conservation objectives. Along with the data obtained from the *Natura 2000* Site data forms and relevant SSSI unit citations and conditions tables, the overarching assessment on each *Natura 2000* Site has been undertaken and reported in the format suggested by RSPB (2007). As such, an assessment has been undertaken for all four PDZs within the SMP area, and these are presented in **Appendices J** to **M**, and the results are summarised in **Section 5.6**.
- 5.4.6 The following section (**Section 5.5**) provides further detail on the Poole Harbour study area, in relation to the *Natura 2000* Sites it supports. This data was used to provide the quantities and impacts identified in **Appendix L**.

5.5 Detailed Data and Assessment of the Effects on PDZ3 SMP Policy Area

5.5.1 PDZ3 in the SMP covers Poole Bay. There are four key Natura 2000 Sites within or potentially affected by the SMP preferred policy, namely: Dorset Heaths SAC, Dorset Heathlands SPA, Dorset Heath and Studland Dunes SAC, and Pool Harbour SPA. This section provides further detailed data on habitat change, incorporating GIS mapping outputs that were used in the completion of **Appendix L** (the assessment).

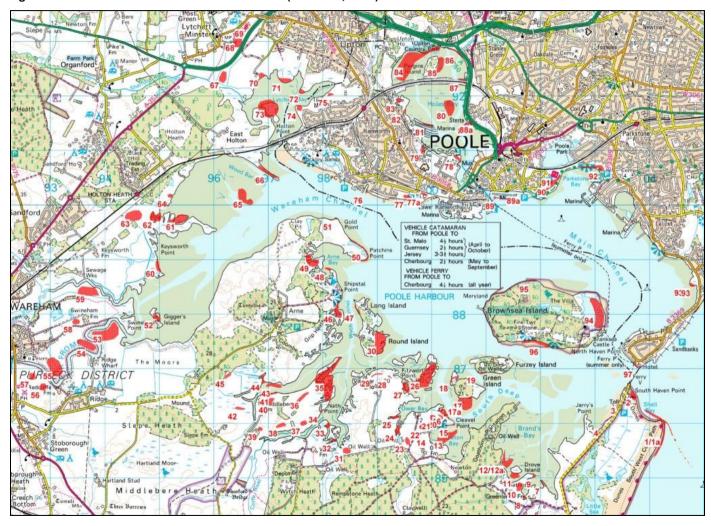


Figure 5.16 Poole Harbour Roost Count Sites (Morrison, 2004)

Dorset Heaths SAC

- 5.5.2 **Table 5.16** presents the GIS based habitat extent changes identified with the preferred SMP policy for PDZ3 and within the Site boundary of Dorset Heaths SAC. The table identifies that saltmarsh zone habitat will increase in extent in Epochs 1 and 2 within the SAC site boundary, but will decline to 1 ha below the current extent in the 3rd Epoch. However, there is predicted to be no change in the extent of saltmarsh within the Site by the end of Epoch 3. As no saltmarsh would be affected, the saltmarsh zone extent therefore lies in the intertidal zone, and as such, this increases in extent within the Site boundary in Epochs 2 and 3 (5 ha and 10 ha above 1993 extent respectively), but decreases slightly in Epoch 1 by 1 ha. The transitional zone experiences an increase in extent in Epoch 1, but then a minor decrease in Epochs 2 and 3, and the maximum loss is 0.3 ha of the current 1993 extents.
- 5.5.3 The HAT extent for the 3 Epochs has been used to ascertain what the losses of terrestrial habitats will be and the quantities. **Figures 5.17, 5.18, and 5.19** present the maximum HAT by the end of Epoch 3 for all the Site areas that may be affected by sea level rise.

Dorset Heathlands SPA

- Table 5.17 presents the GIS based habitat extent changes identified with the preferred SMP policy for PDZ3 and within the Site boundary of Dorset Heathlands SPA. The table identifies that all habitats (saltmarsh zone, saltmarsh, intertidal habitats and extreme tide habitats) will increase in extent within the Site boundary. The intertidal and extreme intertidal zones will increase by up 72 ha, 98 ha, and 158 ha above current 1993 extents by 2025, 2055, and 2105 respectively.
- 5.5.5 The HAT extent for the 3 Epochs has been used to ascertain what the losses of terrestrial habitats will be and the quantities. **Figures 5.20, 5.21, and 5.22** present the maximum HAT by the end of Epoch 3 for all the Site areas that may be affected by sea level rise.

Dorset Heaths and Studland Dunes SAC

- Table 5.18 presents the GIS based habitat extent changes identified with the preferred SMP policy for PDZ3 and within the Site boundary of Dorset Heaths and Studland Dunes SAC. The table identifies that all habitats (saltmarsh zone, saltmarsh, intertidal habitats and extreme tide habitats) will increase in extent within the Site boundary. The intertidal and extreme intertidal zones will increase by up 21 ha, 44 ha, and 99 ha above current 1993 extents by 2025, 2055, and 2105 respectively.
- 5.5.7 The HAT extent for the 3 Epochs has been used to ascertain what the losses of terrestrial habitats will be and the quantities. **Figures 5.23 and 5.24** present the maximum HAT by the end of Epoch 3 for all the Site areas that may be affected by sea level rise.

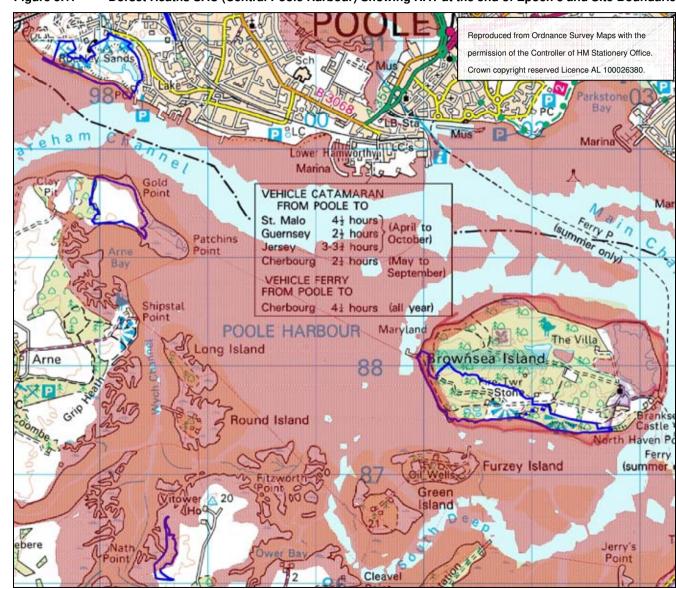


Figure 5.17 Dorset Heaths SAC (Central Poole Harbour) Showing HAT at the end of Epoch 3 and Site Boundaries (in Blue)

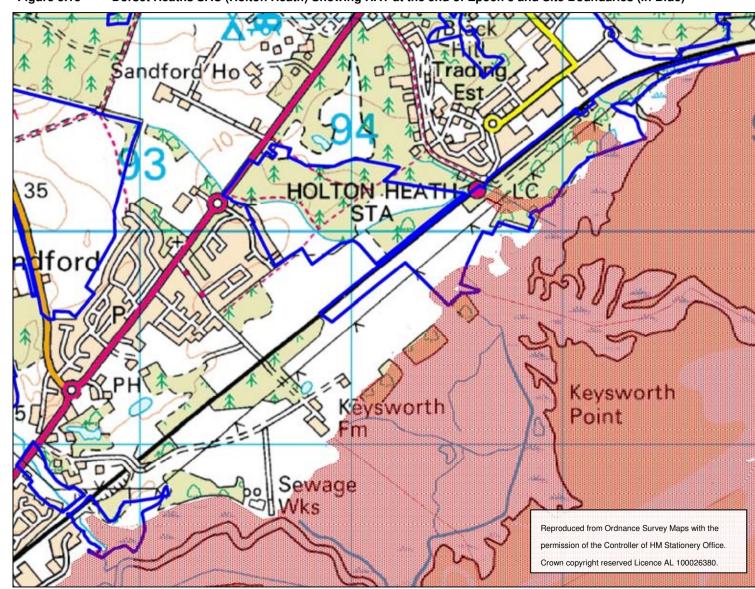


Figure 5.18 Dorset Heaths SAC (Holton Heath) Showing HAT at the end of Epoch 3 and Site Boundaries (in Blue)

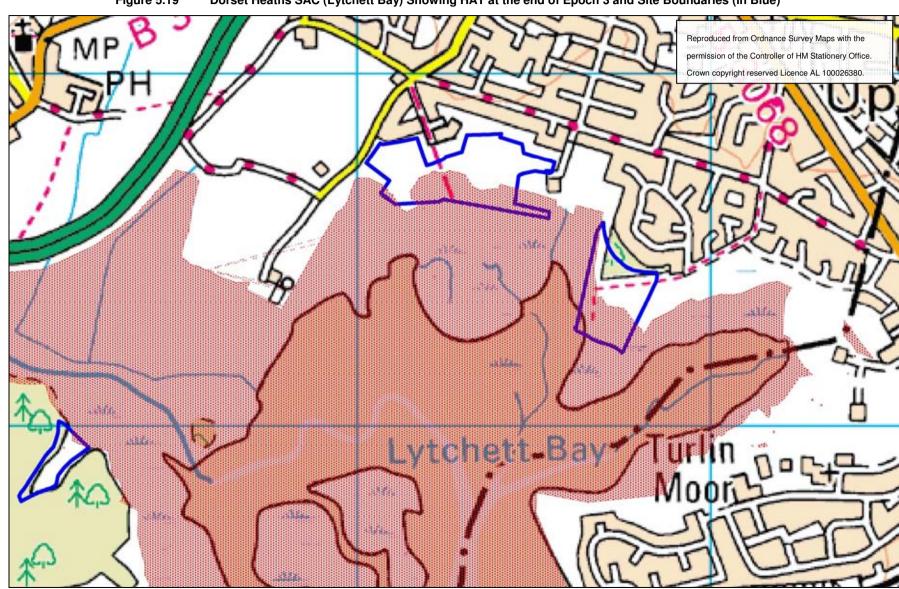


Figure 5.19 Dorset Heaths SAC (Lytchett Bay) Showing HAT at the end of Epoch 3 and Site Boundaries (in Blue)

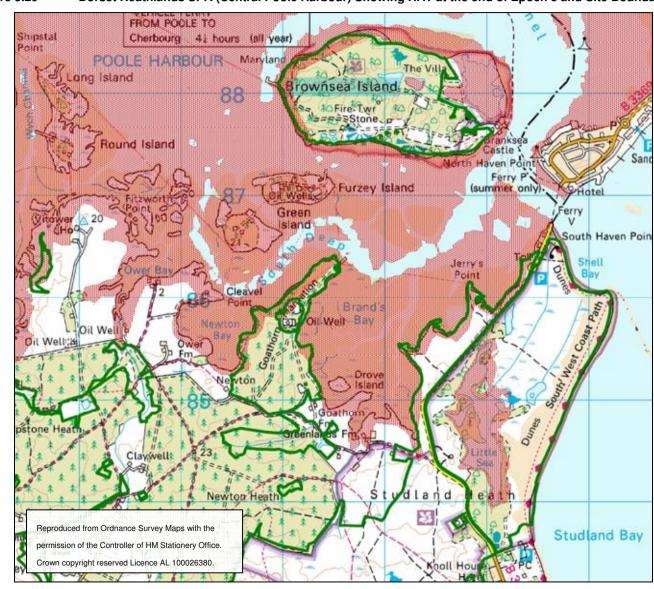


Figure 5.20 Dorset Heathlands SPA (Central Poole Harbour) Showing HAT at the end of Epoch 3 and Site Boundaries (in Green)

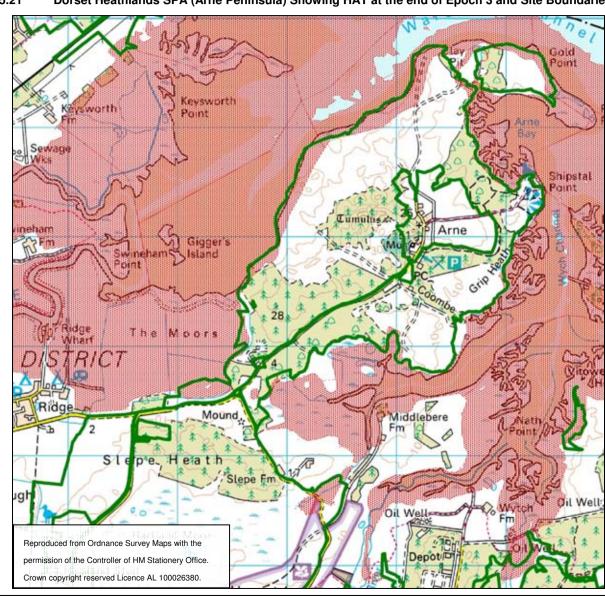


Figure 5.21 Dorset Heathlands SPA (Arne Peninsula) Showing HAT at the end of Epoch 3 and Site Boundaries (in Green)

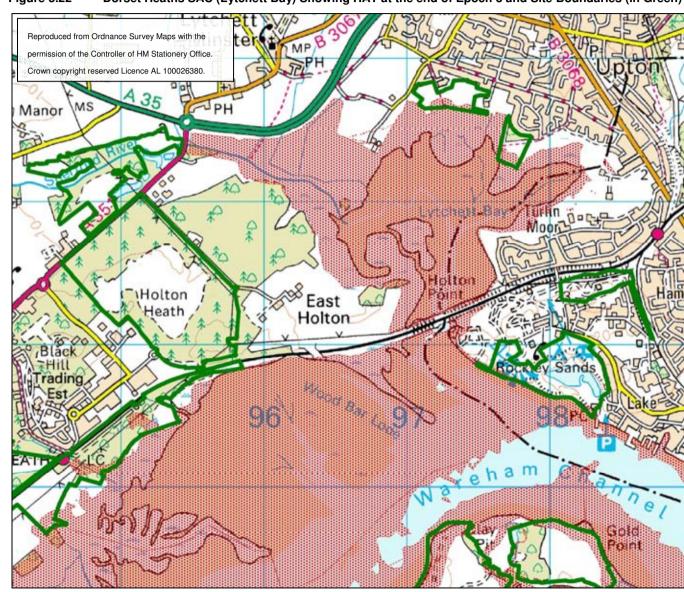


Figure 5.22 Dorset Heaths SAC (Lytchett Bay) Showing HAT at the end of Epoch 3 and Site Boundaries (in Green)

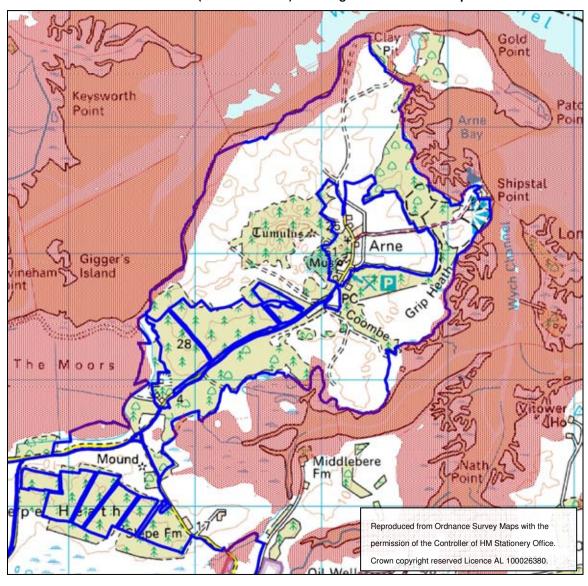


Figure 5.23 Dorset Heaths and Studland Dunes SAC (Arne Peninsula) Showing HAT at the end of Epoch 3 and Site Boundaries (in Blue)

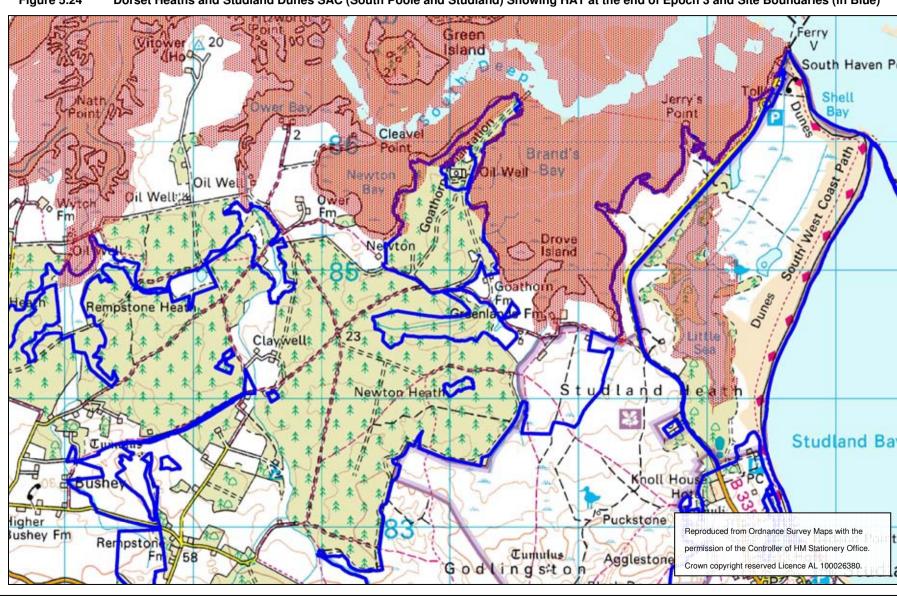


Figure 5.24 Dorset Heaths and Studland Dunes SAC (South Poole and Studland) Showing HAT at the end of Epoch 3 and Site Boundaries (in Blue)

Poole Harbour SPA

- Table 5.19 presents the GIS based habitat extent changes identified with the preferred SMP policy for PDZ3 and within the Site boundary of Poole Harbour SPA. The table identifies that all habitats (saltmarsh zone, saltmarsh, intertidal habitats and extreme tide habitats) will increase in extent within the Site boundary. The intertidal and extreme intertidal zones will increase by up 295 ha, 502 ha, and 800 ha above current 1993 extents by 2025, 2055, and 2105 respectively.
- 5.5.9 The HAT extent for the 3 Epochs has been used to ascertain what the losses of terrestrial habitats will be and the quantities. **Figures 5.25, 5.26, and 5.27** present the maximum HAT by the end of Epoch 3 for all the Site areas that may be affected by sea level rise.

Terrestrial Habitats Effected

- 5.5.10 The encroachment of rising sea levels on terrestrial habitats for which Sites are either designated or that are supporting habitats for designated features, will result in losses of these habitats. Some of the losses will arise due to the natural processes that have heavily influenced the SMP policy development. However, some potential losses of habitat will be as a direct result of Managed Realignment of current tidal flood banks, resulting in tidal incursion and inundation of grazing marsh, reedbeds, and other fen and mire habitats.
- The HAT extent presented on **Figures 5.17 to 5.27** were used to determine a worst case extent of terrestrial habitats that would be affected by sea level rise, furthermore, this was also undertaken for BAP habitats that are supporting habitats to SPA Site features. **Table 5.20** presents the extracted terrestrial areas and habitats that would be affected both as a result of natural migration due to sea level rise as well as migration and loss of terrestrial habitats as a result of the Managed Realignment proposals within the PDZ3 policy sub-units. The losses relevant to MR policies are highlighted, whilst **Table 5.21** presents the floodplain and coastal grazing marsh habitat which although is not within the Poole Harbour SPA Site boundary, is identified as a supporting habitat. It should however be noted that these areas include many of the designated Site qualifying or supporting habitats of the Dorset Heaths SAC and Dorset Heathlands SPA, and hence the amounts of habitat will be lowered by a commensurate amount to those terrestrial habitats that would be transformed into intertidal habitats as a result of MR actions.

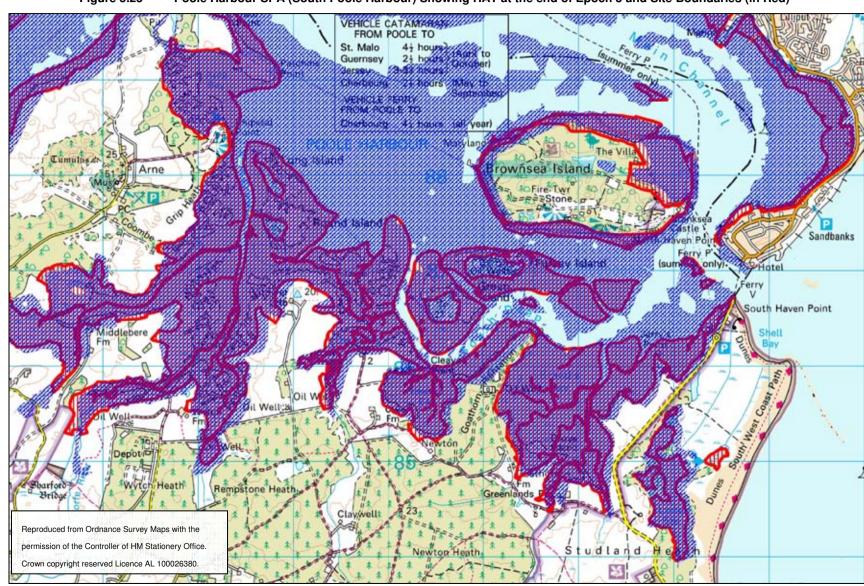


Figure 5.25 Poole Harbour SPA (South Poole Harbour) Showing HAT at the end of Epoch 3 and Site Boundaries (in Red)

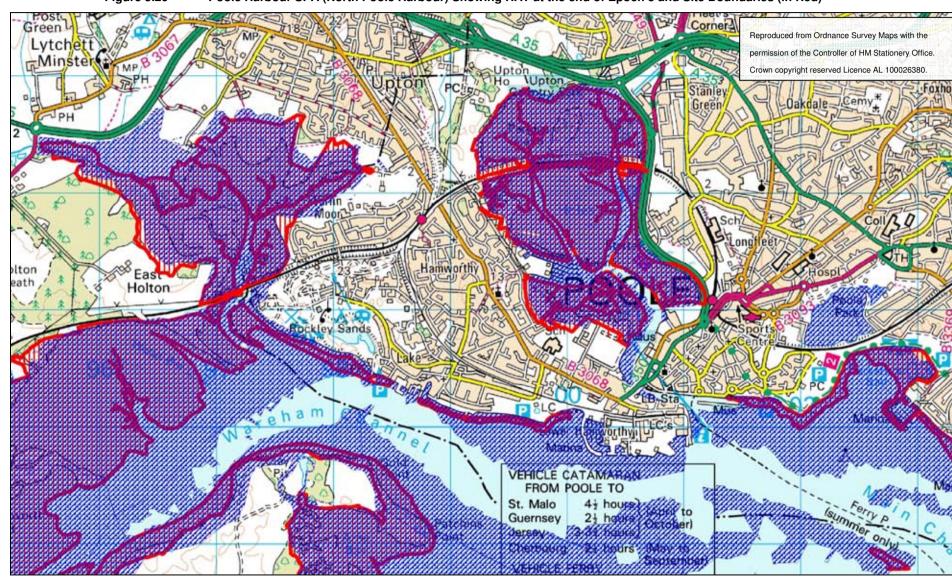


Figure 5.26 Poole Harbour SPA (North Poole Harbour) Showing HAT at the end of Epoch 3 and Site Boundaries (in Red)

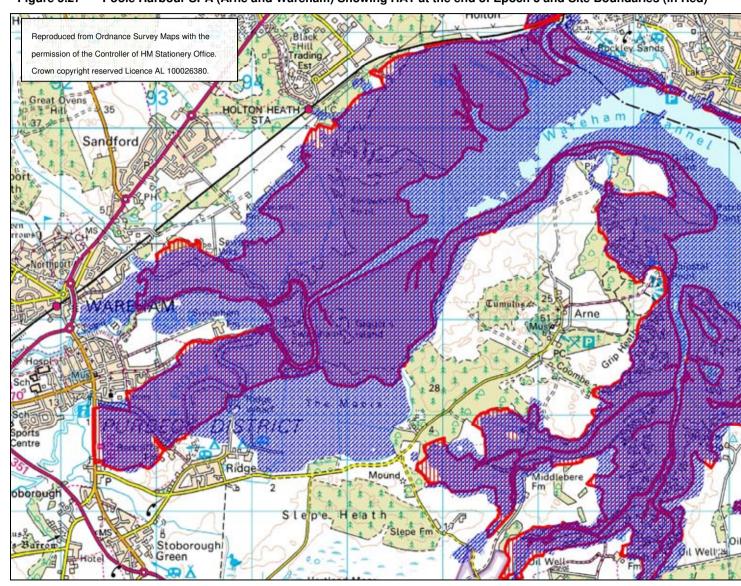


Figure 5.27 Poole Harbour SPA (Arne and Wareham) Showing HAT at the end of Epoch 3 and Site Boundaries (in Red)

Table 5.20 Terrestrial Areas at Risk of Sea Level Rise or Managed Realignment (Red Highlight and Bold indicates possible loss due to MR)

Location	SSSI	SSSI Unit	SSSI Features	Area Lost	Count Sector
Dorset Heaths SAC					
Brownsea Island	Poole Harbour	55	Old acidophilous oak woods with Quercus robur on sandy plains.	1.2	NE2
Brownsea Island	Poole Harbour	58	Atlantic salt meadows: Mediterranean salt meadows: Mediterranean thermo-Atlantic halophilous scrub: Mobile dunes with Ammophila arenaria.	4.9	NE2
Ham Common/Rockley	Ham Common	6	Northern Atlantic wet heaths with <i>Erica tetralix</i> , and European dry heaths.	3.3	W2
Lytchett Bay (Upton)	Poole Harbour	17	Atlantic salt meadows and Mediterranean salt meadows.	1.8	WC3
Lytchett Bay (Upton)	Poole Harbour	18	Northern Atlantic wet heaths with <i>Erica tetralix</i> , and European dry heaths.	0.3	WC3
Lytchett Bay (Upton)	Poole Harbour	19	Northern Atlantic wet heaths with <i>Erica tetralix</i> , and European dry heaths.	0.8	WC3
Lytchett Bay (Upton)	Poole Harbour	20	Northern Atlantic wet heaths with <i>Erica tetralix</i> , and European dry heaths.	1.2	WC3
Lytchett Bay (Upton)	Poole Harbour	21	No information.	0.1	WC3
Holton Heath	Holton & Sandford Heaths	6	Northern Atlantic wet heaths with <i>Erica tetralix</i> , and European dry heaths.	2.3	W2
Holton Heath	Holton & Sandford Heaths	11	Northern Atlantic wet heaths with <i>Erica tetralix</i> , and European dry heaths.	0.4	W2
Keysworth	Holton & Sandford Heaths	11	Northern Atlantic wet heaths with <i>Erica tetralix</i> , and European dry heaths.	1.1	W2
Wareham	Morden Bog	3	Northern Atlantic wet heaths with <i>Erica tetralix</i> , and European dry heaths.	0.2	WC6
Wareham	Wareham Meadows	7	Peatlands (including peat bogs swamps, fens).	0.2	WC6
Wareham	Wareham Meadows	8	Northern Atlantic wet heaths with <i>Erica tetralix</i> , and European dry heaths, and previous record of Cladium.	1.8	WC6
Gold Point	Arne	1	Dry heath and wet heath.	1.1	W1
Patchins Point	Arne	1	Dry heath and wet heath.	1.5	NC1
Patchins Point	Arne	1	Dry heath and wet heath.	0.8	SC6
Nath Point	Poole Harbour	47	Atlantic salt meadows and Mediterranean salt meadows.	3.4	SC5

Location	SSSI	SSSI Unit	SSSI Features	Area Lost	Count Sector
Dorset Heathlands SPA	A Comment				
Brownsea Island	Poole Harbour	55	Old acidophilous oak woods with Quercus robur on sandy plains.	9.2	NE2
Brownsea Island	Poole Harbour	56	Bogs, marshes, water fringed vegetation, and fens.	1.5	NE2
Brownsea Island	Poole Harbour	58	Atlantic salt meadows: Mediterranean salt meadows: Mediterranean thermo-Atlantic halophilous scrub: Mobile dunes with Ammophila arenaria.	2.7	NE2
Ham Common/Rockley	Ham Common	6	Northern Atlantic wet heaths with <i>Erica tetralix</i> , and European dry heaths.	1.2	W2
Lytchett Bay (Upton)	Poole Harbour	18	Northern Atlantic wet heaths with <i>Erica tetralix</i> , and European dry heaths.	1.3	W3
Lytchett Bay (Upton)	Poole Harbour	19	Northern Atlantic wet heaths with <i>Erica tetralix</i> , and European dry heaths.	1.2	W3
Lytchett Bay (Upton)	Poole Harbour	20	Northern Atlantic wet heaths with <i>Erica tetralix</i> , and European dry heaths.	0.4	W3
Trading Estate Keysworth	Holton & Sandford Heaths	6	Northern Atlantic wet heaths with <i>Erica tetralix</i> , and European dry heaths.	1.6	W2
Holton Heath	Holton & Sandford Heaths	6	Northern Atlantic wet heaths with <i>Erica tetralix</i> , and European dry heaths.	0.8	WC5
Holton Heath	Holton & Sandford Heaths	9	No information.	1.0	WC5
Holton Heath	Holton & Sandford Heaths	11	Northern Atlantic wet heaths with <i>Erica tetralix</i> , and European dry heaths.	1.6	WC5
The Moors	The Moors	5	Wet heath and mire, with an abundant occurrence of sphagnum carpets and peat habitat.	1.7	WC4
The Moors	The Moors	6	Wet heath with a narrow strip of dry heath alongside the track.	0.7	WC4
The Moors	The Moors	8	Dry heath and Cladium fen.	6.1	WC4
Arne Peninsula South West	Arne	8	Heathland.	10.2	WC4
Arne Peninsula South West	Arne	10	Open heath.	3.8	W1
Arne Peninsula West	Arne	2	Broadleaved, mixed and yew woodland.	0.4	W1
Arne Peninsula West	Arne	3	No information.	1.3	W1
Arne Peninsula West	Arne	4	Heathland.	13.6	W1
Arne Peninsula West	Arne	8	Heathland.	1.2	W1

Location	SSSI	SSSI Unit	SSSI Features	Area Lost	Count Sector
Gold Point	Arne	2	Broadleaved, mixed and yew woodland.	0.7	W1
Arne Bay	Arne	2	Broadleaved, mixed and yew woodland.	0.3	SC6
Arne Bay	Arne	4	Heathland.	1.4	SC6
Arne Bay	Arne	5	Heathland.	0.8	SC6
Arne Bay	Arne	6	Dry heath.	0.4	SC6
Grip Heath	Arne	7	Dry heath and mire.	0.7	SC7
Middlebere Farm	Arne	7	Dry heath and mire.	1.7	SC8
Slepe Farm	Hartland Moor	4	North Atlantic wet heaths, and European dry heaths, and mire.	4.5	SC8
Slepe Farm	Hartland Moor	5	Fen, marsh and swamp.	1.0	SC8
Wytch Farm	Rempstone Heath	6	Wet heath and mire.	4.5	SC5
Nath Point	Rempstone Heath	7	Dry heath.	3.4	SC5
Ower Bay	Rempstone Heath	9	Heathland and mire.	0.2	SC4
Ower Bay	Rempstone Heath	10	Dry heath and mire.	0.05	SC4
Newton Bay	Rempstone Heath	13	Heathland.	4.6	SC2
Goathorn Peninsula	Rempstone Heath	12	Wet heath.	3.2	SC1
Goathorn Peninsula	Rempstone Heath	14	Heathland.	1.4	SC1
Goathorn Peninsula	Rempstone Heath	16	Heathland.	3.1	SE2
Goathorn Peninsula	Rempstone Heath	28	Heathland.	3.3	SC2
Drove Island	Studland & Godlingston Heaths	5	Wet and dry heath.	0.4	SE2
Jerry's Point (Brands Bay)	Studland & Godlingston Heaths	16	Wet and dry heath.	9.0	SE1
Brand's Bay/Studland Heath	Studland & Godlingston Heaths	15	Embryonic shifting dunes, Shifting dunes along the shoreline with Ammophila arenaria (`white dunes`).	1.5	SE1
Brand's Bay/Studland Heath	Studland & Godlingston Heaths	16	Wet and dry heath.	5.4	SE1

Location	SSSI	SSSI Unit	SSSI Features	Area Lost	Count Sector	
Dorset Heath (Purbeck	Porset Heath (Purbeck and Wareham) and Studland Dunes SAC					
The Moors	The Moors	5	Wet heath and mire, with an abundant occurrence of sphagnum carpets and peat habitat.	1.7	WC4	
The Moors	The Moors	6	Wet heath with a narrow strip of dry heath alongside the track.	0.7	WC4	
The Moors	The Moors	8	Dry heath and Cladium fen.	6.1	WC4	
Arne Peninsula South West	Arne	8	Heathland.	10.4	WC4	
Arne Peninsula South West	Arne	10	Open heath.	3.1	W1	
Arne Peninsula West	Arne	3	No information.	1.3	W1	
Arne Peninsula West	Arne	4	Heathland.	13.3	W1	
Arne Peninsula West	Arne	8	Heathland.	1.2	W1	
Arne Bay	Arne	4	Heathland.	1.6	SC6	
Arne Bay	Arne	5	Heathland.	0.8	SC6	
Arne Bay	Arne	6	Dry heath.	0.4	SC6	
Grip Heath	Arne	7	Dry heath and mire.	0.7	SC7	
Middlebere Farm	Arne	7	Dry heath and mire.	1.9	SC8	
Slepe Farm	Hartland Moor	4	North Atlantic wet heaths, and European dry heaths, and mire.	4.5	SC8	
Slepe Farm	Hartland Moor	5	Fen, marsh and swamp.	1.1	SC8	
Wytch Farm	Rempstone Heath	6	Wet heath and mire.	4.4	SC5	
Ower Bay	Rempstone Heath	9	Heathland and mire.	0.2	SC4	
Ower Bay	Rempstone Heath	10	Dry heath and mire.	0.05	SC4	
Newton Bay	Rempstone Heath	13	Heathland.	4.5	SC2	
Goathorn Peninsula	Rempstone Heath	12	Wet heath.	3.0	SC1	

Location	SSSI	SSSI Unit	SSSI Features	Area Lost	Count Sector
Goathorn Peninsula	Rempstone Heath	13	Heathland.	0.3	SC1
Goathorn Peninsula	Rempstone Heath	14	Heathland.	1.2	SC1
Goathorn Peninsula	Rempstone Heath	28	Heathland.	3.2	SE2
Goathorn Peninsula	Rempstone Heath	52	No information.	0.4	SC2
Brand's Bay	Rempstone Heath	15	Broadleaved, mixed and yew woodland.	1.4	SE1
Brand's Bay	Rempstone Heath	16	Heathland.	0.1	SE1
Drove Island/Studland Heath	Studland & Godlingston Heaths	5	Wet and dry heath.	0.4	SE2
Drove Island/Studland Heath	Studland & Godlingston Heaths	16	Wet and dry heath.	12.1	SE2
Jerry's Point	Studland & Godlingston Heaths	15	Embryonic shifting dunes, Shifting dunes along the shoreline with Ammophila arenaria (`white dunes`).	1.4	SE2
Jerry's Point	Studland & Godlingston Heaths	16	Wet and dry heath.	5.0	SE2

Table 5.21 Floodplain and Coastal Grazing Marsh at Risk from Managed Realignment

Location	Description	2025	2055	2105
Turlin Moor		0.5	0.8	2.1
Lytchett (NW Corner)		23	24.1	25.9
Keysworth		67.5	70.2	72
Swineham (Wareham)		25	33.4	39.8
Redcliffe Farm	South of Wareham	29	29.1	29.2
South of Swineham		45.5	45.5	45.5
North of Ridge	Southeast of Wareham	16.3	16.3	16.3
The Moors		146	149	152
Total		352.8	368.4	382.8

5.6 PDZs Considered to have No Adverse Effect on the Integrity of International Sites

- The nature of Poole and Christchurch Bays coastal area means that SMP policy in all PDZs has the potential to affect International sites, as a significant proportion of the coastline is designated SAC, SPA or Ramsar Sites' (or indeed, all three of these designations). The following presents the summary of the findings of the assessment detailed in **Appendices J** to **M**.
- 5.6.2 No Adverse Effect on Integrity (NAEOI) was considered for the following PDZs:

PDZs deemed to have No Adverse Effect on Integrity (NAEOI): PDZ 4 - Swanage.

5.6.3 For further information relating to the assessment of this PDZ, please refer to **Appendix M**. A summary of the factors leading to the assessment of these PDZs is, however, provided below.

PDZ 4 - Swanage

This PDZ provides for a HTL policy in all 3 epochs where sections are not present within or fronted by *Natura 2000* Site. No indirect effects are expected from these HTL sections as there would only be localised effects on coastal processes, limited if any alteration to sediment budgets or movement, and the Site's (Isle of Portland to Studland Cliffs SAC) features (vegetated sea cliffs, semi-natural dry grassland and scrubland, and annual vegetation of drift lines) are not sensitive to adjacent HTL policy at the weak and localised scale of adjacent coastal sections. Where the *Natura 2000* Site is present along the coastline, the preferred policies are Managed Realignment leading to No Active Intervention, or No Active Intervention for all 3 epochs. The use of MR or NAI results in limited if any physical works (and those anticipated are drainage related only), allowing natural processes of erosion and succession to proceed unhindered. Therefore, **no adverse affect on integrity** is expected for this PDZ.



5.7 PDZs where No Adverse Effect on the Integrity of International Sites cannot be concluded

5.7.1 Of the appropriate assessment undertaken for all the PDZs within the SMP area, it has been deemed not possible to conclude NAEOI of International sites, even when mitigation measures are implemented. However, combined compensatory measures will be identified as there is significant cross-over between sites (e.g. in Poole Harbour) or across SMPs (at Hurst Spit).

PDZs where no adverse effect on the integrity of International sites cannot be concluded:

PDZ 1 – Central and Eastern Sections of Christchurch Bay PDZ 2 – Christchurch Harbour and Central Poole Bay PDZ 3 – Poole Harbour and Associated Coastline

The consideration of the policies within these PDZs is made more complicated by 5.7.2 uncertainties relating to how various 'systems' will respond to sea level rise and management. For example, no specific hydrodynamic models have been created, and significant alterations to existing systems and coastal processes that may arise from large scale changes in coastal management policies are not therefore predicted at a measurable scale. Consequently, assessment where such radical changes would be expected to occur are undertaken based on the general understanding of the hydrodynamic and coastal processes arising during the preparation of the SMP provided by the project geomorphologists. In addition, even relatively minor changes that may occur to systems that could alter the 'quantitative' understanding of habitat change (e.g. the role of erosion and accretion within Poole Harbour) cannot be factored into the qualitative and quantitative assessment. In terms of this assessment, under the terms of the Directive, we are faced with seeking to offer an assessment, which is required to prove beyond reasonable scientific doubt, that a given policy will not have an adverse effect on a Site's integrity. Therefore, when identifying the spatial and quantitative changes that may arise from a specific preferred policy, the background geomorphological knowledge alongside conservative delineation of at risk areas has been the basis of the assessment. However, the level of assessment undertaken for these PDZs at this stage is considered to be sufficient and appropriate to the strategic level of the SMP which has been confirmed by Natural England. Furthermore, an important factor to remember at this stage is that where such lack of detail is currently available, further study and more detailed development of options (e.g. at the Strategy level) will clarify and provide improved quantification and specification of the potential effects and thus provide clearer frames of reference at the 'next' stage of the SMP policy implementation, and further work will also inform the subsequent SMP revision in the future.

PDZ 1 - Central and Eastern Sections of Christchurch Bay

5.7.3 This PDZ comprises of a complex shingle spit (Hurst Spit) that is still developing, which shelters a large area of intertidal habitats, as well as terrestrial and lagoon habitats in the hinterland. The spit, the intertidal habitats, and the lagoon and terrestrial habitats fall within the following designations.

Solent and Southampton Water SPA and Ramsar Site Solent Maritime SAC

- 5.7.4 The preferred policy is to Hold The Line at Hurst Spit to maintain the overall integrity of the geomorphological feature, and to maintain the shelter the spit provides to the intertidal and hinterland habitats to the north, and hence prevent significant disturbance and damage to these habitats in the event of an uncontrolled breach of the Spit. North Point would be allowed to develop naturally while continuing to provide a source of sediment for recycling under an agreed management plan.
- 5.7.5 The intertidal habitats are recorded as being adversely affected by coastal squeeze and this will be exacerbated by continued sea level rise. However, the current line of defence landward of the intertidal habitats is also a dominating factor in the cause of the coastal squeeze. Consequently, the adverse effects of this PDZ preferred policy arise from the in-combination effects of sea level rise and the coastal defences along the Keyhaven frontage within the North Solent SMP. The contribution of the Spit and HTL policy is anticipated to be a small proportion of that resulting from the policies of the neighbouring SMP. However, it is considered that without maintaining the integrity of Hurst Spit, the consequences to the intertidal area behind the spit would be of greater scale and significance.
- 5.7.6 The sites that are identified as having an adverse effect on their integrity based on the qualitative data available at this strategy level are the Solent and Southampton Water SPA and Ramsar Site, and the Solent Maritime SAC. Although NAI would result in adverse effects of greater scale and significance, the HTL policy would not reduce the in-combination effect of coastal squeeze, caused by sea level rise and the hinterland coastal defences that constrain intertidal habitats from adapting to the physical changes.
- 5.7.7 The assessment is limited by the availability of detailed quantified data on the amount and extent of habitat likely to be affected by sea level rise, though this work has been undertaken and provided within the North Solent SMP2, nor as mentioned in **paragraph 7.5.2** that detailed model result data is available to provide a robust indication of the scale of the potential extensive changes that could take place as a result of, for example, the NAI policy. The policies along the Spit interact with policies of the western end of the North Solent SMP2, and there is from those preferred policies been an assessment of adverse effect. As the effects from the HTL policy only arise incombination and given the protective nature of the form and function of the existing Spit the position arises that the compensatory requirement (following examination of alternative solutions and IROPI) are identified within and should refer to those specific within the North Solent SMP2 HRA with those of the North Solent SMP2 HRA.

PDZ 2 – Christchurch Harbour and Central Poole Bay

5.7.8 This PDZ comprises of a Bay enclosed by two shingle spits. Both spits are currently defended, although the eastern spit contains a significantly 'harder' defence than the western spit (Hengistbury Head). The Bay provides shelter to a wide range of intertidal habitats and terrestrial habitats, as well as containing the mouth of the River Avon which is designated. The following designations are present.

Avon Valley SPA and Ramsar Site

Dorset Heathlands SPA and Ramsar Site

River Avon SAC

Dorset Heaths SAC

- 5.7.9 The preferred policy entails HTL at the eastern end of Hengistbury Head to maintain its position and function in controlling sediment transport within and outside the Bay forming a keystone in the defensive function of other defences away from the Bay. In addition, along the west of Hengistbury Head the policy is to undertake Managed Realignment to allow for a more natural development of the spit to the west of Hengistbury Head, whilst within the Bay the policy is No Active Intervention on the inner face of Hengistbury Head.
- 5.7.10 The designated habitats within the PDZ are heathland (primary and supporting habitat) and grassland habitats (supporting habitat) on Hengistbury Head. Without any intervention, the whole of Hengistbury Head would be completely eroded by the end of the 3rd Epoch, resulting in the complete loss of the designated site area in this zone. Consequently, though some 3ha of grassland and heathland habitat would be lost as a result of MR, the majority of the functional site unit would be protected by the HTL policy and resulting and managed coastline.
- 5.7.11 The Sites that are identified as potentially having an adverse effect on their integrity, based on the qualitative data available at this strategy level, are the Dorset Heathlands SPA and Ramsar Site, and the Dorset Heaths SAC. Although NAI would result in adverse effects of greater scale and significance (i.e. the complete loss of the Site unit), the MR of Hengistbury Head (west) would result in loss of habitat and thus have an adverse affect on the SPA, SAC and Ramsar integrity for this unit, but it would be protecting a greater majority of the Sites interests.
- 5.7.12 No adverse affects on the integrity of the Avon Valley SPA and Ramsar or the River Avon SAC are expected due to the location of the policy options, the existing nature of the Site's surroundings, and the fact that there would be no noticeable change to the structure or function of the Site's interests and supporting habitats.
- 5.7.13 The assessment is limited by the availability of detailed quantified data on the amount and extent of habitat likely to be lost as a result of the strategic nature of the MR policy. However, from the photo image at the top of page 4.3.33 of the SMP report, the indicative line anticipated for a retreat option can be seen to cover an area likely to be less than 3ha in area, and one which contains quite extensive paths through the grassland habitat. Consequently, the estimate of habitat affected is likely to be of a lesser magnitude, and this would be further quantified in the next stage of policy development, though the subsequent stages of this appropriate assessment will use this worst case area.

PDZ 3 - Poole Harbour and Associated Coastline

5.7.14 This PDZ comprises a large shallow estuary (Poole Harbour) with two shingle and sand spits that virtually enclose the estuary mouth). The southern arm (Studland peninsula) is designated for its coastal and terrestrial habitats and associated species, whilst the large areas of the intertidal estuary are designated along with large areas of terrestrial and freshwater habitats (heathland, grassland, woodland, and standing water at Little Sea) are also designated. Furthermore, the estuary (Poole Harbour) also supports a large brackish lagoon on one of its islands (Brownsea Island). The estuary and its associated coastline fall within the following designations.

Dorset Heathlands SPA and Ramsar Site

Poole Harbour SPA and Ramsar Site

Dorset Heaths SAC

Dorset Heaths (Purbeck & Wareham) & Studland Dunes SAC

Isle of Portland to Studland Cliffs SAC

- 5.7.15 To introduce the complexity of the PDZ and all the sites within it, there is a large degree of uncertainty in current knowledge of the likely future scenarios for the Harbour and its associated coastline. Consequently, it should be noted that an adverse affect on integrity of most of the sites would occur for any policy options. Consequently, the policies developed are focussed on preserving both the infrastructure and nature conservation aspects within their key zones of significance. Furthermore, as the designated sites either overlap or lie adjacent to each other, coupled with the current unknown nature of the future, policies are seen to either affect one type of designated habitat or alternatively another.
- 5.7.16 The preferred policy entails HTL from Poole Bay moving south and around the northern spit (Sandbanks) into the Harbour and all around the Northern Harbour to Lower Hamworthy to protect significant infrastructure and settlement. HTL then becomes sporadic where it protects key infrastructure such as at Holton Railway Line, Brownsea Quay, South Haven Point, and the Training Bank. Managed Realignment policy for some or all the epochs is identified at Ham Common, Wareham, Lytchett Bay, Brownsea Lagoon, South Haven Point to Redend, and Redend to The Warren, in order to enable controlled natural processes to prevent significant impacts to infrastructure and settlement prior to their adaptation. In some cases, MR is to be undertaken in the 1st epoch to provide a rapid response for natural adaptation of habitats (such as at Brownsea). Some of these MR sites end with or commence with No Active Intervention depending on the infrastructure or interests that may be affected. Large areas of the southern estuary then have the policy of No Active Intervention.

Summary

5.7.17 The intertidal habitats are recorded as being adversely affected by coastal squeeze and this is likely to be exacerbated by continued sea level rise. However, no definitive 'forecast' of how the Harbour and its hydrodynamic processes will respond to sea level rise is available with the current strategic level of this study. Consequently, if the processes allow for the sediment regime that would enable the upper estuary, western estuary and southern estuary areas of the Harbour to respond to sea level rise, the preferred policies enable this adaptation to occur. However, this comes at a price. The land behind the intertidal habitats is also designated for its habitats or species that occur within those habitats and the decision over one or the other has been made. The intention is to enable intertidal habitats to respond and roll landward. This natural process of response will force the terrestrial habitats to also respond, though it is evident that response of terrestrial habitats is likely to be constrained by other land uses. In addition, it is anticipated (though quantitative information is not available) that given the landform of the estuary, there may be much less opportunity for intertidal habitats to adapt to the same quantity as they would be lost, as the land rises fairly sharply in most areas, or where there are current defences (e.g. Wareham Tidal Banks) that prevent adaptation. Consequently, the crux of the adverse affects on integrity are the lack of available adaptation area for intertidal and subsequent terrestrial habitats, thus there would be a net loss with an adverse affect on the integrity of the SPAs, SACs, and Ramsar Sites within the Harbour.

- 5.7.18 One notable point with regard to the argument of HTL policy at Sandbanks and Sandbanks Spit in particular relates to the do nothing (or NAI) scenario. It is expected that in the NAI scenario a breach would occur within the Spit, and it is expected that this is likely to result in significant hydrodynamic changes within and immediately outside Poole Harbour. Significant to the point of not only threatening large areas of infrastructure and commerce, but also to the potential adverse affects on the habitats within the estuary itself.
- 5.7.19 The sites that are identified as having an adverse effect on their integrity based on the qualitative data available at this strategy level are the Poole Harbour SPA and Ramsar Site, the Dorset Heaths SAC, and the Dorset Heaths (Purbeck and Wareham) and Studland Dunes SAC. No adverse affect on the integrity of the Isle of Portland to Studland Cliffs SAC are expected, due to the MR and NAI policies selected for the associated southern coastline outside the Harbour. In relation to the particular *Natura 2000* Sites a summary of the impacts is presented in **Table 5.22**. Table 5.20 identifies the specific locations (using SSSI unit numbers and names) whereby terrestrial habitats are likely to be affected by particular long term changes due to sea level rise and subsequent policies of NAI or MR. Those locations that would be affected by MR are coloured orange.
- 5.7.20 The assessment is limited by the lack of certainty of the response of the Harbour to sea level rise. As the sea level rise scenarios extend beyond 2025, the accuracy of forecasting or predicting the habitat changes significantly reduces in accuracy. Consequently, both more detailed modelling and habitat survey should be undertaken, and the Epoch 1 predicted figures and assessment is considered the most appropriate at this point in time.



Table 5.22 Summary of Significant Adverse Effects on the Key Features of the *Natura 2000* Sites in Poole Harbour

Natura 2000 Site		Summary of Significant Adverse Affects
Dorset Heathlands SPA / Dorset Heaths SAC – Hengistbury Head	1.	The loss of 3ha grassland and heathland would arise in the 1st or 2nd epoch as a result of MR implementation.
Poole Harbour SPA – see Figures 5.10, 5.11, 5.12, 5.25, 5.26, and 5.27 for locations	1.	The loss of supporting intertidal habitats including the saltmarsh zone of 5ha (by 2025), 34ha by 2055, and 310ha (by 2105). This would arise due to coastal squeeze within units of existing and future HTL for count sectors NC2, NC3, NE1, NE3, W2, WC3, WC4, WC5, WC6, and WC7, though some units will also enable adaptation hence the figures do not exactly match those identified in summary tables. However, this habitat loss could be offset by the creation of intertidal and saltmarsh habitat within the locations where MR is proposed as part of the preferred policy, as clarified in Section 6.5 .
	2.	The loss of extreme high intertidal habitat of 3ha (by 2025), 15ha (by 2055), and 4ha by 2105. As with intertidal habitats identified above, these figures are for sites where constraints from HTL occur, whereas for the overall SPA and taking into account the MR policies, these figures are positive by Epoch 3 by 150ha .
	3.	The loss of supporting grazing marsh habitat due to MR of with 353ha (by 2025), 368ha (by 2055), and 383ha (by 2105). The locations of grazing marsh and HAT lines for the various epochs are presented in Figures 5.28 and 5.29. These losses would only be expected to occur in locations where MR policy is proposed (as part of the compensatory aspects to this strategy). However, it is likely that much of this grazing marsh may remain or be offset by the increased area of extreme intertidal habitat (i.e. around HAT), which would increase by up to 37ha by 2025 and by up to 153ha by 2105, and could be used as compensatory habitat for over 1/3 of the grazing marsh habitat compensation requirement.
	4.	The loss of roost (in the worst case) for 98 Avocet (21% of the SPA population or 10% of the national population by 2105) in Holes Bay northwest (Roost 84) and Creekmoor Lake (roost 80). However, it is likely the population would relocate the roost to another alternative location within the Harbour.



Natura 2000 Site		Summary of Significant Adverse Affects
Dorset Heaths SAC - see Figures 5.17, 5.18 and 5.19 for locations	1.	The loss of lowland heathland and Atlantic wet heath qualifying habitat features of 9.3ha .
Dorset Heathlands SPA - see Figures 5.20 and 5.21 for locations	1.	The loss of lowland heathland and Atlantic wet heath supporting habitat of 14.7ha *.
Dorset Heaths (Purbeck and Wareham) and Studland Dunes SAC - see Figures 5.22, 5.23 and 5.24 for locations	1.	The loss of lowland heathland and Atlantic wet heath qualifying habitat features of 8.5ha .

^{*} The area of supporting habitat within the Dorset Heathlands SPA that is lost occurs within the two Dorset Heaths SAC sites, so overall, only a maximum of 18ha of lowland heathland and wet heath is therefore lost as a result of the SMP policies.

Figure 5.28 Grazing Marsh within Future HAT in Lytchett Bay (i.e. expected to be lost due to sea level rise)

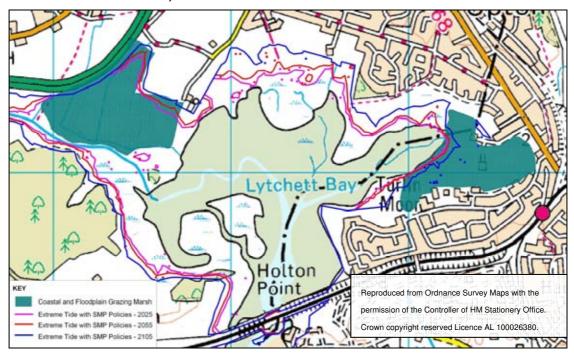
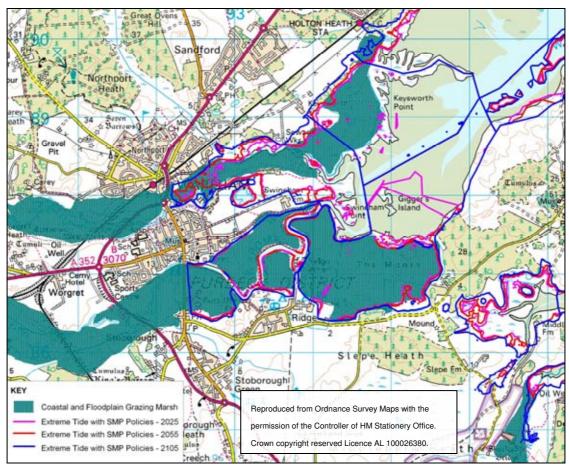


Figure 5.29 Grazing Marsh within Future HAT in Wareham Area (i.e. expected to be lost due to sea level rise)





6 CONSIDERATION OF MITIGATION MEASURES, ALTERNATIVE SOLUTIONS, IROPI, AND COMPENSATORY HABITAT REQUIREMENTS

6.1 Introduction

6.1.1 The consideration of the effects of SMP policy on the features and conservation objectives of the International Sites in this area has been central to policy production in this process. However, due to the conflicting and mutually exclusive requirements of the SMP (in both a socio-economic and environmental context) it has not been possible for the appropriate assessment of The Poole and Christchurch Bays SMP to conclude no adverse effect on the integrity of some of the International Sites. It should be noted, that Natural England have been consulted in development of the SMP through being part of the CSG clarifying aspects related to the policy selection/decision making process and the HRA.

6.2 Consideration of Preventative and Mitigation Measures

- 6.2.1 The consideration of the effects of SMP policy on the features and conservation objectives of the International sites in this area has been central to policy production in this process. However, due to the conflicting and mutually exclusive requirements of the SMP (in both a socio-economic and environmental context) it has not been possible for the appropriate assessment of The Poole and Christchurch Bays SMP to conclude no adverse effect on the integrity of the International Sites even with the incorporation of preventative measures and mitigation measure. Preventative measures and mitigation measures that have been identified and that must be incorporated within the SMP2 Action Plan are:
 - PDZ1 At Hurst Spit, measures within the next (Strategy) stage should consider
 the feasibility of no intervention of the North Point spit to enable the spit to develop
 naturally as well as providing a source of material for recycling of the western spit;
 - PDZ1 In the intertidal habitat to the north of the Hurst Spit (within the *Natura 2000* Sites' boundaries) the next stage (Strategy) should consider possible measures to increase the rate of deposition and thus maintain intertidal mudflat and saltmarsh elevations;
 - 3. PDZ2 Appropriate realignment and realignment works and materials should be used in and around Hengistbury Head to minimise the significance of the impact of MR on any primary habitats within the Sites;
 - 4. PDZ3 Identify and implement appropriate measures to encourage/enhance deposition of sediment within Poole Harbour as a whole, and within the section from the western side of Sandbanks to Luscombe Valley encourage saltmarsh development and other intertidal habitat development;
 - PDZ3 Following closure of oil wells (such as Wytch Heath, Rempstone Heath, and Green Island) in the future (e.g. 2nd or 3rd epoch), managed realignment could then be implemented at any localised HTL locations;
 - 6. PDZ3 Ensure that any structures to prevent tidal flooding from the rivers (Frome, Piddle, and Sherford) provide appropriate and successful design features to ensure no obstruction to the migration of aquatic species, and minimal obstruction to the movement of sediment:

- 7. PDZ3 Managed realignment design should ensure that the *Cladium* fen lies inland of realigned defences (The Moors SSSI unit 8 and Wareham Meadows SSSI unit 8) in order to maintain the habitat:
- 8. PDZ4 Ensure that any consideration of HTL actions preclude works within the Site footprint on Peveril Point; and
- 9. All PDZs Ensure MR actions take place prior to the loss of designated habitats.

6.3 Test of Alternative Solutions

6.3.1 The test for no alternative solutions must be based on the alternatives that may be more expensive, more difficult to achieve, less convenient to implement, but must not be unrealistic alternatives that are clearly not technically feasible. The policy development stage examined the four potential strategic policy options with respect to coastal management measures. Consequently, the four PDZs are examined with respect to the effects of the alternative options on each of the *Natura 2000* Sites where a significant adverse effect on their integrity is identified through the assessment reported in **Section 5.7**. Subsequently, an examination of the alternative options for each PDZ has been undertaken for each Site that would be affected by the PDZ policy.

PDZ 1 - Solent and Southampton Water SPA

6.3.2 The alternative solutions available to the SMP policy at and along Hurst Spit (preferred policy is **Hold The Line**) are the three other strategic policy options, namely: No Active Intervention, Managed Realignment, and Advance the Line. **Table 6.1** highlights the key effects of each policy option.

Table 6.1 Examination of Alternative Solutions for the Effects of PDZ1 on the Solent and Southampton Water SPA

Policy	Physical Effects	Effects on Natura 2000 Sites
ATL	Likely and unwelcome unknown geomorphological effects on the Christchurch Bay and the Western Solent. Potential alteration to estuary features within the Western Solent.	Due to the potential wide-ranging effects of ATL policy, and given the limited information in terms of likely physical changes it is necessary to adopt a precautionary approach, and on the assumption that a significant alteration to hydrodynamic processes would have further reaching effects than maintaining for example the current policy of HTL whose likely future effects are more clearly understood.
HTL	In the future it is expected that continued erosion pressure would occur along the frontage of Hurst Spit. However, HTL coastal management measures will maintain the control and protection function of the Spit and prevent future breaches occurring, which would result in significant erosion and scour within the Keyhaven intertidal area.	HTL would not directly or in any noticeable manner result in any physical effects to supporting habitats. However, in-combination with sea level rise the HTL could result in coastal squeeze of intertidal mudflats and saltmarsh within the West Solent SPA to the north. However, the Spit also provides protection and shelter to the intertidal habitats to the north, and prevents breach of the Spit which would have far reaching and likely significant losses of supporting intertidal habitats.

Policy	Physical Effects	Effects on Natura 2000 Sites
MR	Realignment of the Spit would result in	MR would result in immediate loss and
	physical movement of the Spit to the	displacement of supporting intertidal habitats to
	north and increase the pressure of	the north, as well as accelerate and exacerbate
	coastal squeeze on the intertidal	the in-combination effect of coastal squeeze on
	sediments to the north.	the intertidal habitats.
NAI	NAI would leave natural processes to	The breach of the Spit would result in large
	dominate which would result in the	scale and significant loss of supporting intertidal
	eventual breach of the Spit, which	habitats at a much greater rate than any other
	would result in extensive erosion of the	option.
	intertidal sediments to the north.	

6.3.3 From the strategic examination of the policy options presented in **Table 6.1** it is apparent that the HTL option is the only option that prevents potentially significant changes to hydrodynamic processes and thence effects on the supporting habitats, whilst also avoiding any exacerbation of habitat loss from coastal squeeze. HTL is therefore considered to be the most appropriate solution that minimises adverse effects on the Site.

PDZ 1 - Solent Maritime SAC

6.3.4 The alternative solutions available to the SMP policy at and along Hurst Spit (preferred policy is **Hold The Line**) are the three other strategic policy options, namely: No Active Intervention, Managed Realignment, and Advance the Line. **Table 6.2** highlights the key effects of each policy option.

Table 6.2 Examination of Alternative Solutions for the Effects of PDZ1 on the Solent Maritime SAC

Policy	Physical Effects	Effects on Natura 2000 Sites
ATL	Likely and unwelcome unknown geomorphological effects on the Christchurch Bay and the Western Solent. Potential alteration to hydrodynamic processes within the Western Solent.	Due to the potential wide-ranging effects of ATL policy, and given the limited information in terms of likely physical changes it is necessary to adopt a precautionary approach, and on the assumption that a significant alteration to hydrodynamic processes would have further reaching effects than maintaining for example the current policy of HTL whose likely future effects are more clearly understood. This would be likely to lead to disturbance to the physical characteristics of the estuarine and coastal processes and result in the loss of mudflat and saltmarsh qualifying features.
HTL	In the future it is expected that continued erosion pressure would occur along the frontage of Hurst Spit. However, HTL coastal management measures will maintain the control and protection function of the Spit and prevent future breaches occurring, which would result in significant erosion and scour within the Keyhaven intertidal area and estuary to the north.	HTL would not directly or in any noticeable manner result in any physical effects to qualifying features. However, in-combination with sea level rise the HTL could result in coastal squeeze of intertidal mudflats and saltmarsh qualifying features within the Site. However, the Spit also provides protection and shelter to the intertidal habitats to the north, and prevents breach of the Spit which would have far reaching and likely significant losses of qualifying intertidal and subtidal habitats.

Policy	Physical Effects	Effects on Natura 2000 Sites
MR	Realignment of the Spit would result in	MR would result in immediate loss and
	physical movement of the Spit to the	displacement of qualifying intertidal habitats to
	north and increase the pressure of	the north, as well as accelerate and exacerbate
	coastal squeeze on the intertidal	the in-combination effect of coastal squeeze on
	sediments to the north.	the qualifying features.
NAI	NAI would leave natural processes to	The breach of the Spit would result in large
	dominate which would result in the	scale and significant loss of qualifying intertidal
	eventual breach of the Spit, which	and subtidal habitats at a much greater rate
	would result in extensive erosion of the	than any other option.
	intertidal sediments to the north.	

6.3.5 From the strategic examination of the policy options presented in **Table 6.2** it is apparent that the HTL option is the only option that prevents potentially significant changes to hydrodynamic processes and thence effects on qualifying intertidal and subtidal habitats, whilst also avoiding any exacerbation of habitat loss from coastal squeeze. HTL is therefore considered to be the most appropriate solution that minimises adverse effects on the Site.

PDZ 2 - Dorset Heathlands SPA

6.3.6 The alternative solutions available to the SMP policy at and along Hengistbury Head (preferred policy is **Hold The Line** at Long Groyne and west, and **Managed Realignment** to the east of the Long Groyne) are the two other strategic policy options, namely: No Active Intervention and Advance the Line. **Table 6.3** highlights the key effects of each policy option.

Table 6.3 Examination of Alternative Solutions for the Effects of PDZ2 on the Dorset Heathlands SPA

Policy	Physical Effects	Effects on Natura 2000 Sites
ATL	There would be significant	This policy would prevent any loss of
	geomorphological effects associated with	supporting habitats, though significant
	advancing the line; not least the extremely	disturbance to natural processes would occur.
	large scale of physical works that would	
	be required, which could have far	
	reaching consequences to the natural	
	processes along Poole Bay and	
	particularly Christchurch Bay and	
	Christchurch Harbour.	
HTL	This policy would prevent erosion	HTL for the entire frontage of the Site would
	occurring within the Site boundary.	prevent any loss of supporting habitats;
	However, eastwards of Long Groyne, this	however disturbance to natural processes
	policy would have a significant effect on	would occur to the east of the Site.
	natural processes along to Mudeford Spit.	
MR	MR would result in direct loss of terrestrial	MR would result in immediate loss and
	land within the Site boundary, but retain a	displacement of supporting habitats along the
	more natural coastal system.	southern edge of the Site.
NAI	NAI would leave natural processes to	NAI would result in a significantly greater area
	dominate which would result in the	of loss of supporting habitat than any other
	eventual breach of the Spit, as well as	policy, with consequences that may
	significant erosion of terrestrial land within	unpredictable at this strategic level.
	the Site boundary.	



6.3.7 From the strategic examination of the policy options presented in **Table 6.3** it is apparent that although ATL and HTL policies would prevent any loss of the Site's supporting habitats, though with possibly significant to severe disturbance to the natural coastal processes of the surrounding and wider area, and with the potential for unpredictable consequences. MR would reduce the loss of supporting habitat within the Site that would arise from NAI. However, given the nature of the geomorphological processes, it is understood that HTL east of Long Groyne would not result in deleterious effects to natural processes that would occur if this policy was implemented across the Site. Consequently, the preferred policy is a mixed HTL/MR policy across the Site frontage, which balances the protection of the Site and its supporting habitats, whilst not adversely effecting coastal processes.

PDZ 2 - Dorset Heaths SAC

6.3.8 The alternative solutions available to the SMP policy at and along Hengistbury Head (preferred policy is **Hold The Line** at Long Groyne and west, and **Managed Realignment** to the east of the Long Groyne) are the two other strategic policy options, namely: No Active Intervention and Advance the Line. **Table 6.4** highlights the key effects of each policy option.

Table 6.4 Examination of Alternative Solutions for the Effects of PDZ2 on the Dorset Heaths SAC

Policy	Physical Effects	Effects on Natura 2000 Sites
ATL	There would be significant geomorphological effects associated with advancing the line; not least the extremely large scale of physical works that would be required, which could have far reaching consequences to the natural processes along Poole Bay and particularly Christchurch Bay and Christchurch Harbour.	This policy would prevent any loss of qualifying habitat features, though significant disturbance to natural processes would occur.
HTL	This policy would prevent erosion occurring within the Site boundary. However, eastwards of Long Groyne, this policy would have a significant effect on natural processes along to Mudeford Spit.	HTL for the entire frontage of the Site would prevent any loss of qualifying habitat features; however disturbance to natural processes would occur to the east of the Site.
MR	MR would result in direct loss of terrestrial land within the Site boundary, but retain a more natural coastal system.	MR would result in immediate loss and displacement of qualifying habitat features along the frontage of the Site.
NAI	NAI would leave natural processes to dominate which would result in the eventual breach of the Spit, as well as significant erosion of terrestrial land within the Site boundary.	NAI would result in a significantly greater area of loss of qualifying habitat features than any other policy, with consequences that may unpredictable at this strategic level.

6.3.9 From the strategic examination of the policy options presented in **Table 6.4** it is apparent that although ATL and HTL policies would prevent any loss of the Site's qualifying habitat features, though with possibly significant to severe disturbance to the natural coastal processes of the surrounding and wider area, and with the potential for

unpredictable consequences. MR would reduce the loss of qualifying habitat features within the Site that would arise from NAI. However, given the nature of the geomorphological processes, it is understood that HTL east of Long Groyne would not result in deleterious effects to natural processes that would occur if this policy was implemented across the Site. Consequently, the preferred policy is a mixed HTL/MR policy across the Site frontage, which balances the protection of the Site and its qualifying habitat features, whilst not adversely effecting coastal processes.

PDZ 3 - Poole Harbour SPA

6.3.10 The alternative solutions available to the SMP policy within Poole Harbour (preferred policy is **Hold The Line** generally in the northern Harbour, **Managed Realignment** in the western Harbour, and **No Active Intervention** in the southern Harbour) is to have one overall policy which could also be Advance the Line, or an alteration to the combination of the policies within specific PDZ units. **Table 6.5** highlights the key effects of each policy option.

Table 6.5 Examination of Alternative Solutions for the Effects of PDZ3 on Poole Harbour SPA

Policy	Physical Effects	Effects on Natura 2000 Sites
ATL	Would significantly increase pressure on intertidal habitats as a result of sea level rise, resulting in reduction of habitats.	Supporting habitats for feeding and roosting would be lost in the short, medium, and long term. Short-term permanent loss would arise, whilst medium to long term loss of supporting habitats (mudflats, saltmarsh, sandflats, etc) would be lost due to coastal squeeze resulting from the constraint of an advanced defence line and sea level rise.
HTL	HTL would create pressure on intertidal habitats by preventing any migration with sea level rise, hence resulting in losses due to coastal squeeze.	Losses of supporting habitats (mudflats, saltmarsh, etc) would arise due to coastal squeeze resulting from the constraint of maintaining the current defence and sea level rise.
MR	Realignment would provide available space for intertidal habitats to migrate with sea level rise. Realignment would result in the loss of terrestrial and freshwater/brackish habitats. MR would also result in the loss of significant social and economic infrastructure and assets specifically in the northern shoreline of the Harbour, with the exception of most areas within Holes Bay and Lytchett Bay.	MR would result in immediate loss and displacement of supporting terrestrial and freshwater/brackish habitats, but would provide space for migrating intertidal habitats that are a supporting habitat for the Site
NAI	NAI would leave natural processes to dominate which would result in the encroachment of rising sea levels and subsequently intertidal habitats in terrestrial lands, including areas of significant social and economic infrastructure and assets specifically in the northern shoreline of the Harbour, with the exception of most areas within Holes Bay and Lytchett Bay.	NAI would provide greater space for intertidal habitats to migrate though at the loss of other supporting habitats, and also potentially resulting in pollution risk (e.g. the landfill at Holton) that could in the long term have a significant deleterious affect on the wildlife and primary qualifying species for which the Site is designated.

- 6.3.11 From the strategic examination of the policy options presented in **Table 6.5** it is apparent that a complete NAI policy would have significant effects on nationally important economic and social infrastructure. The combined approach of the preferred HTL/MR/NAI policy provides a balance whereby the Site is allowed or even helped (with MR) to migrate its intertidal habitats in line with sea level rise, whilst maintaining the economic infrastructure and assets essential for the region.
- 6.3.12 The most appropriate policy for what is intended at Brownsea Lagoon appears to be NAI:
 - HTL would imply significantly defending the site which is ultimately unsustainable, and in itself could result in coastal squeeze to features of the Poole Harbour SPA;
 - MR implies an intention to move the shoreline landward which would not be the
 best policy for the SPA in order to mitigate any adverse effect, given the interests
 within the lagoon, and this does not take into account the potential natural
 processes that may maintain the lagoon's interest features;
 - ATL would not achieve any sensible objective as it would encroach within the intertidal and subtidal habitats of Poole Harbour, including areas of the SPA;
 - NAI therefore appears to be best available policy given that it provides the flexibility for natural processes to take place to prevent any coastal squeeze impacts on SPA features outside the lagoon. In addition, given the lack of understanding of what the physical response of the lagoon embankments and walls there remains the possibility that many of the supporting lagoon habitats that are of interest to the species for which the lagoon is of significant interest, could respond sufficiently that no alteration to the interest species populations may occur. It must be noted however, that no definite statement that the features within the lagoon will remain can be made at this strategic level.
- 6.3.13 Brownsea Lagoon is part of the Poole Harbour SPA and supports a significant proportion of the feeding and roosting bird interest of Poole Harbour SPA (including a majority of the avocet population) and is the only known site for the breeding common tern interest). The Habitats Directive Member (Article 6(2)) states that appropriate steps must be taken to avoid the deterioration of natural habitats and the habitats of species for which the areas have been designated. A plan is therefore needed prior to the next stage of policy implementation to ensure that the function that the Lagoon provides to the bird interest of the SPA continues to exist within the SPA. It is likely that such a plan will be determined during ongoing monitoring of the lagoon habitats and physical nature, along with future study into the dynamics of the lagoon as a response to sea level rise.

PDZ 3 - Dorset Heaths SAC

6.3.14 The alternative solutions available to the SMP policy within Poole Harbour (preferred policy is **Hold The Line** generally in the northern Harbour, **Managed Realignment** in the western Harbour, and **No Active Intervention** in the southern Harbour) is to have one overall policy which could also be Advance the Line, or an alteration to the combination of the policies within specific PDZ units. **Table 6.6** highlights the key effects of each policy option.

Table 6.6 Examination of Alternative Solutions for the Effects of PDZ2 on the Dorset Heaths SAC

Policy	Physical Effects	Effects on Natura 2000 Sites
ATL	Advancing the line would protect the Site's qualifying habitat features from sea level rise, although this cannot be guaranteed as potential groundwater affects could be experienced, which would result in increased salinity in the groundwater.	It is likely that most qualifying habitat features would be protected, but at the expense of the Poole Harbour SPAs supporting habitats and subsequently its primary qualifying species populations, as a result of exacerbated coastal squeeze.
HTL	Holding the line would protect the Site's qualifying habitat features from sea level rise, although this cannot be guaranteed as potential groundwater affects could be experienced, which would result in increased salinity in the groundwater.	It is likely that most qualifying habitat features would be protected, but at the expense of the Poole Harbour SPAs supporting habitats and subsequently its primary qualifying species populations, as a result of coastal squeeze.
MR	MR would result in direct loss of land behind the existing defence lines, and result in tidal inundation which would alter the habitat.	MR would result in immediate loss of qualifying habitat features (such as heaths, mires, fens, etc), but would be in balance (in the long term) with the migration of the intertidal primary qualifying habitat features of the Poole Harbour SPA.
NAI	NAI would result in the gradual loss of land from encroaching tides due to sea level rise, which would alter the terrestrial habitats.	NAI would result in the gradual loss of qualifying habitat features (such as heaths, mires, fens, etc) as a result of the increasing in sea levels, but this would be in balance (in the long term) with the migration of the intertidal primary qualifying habitat features of the Poole Harbour SPA.

6.3.15 From the strategic examination of the policy options presented in **Table 6.6** it is apparent that the predominant objective is to ensure that there are no adverse effects on the Poole Harbour SPA that would arise as a result of coastal squeeze, as well as ensuring wherever possible that natural processes dominate the Harbour. Consequently, the mix of NAI or MR is appropriate where either no current coastal defence exist, or where a lack of management could in the long term result in significant loss or damage to the social or economic infrastructure. However, some features are identified that should be protected from loss due to their rarity and the low probability of success for re-creating them elsewhere, namely Cladium fen habitat.

PDZ 3 - Dorset Heathlands SPA

6.3.16 The alternative solutions available to the SMP policy within Poole Harbour (preferred policy is **Hold The Line** generally in the northern Harbour, **Managed Realignment** in the western Harbour, and **No Active Intervention** in the southern Harbour) is to have one overall policy which could also be Advance the Line, or an alteration to the combination of the policies within specific PDZ units. **Table 6.7** highlights the key effects of each policy option.

Table 6.7 Examination of Alternative Solutions for the Effects of PDZ2 on the Dorset Heathlands SPA

Policy	Physical Effects	Effects on Natura 2000 Sites
ATL	Advancing the line would protect the Site's supporting habitat features from sea level rise, although this cannot be guaranteed as potential groundwater affects could be experienced, which would result in increased salinity in the groundwater.	It is likely that most supporting habitat features would be protected, but at the expense of the Poole Harbour SPAs supporting habitats and subsequently its primary qualifying species populations, as a result of exacerbated coastal squeeze.
HTL	Holding the line would protect the Site's supporting habitat features from sea level rise, although this cannot be guaranteed as potential groundwater affects could be experienced, which would result in increased salinity in the groundwater.	It is likely that most supporting habitat features would be protected, but at the expense of the Poole Harbour SPAs supporting habitats and subsequently its primary qualifying species populations, as a result of coastal squeeze.
MR	MR would result in direct loss of land behind the existing defence lines, and result in tidal inundation which would alter the habitat.	MR would result in immediate loss of supporting habitats (heathland, woodland, mires, fens, etc), but would be in balance (in the long term) with the migration of the intertidal primary qualifying habitat features of the Poole Harbour SPA.
NAI	NAI would result in the gradual loss of land from encroaching tides due to sea level rise, which would alter the terrestrial habitats.	NAI would result in the gradual loss of supporting habitats (heathland, woodland, mires, fens, etc) as a result of the increasing in sea levels, but this would be in balance (in the long term) with the migration of the intertidal primary qualifying habitat features of the Poole Harbour SPA.

6.3.17 From the strategic examination of the policy options presented in **Table 6.7** it is apparent that the predominant objective is to ensure that there are no adverse effects on the Poole Harbour SPA that would arise as a result of coastal squeeze, as well as ensuring wherever possible that natural processes dominate the Harbour. Consequently, the mix of NAI or MR is appropriate where either no current coastal defence exist, or where a lack of management could in the long term result in significant loss or damage to the social or economic infrastructure. However, some features are identified that should be protected from loss due to their rarity and the low probability of success for re-creating them elsewhere, namely *Cladium* fen habitat.

PDZ 3 – Dorset Heaths (Purbeck and Wareham) and Studland Dunes SAC

6.3.18 The alternative solutions available to the SMP policy within Poole Harbour (preferred policy is **Hold The Line** generally in the northern Harbour, **Managed Realignment** in the western Harbour, and **No Active Intervention** in the southern Harbour) is to have one overall policy which could also be Advance the Line, or an alteration to the combination of the policies within specific PDZ units. **Table 6.8** highlights the key effects of each policy option.

Table 6.8 Examination of Alternative Solutions for the Effects of PDZ2 on the Dorset Heaths SAC

Policy	Physical Effects	Effects on Natura 2000 Sites
ATL	Advancing the line would protect the Site's qualifying habitat features from sea level rise, although this cannot be guaranteed as potential groundwater affects could be experienced, which would result in increased salinity in the groundwater.	It is likely that most qualifying habitat features would be protected, but at the expense of the Poole Harbour SPAs supporting habitats and subsequently its primary qualifying species populations, as a result of exacerbated coastal squeeze.
HTL	Holding the line would protect the Site's qualifying habitat features from sea level rise, although this cannot be guaranteed as potential groundwater affects could be experienced, which would result in increased salinity in the groundwater.	It is likely that most qualifying habitat features would be protected, but at the expense of the Poole Harbour SPAs supporting habitats and subsequently its primary qualifying species populations, as a result of coastal squeeze.
MR	MR would result in direct loss of land behind the existing defence lines, and result in tidal inundation which would alter the terrestrial habitats.	MR would result in immediate loss of qualifying habitat features habitats (such as heaths, mires, fens, etc), but would be in balance (in the long term) with the migration of the intertidal primary qualifying habitat features of the Poole Harbour SPA.
NAI	MR would result in the gradual loss of land from encroaching tides due to sea level rise, which would alter the terrestrial habitats.	NAI would result in the gradual loss of qualifying habitat features habitats (such as heaths, mires, fens, etc) as a result of the increasing in sea levels, but this would be in balance (in the long term) with the migration of the intertidal primary qualifying habitat features of the Poole Harbour SPA.

6.3.2 From the strategic examination of the policy options presented in **Table 6.8** it is apparent that the predominant objective is to ensure that there are no adverse effects on the Poole Harbour SPA that would arise as a result of coastal squeeze, as well as ensuring wherever possible that natural processes dominate the Harbour. Consequently, the NAI along the Site's frontage is appropriate where no current coastal defence exist.

6.4 Test of Imperative Reasons of Overriding Public Interest (IROPI)

- 6.4.1 Following the test for alternative solutions, the policies require approval for reasons of imperative overriding public interest. Acceptable reasons for IROPI are:
 - Imperative, that it is both necessary and urgent;
 - Overriding, that it is of such a scale of importance that the reasons outweigh the scale of harm to the integrity of the site(s);
 - Of public, not private interest; and
 - Of a social or economic nature unless a priority habitat or species may be affected.



6.4.2 These reasons may relate to economic or social considerations, reasons of human health, reasons of public safety, or beneficial consequences of primary importance for the environment.

PDZ 1 - Solent and Southampton Water SPA / Solent Maritime SAC

- 6.4.3 The Solent and Southampton Water SPA and the Solent Maritime SAC have been examined together in the IROPI case due to the overlapping Site boundaries, and the fact that the nature of the policy selection on them is the same.
- 6.4.4 As identified in **Section 6.3** the preferred policy of HTL provides protection to the structure of Hurst Spit, which acts as a barrier to waves and tides from the southwest, which if left unhindered would breach the Spit and commence erosion of wide swathes of the intertidal habitats (that are qualifying features or supporting habitat to qualifying species) for both Sites.
- In order to provide at the very least sufficient time for planned programmes of habitat creation identified in the North Solent SMP2 as a necessity to offset losses resulting from coastal squeeze of these habitats within these two Sites. It is likely that these programmes will take place over considerable timescales, and therefore it is necessary for the HTL policy to be implemented.
- 6.4.6 The scale of the importance is clear, widespread loss of habitats would occur in a short period of time if a breach occurred, whilst the in-combination loss of habitats resulting from coastal squeeze (predominantly influenced by the North Solent coastline and policies along various frontages) would be a 'creeping' and barely noticeable occurrence in the short term. The size of the area protected is thus larger than the size of the area that would indirectly be affected over a very long timescale.
- The protection of the Site interests is in the public (national) interest, and does not necessarily protect any specific private interest except as an indirect consequence.
- 6.4.8 The nature of the reason for the policy selection is to maintain the shelter afforded by the Spit to the settlement of Keyhaven as well as the designated intertidal areas to the north (and within the SAC), and is considered to be of primary importance for the environment given the large scale adverse effects it prevents.

PDZ 2 - Dorset Heathlands SPA / Dorset Heaths SAC

- 6.4.9 The Dorset Heathlands SPA and the Dorset Heaths SAC have been examined together in the IROPI case due to the overlapping Site boundaries, and the fact that the nature of the policy selection on them is the same.
- As identified in **Section 6.3** the preferred policy of HTL/MR provides protection to Hengistbury Head (upon which the Site is located) whilst minimising the loss of the Sites' features through MR along the eastern edge. Without HTL and protection afforded by it and the controlled loss of Sites' interests from MR, the Sites' would experience greater loss if completely unmanaged, or result in significant disruption to wide scale coastal processes.
- 6.4.11 HTL is required immediately to prevent any loss occurring to the southern frontage, whilst MR would be necessary to minimise loss and reduce the disturbance to coastal processes with potential far reaching effects immediately. Loss could be occurring now; hence it is necessary that HTL is maintained now.

- 6.4.12 The scale of the importance is clear; a larger area of qualifying and supporting habitats would be lost without these policies, particularly the HTL elements, than with other options. Hence the limited loss of partial MR would be less than NAI or overall MR of the Sites' interests.
- 6.4.13 The protection of the Site interests is in the public (national) interest, and does not necessarily protect any specific private interest except as an indirect consequence.
- 6.4.14 The nature of the reason for the policy selection is to maintain the shelter afforded by the Spit to the settlement of Keyhaven as well as the designated site interests (i.e. the intertidal areas) to the north (and within the SPA), and is considered to be of primary importance for the environment given the large scale adverse effects it prevents.

PDZ 3 - Poole Harbour SPA

- 6.4.15 As identified in **Section 6.3** the preferred policy of HTL/MR/NAI provides protection to social and economic infrastructure whilst providing controlled movement of the defence line (MR) in locations where NAI would in the long term result in the loss of further social and economic infrastructure, coupled with allowing the shoreline to respond to sea level rise and intertidal habitats to migrate.
- 6.4.16 HTL is required immediately to prevent any loss occurring to the social and economic infrastructure in the Poole area and outlying areas. However, in addition, protecting Sandbanks will prevent a potentially catastrophic breaching, which could have severe effects on the Harbour as a whole. MR is necessary to provide the space for intertidal habitats to migrate, otherwise there would be a loss of these supporting habitats within the Site and is therefore necessary and in some locations may be urgent.
- 6.4.17 The scale of the importance is clear; given the very large urban and social infrastructure HTL is necessary along some frontages, whilst MR would result in the loss of some supporting grazing marsh, the loss to intertidal habitats within the Site would have a more direct and significant effect.
- 6.4.18 The protection of the economic and social infrastructure is in the nations interest, such as significant urban, economic and social centre is essential to the national economy within the region, though there would be many private interests that would be protected this is an indirect consequence.
- The nature of the reason for the policy selection is to ensure the long term conservation objectives of the SPA, but also to protect nationally important social and economic infrastructure. This infrastructure and assets include the settlement of Poole, including the core of the town, harbour area and Hamworthy and the associated local communities of Lower Parkstone, Lilliput and Canford Cliffs, running to the east to the open coast, with the development of Sandbanks along the shoreline. Linked to these are Poole Harbour which contains a conventional freight and Ro-Ro Ferry Port, and the main A35 runs to the north of the Harbour area with the A350 running down to Poole centre and the A351 running through to Wareham. In addition a national rail link runs through from Bournemouth to Poole, after Poole it cuts across the northern bays and along the western edge of the Harbour through to Weymouth. Finally, there are also schools at Turlin Moor, Lower Hamworthy and Poole along with two sewage works and several pump stations, and several electricity sub stations are situated in the Poole Quays area of Lower Hamworthy.

PDZ 3 – Dorset Heathlands SPA / Dorset Heaths SAC / Dorset Heaths (Purbeck and Wareham) and Studland Dunes SAC

- 6.4.20 The Dorset Heathlands SPA, Dorset Heaths SAC, and Dorset Heaths (Purbeck and Wareham) and Studland Dunes SAC have been examined together in the IROPI case due to the overlapping Site boundaries, and the fact that the nature of the policy selection on them is the same.
- As identified in **Section 6.3** and in paragraphs 6.4.15 to 6.4.19 above, the combination of HTL/MR/NAI for specific units within Poole Harbour has been selected to provide protection to social and economic infrastructure whilst providing controlled movement of the defence line (MR) in locations where NAI would in the long term result in the loss of further social and economic infrastructure, coupled with allowing the shoreline to respond to sea level rise and supporting intertidal habitats of the Poole Harbour SPA to migrate naturally in many places but with MR where necessary. For the majority of the frontage to these Sites, the potential effects arise from MR, whereas the NAI policy is a natural response to climate change.
- 6.4.22 HTL is required immediately to prevent any loss occurring to the social and economic infrastructure in the Poole area and outlying areas. However, in addition, protecting Sandbanks will prevent a potentially catastrophic breaching, which could have severe effects on the Harbour as a whole. MR is necessary to provide the space for intertidal habitats to migrate, otherwise there would be a loss of these supporting habitats within the Site and is therefore necessary and in some locations may be urgent.
- 6.4.23 The scale of the importance is clear; given the very large urban and social infrastructure HTL is necessary along some frontages, whilst MR would result in the loss of some qualifying habitat features as well as supporting habitats, the loss to intertidal habitats within the Site would have a more direct and significant effect.
- 6.4.24 The protection of the economic and social infrastructure is in the nations interest, such as significant urban, economic and social centre is essential to the national economy within the region, though there would be many private interests that would be protected this is an indirect consequence. Maintaining the extent and character of intertidal supporting habitats, noting that wetlands are of special interest, is also of national public interest.
- The nature of the reason for the policy selection is to ensure the long term conservation objectives of the SPA, but also to protect nationally important social and economic infrastructure particularly in the northern Harbour. This infrastructure and assets include the settlement of Poole, including the core of the town, harbour area and Hamworthy and the associated local communities of Lower Parkstone, Lilliput and Canford Cliffs, running to the east to the open coast, with the development of Sandbanks along the shoreline. Linked to these are Poole Harbour, which contains a conventional freight and Ro-Ro Ferry Port, and the main A35 runs to the north of the Harbour area with the A350 running down to Poole centre and the A351 running through to Wareham. In addition a national rail link runs through from Bournemouth to Poole, after Poole it cuts across the northern bays and along the western edge of the Harbour through to Weymouth. Finally, there are also schools at Turlin Moor, Lower Hamworthy and Poole along with two sewage works and several pump stations, and several electricity sub stations are situated in the Poole Quays area of Lower Hamworthy.

6.5 Compensatory Habitat Requirements

- Subject to approval from Natural England to the test for IROPI, where habitats and species are being adversely affected, compensatory measures must be identified to ensure the ecological coherence of the *Natura 2000* network is protected. For the current level of information available to this strategy, quantitative data is not yet considered to be wholly accurate to accord the appropriate quantities to the year 2105, and ongoing work on Poole Harbour Strategy and subsequent revisions to the SMP will continue to improve the accuracy of both quantities and effects. Based on the summary of features affected in **Table 6.22**, broad brush compensatory habitat requirements have been identified, as necessary at this strategic level. As mentioned in a number of places in this document, these values are considered to be the worst case or 'conservative' quantities and types that are likely to reduce as time and further studies are completed. Consequently, the compensatory habitat requirements will themselves be conservative and these will be monitored and revised as necessary during subsequent SMP reviews.
- Table 6.9 presents the compensatory habitat targets for this SMP, base on the detailed assessments Appendices K and L, based on the work carried out and presented in Sections 5 and 6 of this HRA, alongside GIS extraction of Site and location specific data from the topographic and bathymetric model created for the SMP2. The compensatory habitat requirement is that which will be required with the preferred policies being implemented, and many of them would be expected to be created from the Managed Realignment policies and locations.

Table 6.9 Summary of Predicted Compensatory Habitat Requirements

Sites Habitats		Area to be compensated (ha)			
Siles	nabitats	Epoch 1	Epoch 2	Epoch 3	Total
Hengistbury Head (Dorset Heathlands SPA and Dorset Heaths SAC)	Lowland heathland and grassland	3	0	0	3
	Intertidal zone (including saltmarsh zone) between MHWS-MLWS	5	29	271	310
Poole Harbour SPA and Ramsar	Extreme tide zone (HAT- LAT) excluding intertidal zone (MHWS-MLWS)	3	12	0	15
	Grazing marsh	352	1	1	353
Dorset Heathlands SPA	Dry heathland and Atlantic wet heath	1*	3*	11*	15*
Dorset Heaths SAC	Dry heathland and Atlantic wet heath	0.5	2	7	9.5
Dorset Heaths (Purbeck and Wareham) and Studland Dunes SAC	Dry heathland and Atlantic wet heath	0.5	2	6	8.5

^{*} This habitat falls within the habitat area created for the SAC sites below due to overlap of the sites, therefore the SPA habitat will already be compensated for.

- 6.5.3 In relation to the compensatory habitat requirements for the effects of policy in PDZ1 on Solent and Southampton Water SPA and Solent Maritime SAC, no quantification is identified within this SMP given the majority of the contribution arising from the policies of the North Solent SMP. Furthermore, the quantified impact within the North Solent SMP includes any element arising from the HTL of Hurst Spit. Consequently, the compensatory habitat identified and agreed in the North Solent SMP, which is to be implemented through the Environment Agency's Regional Habitat Creation Programme (RHCP), effectively completes the compensatory habitat requirement that may arise as a result of the policy of the Poole and Christchurch Bays SMP within or along Hurst Spit.
- 6.5.4 The determination of which habitats will be lost and which would develop landward of their existing locations as a result of sea level rise does not (and at this stage and with the current level of information available cannot) take into account a number of sitespecific factors. These factors are: the future extent and continuation of Spartina dieback and the subsequent colonisation and communities, future erosion and accretion, and success of managed realignment schemes. Consequently, it is advised that continued monitoring of habitats and topography/bathymetry be undertaken at constant intervals to continue to inform the future SMPs and effects on the Natura 2000 Sites. This monitoring should also entail co-ordination and focussed monitoring of roosting bird sites, nesting sites, as well as collation of the ongoing WeBS counts. In addition, it cannot be ascertained at this stage whether existing roost sites, nesting sites, or feeding areas that are affected as a result of sea level rise and coastal squeeze would remain local to adapting habitat or whether bird species will move to another location within Poole Harbour or even outside Poole Harbour. Consequently, the assumption underlying this assessment and identification of compensatory habitat is that provided a greater area of specific habitat zones is retained throughout the Poole Harbour system, then the majority of roosting, feeding and breeding behaviour will remain unchanged in total across Poole Harbour. However, it is accepted that there are a number of breeding, roosting or feeding sites that are unique within Poole Harbour and that these will require specific work to compensate. These are described below.
- Detailed studies and monitoring of the various managed realignment proposals in the near and medium term future will provide more detailed predictions of the benefits that will arise from these policies, and long term monitoring will confirm this. **Table 6.10** provides an indication of the maximum area of potential managed realignment within Poole Harbour, with a potential area of **442ha** of land that could be suitable for managed realignment or habitat creation, and it is recommended that detailed strategy investigations consider all of these sites in order to determine their appropriateness and suitability. Within the measured areas used within this assessment, the MR policies and locations were identified as providing **415ha** (in Epoch 1), **583ha** (in Epoch 2), and **447ha** (in Epoch 3). These values are mirrored in the potential compensatory habitat requirements below, and these are expected to arise from the MR policies within Lytchett Bay, and from Keysworth to Wareham and The Moors.



Table 6.10 Summary of Predicted Compensatory Habitat Requirements

Potential Managed Realignment Sites	Coastal Area Code	Total Unit Area (ha)
The Moors (The Moors Wood to Arne Moors Heath)	TM3, TM5, TM7	22.05
The Moors (Moors NW to The Moors East)	TM1, TM2a-c, TM4a,b	137.21
Wareham Meadows (Bestwall Meadows East & West; Clarke)	WM14, WM 16, WM17	56.99
Wareham Meadows (Redcliffe farm to Causeway West)	WM18, 19 20, 21, 22	42.54
Wareham Meadows (South Piddle Fen; Town Walls; South Piddle)	WM23, WM24, WM5	37.76
Wareham Meadows (Northport Reed - Stockley Meadows)	WM1 - 4, 6	20.39
Wareham Meadows	WM 8 - WM 9	21.79
Poole Harbour	PH21a-b,22, 28, 29	6.93
Arne	AR13,14	31.06
Keysworth Marsh	PH33	65.49
Total		442.21

- 6.5.6 The compensatory habitat requirement estimations relate solely to the area of habitats anticipated to be affected by the SMP policies. However, it is essential that as compensatory habitat progresses (or where managed realignment progresses) there is a focus on supporting the breeding, roosting, or feeding habitat of Site's interest features that are noted as declining during the ongoing monitoring. Due to the wide ranging nature of changes that may occur in the long-term, it should be accepted that compensation is not purely a matter of habitat replacement, but of replacing habitat to support the populations of the interest species for which the Site's are designated.
- 6.5.7 Key focus for the wetland compensatory habitats are those habitats that are unlikely to develop naturally within the Poole Harbour area, and these are the controlled lagoon habitat in Brownsea Lagoon and the tern nesting area, and Cladium fen in The Moors area. These will require specific focus as the Brownsea Lagoon effects would be anticipated in the 2nd Epoch.



In relation to the coastal and floodplain grazing marsh and the heathland habitat compensation requirements identified in **Table 6.9**, due to the strategic nature of the SMPs, site-specific assessment has not been undertaken; in the case of intertidal habitats from Managed Realignment, the information presented in **Table 6.10** was supplied by Natural England to inform the SMP and HRA. The requirement for identifying where and who will support and provide the compensatory habitat needed will be fulfilled as part of the Poole Harbour Strategy (in preparation) and through the Environment Agency's Regional Habitat Creation Programme, with support from the SMP2 Coastal Authorities for Poole and Christchurch Bays.

6.6 Risks

- 6.6.1 The following key risks have been identified associated with achieving mitigation / compensation habitat for Natura 2000 sites of the Poole and Christchurch Bays SMP:
 - Lack of data of sufficient detail on the existing flora and fauna;
 - Lack of clarity regarding the verification of interest features;
 - Uncertainty regarding the actual potential to carry out the successful implementation of mitigation/compensation;
 - Uncertainty regarding the timing of measures/actions to successfully compensate;
 - Failure of compensatory habitat applications not successfully being implemented due to IROPI; and
 - · Risk of lack of funding.

6.7 Status and Timescale

6.7.1 For the Poole and Christchurch Bays SMP2, the package of works associated with IROPI will be submitted in August 2010 to the Regional Representative.



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7 CONCLUSIONS

7.1 Introduction

- 7.1.1 The consideration of the effects of SMP policy on the features and conservation objectives of the International sites in this area has been central to policy production in this process. However, due to the conflicting and mutually exclusive requirements of the SMP (in both a socio-economic and environmental context) it was not possible for the Appropriate Assessment of The Poole and Christchurch Bays SMP2 to conclude no adverse effect on the integrity of the following International sites:
 - Solent and Southampton Water SPA;
 - Solent Maritime SAC;
 - Dorset Heathlands SPA;
 - Dorset Heaths SAC;
 - Poole Harbour SPA and Ramsar; and
 - Dorset Heaths (Purbeck and Wareham) and Studland Dunes SAC.
- 7.2.1 The policy selection in PDZ1 in the area that could affect Solent and Southampton Water SPA and Solent Maritime SAC has focussed on the maintenance of Hurst Spit as a feature that protects both the shore and intertidal habitats within the marshes surrounding Keyhaven, given the potentially severe disturbance that would arise if a NAI policy was selected.
- 7.2.2 The policy selection (MR) in PDZ2 in the area around Hengistbury Head that could affect an area of Dorset Heathlands SPA and Dorset Heaths SAC is intended to provide protection to the features within Hengistbury Head, without detrimental disturbance to or significant influences on coastal processes.
- 7.2.3 The policy selection within PDZ3 has focussed on, wherever possible, No Active Intervention in order to enable natural processes to prevent coastal squeeze of intertidal habitats. In addition, where defences are present that are providing protection to assets that are not considered to be of national or regional significance. Managed Realignment is proposed again to prevent coastal squeeze and to re-create some of the intertidal habitats that would be lost as a result of coastal squeeze in defended areas. In both of these cases, areas of the Dorset Heathlands SPA, Dorset Heaths SAC, and Dorset Heaths (Purbeck and Wareham) and Studland Dunes SAC may be lost as sea levels rise and intertidal habitats develop where terrestrial features currently exist, due to the policy of MR/NAI particularly for the southern undeveloped parts of Poole Harbour. In addition, areas of grazing marsh within and outside (supporting habitat) the SPA will be lost as a result of MR policies but this is unavoidable if intertidal habitats are to be recreated. HTL occurs in the northern areas of Poole Harbour in particular as these are more urbanised, with the intention of protecting significant residential, commercial, and infrastructure assets. However, even here NAI and MR have been used where possible, for example in Holes Bay and Lytchett Bay'.



7.2 Summary of Adverse Effects on Integrity of the International Sites

- 7.2.4 The significant adverse effects on the integrity of *Natura 2000* Sites within or adjacent to the SMP2 study area, as a result of the preferred policies is:
 - Solent and Southampton Water SPA: an indirect in-combination effect as a result
 of coastal squeeze from the maintained defences as part of the North Solent SMP
 would arise. The spit would contribute to a minor area of loss compared to that of
 the Keyhaven frontage.
 - Solent Maritime SAC: an indirect in-combination effect as a result of coastal squeeze from the maintained defences as part of the North Solent SMP would arise. The spit would contribute to a minor area of loss compared to that of the Keyhaven frontage.
 - Dorset Heathlands SPA: loss of up to 3ha of grassland and heathland supporting habitat at Hengistbury Head, and the loss of up to 15ha of supporting lowland heathland and Atlantic wet heath habitat within Poole Harbour (which comprises the habitats also covered in the two Dorset Heaths SAC sites due to overlapping site boundaries).
 - Dorset Heaths SAC and Dorset Heaths (Purbeck and Wareham) and Studland Dunes SAC: loss of up to 3ha of grassland and heathland supporting habitat at Hengistbury Head (same area as that identified for Dorset Heathlands SPA above), and the loss of up to 18ha dry heathland and Atlantic wet heath within Poole Harbour.
 - Poole Harbour SPA: loss of up to 314ha of qualifying intertidal habitats (within Poole Harbour), and the loss of up to 383ha of supporting grazing marsh.

7.3 Test for Alternative Solutions

- 7.3.1 The consideration of the effects of SMP policy on the features and conservation objectives of the International Sites in this area has been central to policy production in this process. However, due to the conflicting and mutually exclusive requirements of the SMP (in both a socio-economic and environmental context), or due to the very nature that policy to protect a Site could have adverse effects on it or other nearby Sites, it has not been possible for the appropriate assessment of The Poole and Christchurch Bays SMP to conclude no adverse effect on the integrity of the International Sites.
- 7.3.2 However, as presented in **Section 6.3**, the preferred policy options are the most suitable policies because:
 - 1. HTL at Hurst Spit would protect the Site and minimise long term adverse effects on both natural processes (which would have far reaching consequences on Site features with other policies) and the natural environment (by avoiding direct physical disturbance to Site qualifying features;
 - HTL/MR at Hengistbury Head would minimise the direct and indirect loss of qualifying habitat features and supporting habitats of the SAC and SPA, whilst avoiding potentially significant and severe disruption to coastal processes across a wide area; and
 - 3. A mixture of HTL/MR/NAI in Poole Harbour is necessary due to the wide ranging natural and managed frontages, which minimises the effects of coastal squeeze due to the requirement for coastal management and protection of nationally

important social and economic assets, but loss of some terrestrial designated habitats to reduce potentially wider ranging significant effects of coastal squeeze. In all, the balance is considered appropriate for the key economic assets, but MR and NAI have been implemented wherever lesser important economic and social assets would be at risk, in order to minimise the long term impacts of coastal squeeze on supporting habitat features.

7.4 Test for Imperative Reasons of Overriding Public Interest (IROPI)

7.4.1 The consideration of the effects of SMP policy on the features and conservation objectives of the International Sites in this area has been central to policy production in this process. However, due to the conflicting and mutually exclusive requirements of the SMP (in both a socio-economic and environmental context) it has not been possible for the appropriate assessment of The Poole and Christchurch Bays SMP to conclude no adverse effect on the integrity of the International Sites, and no suitable alternative policy is considered appropriate. Consequently, the test for imperative reasons of overriding public interest was undertaken at the strategic level (see **Section 7.4**, and **Appendix N**).

7.4.2 The IROPI test concludes that for:

- PDZ 1 (Hurst Spit HTL) affects less qualifying and supporting habitats and features than it protects, is for the benefit of the public including the fact that it comprises a significant defence for economic infrastructure and settlements to the north (within the North Solent), and minimises the adverse effects of habitat loss on an SPA and an SAC;
- PDZ 2 (Hengistbury Head HTL/MR) is both necessary and urgent, affects less
 qualifying and supporting habitats and features than it protects as well as
 avoiding or minimising much greater disruption to coastal processes on a wide
 scale, is for the benefit of the public, and is required to minimise the adverse
 effects of habitat loss on an SPA and an SAC; and
- PDZ 3 (Poole Harbour HTL/MR/NAI) is both necessary and urgent, is intended
 to avoid long term effects of coastal squeeze both as a result of natural
 constraints and because of national social and economic assets being at risk,
 and provide sustainable compensatory habitat, which all benefit the national
 public interest, and ensure that wetland SPA/Ramsar is adequately maintained
 in terms of character and interest features.

7.5 Compensatory Habitat Requirements

7.5.1 The compensatory habitat requirements identified from this Appropriate Assessment indicates that the up to 33ha of heathland habitat will be required, 353ha of coastal and floodplain grazing marsh will be required, and 329ha of intertidal and transitional habitat will be required. The intertidal and transitional habitats will be created from the MR policy locations within the western end of Poole Harbour, the grazing marsh and heathland requirements will be determined through further study for the next Stage of policy implementation. However, it is expected that compensatory habitat will be implemented through the Environment Agency's Regional Habitat Creation Programme which will be supported by the maritime local authorities involved in this SMP.



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9 GLOSSARY OF TERMS

Appropriate Assessment (AA): An appropriate assessment determines whether a likely significant effect will or will not arise as a result of a proposed plan, policy or project. Also referred to as a Habitats Regulations Assessment (HRA).

Biodiversity Action Plan (BAP): An agreed plan for a habitat or species, which forms part of the UK's commitment to biodiversity. For further information consult the BAP website: http://www.ukbap.org.uk

Birds Directive: European Community Directive (79/409/EEC) on the conservation of wild birds. Implemented in the UK as the Conservation (Natural Habitats, etc) Regulations (1994). For further information consult Her Majesties Stationary Office website: http://www.hmso.gov.uk/si/si1994/Uksi 19942716 en 1.htm

Candidate Special Area for Conservation (cSAC): SACs are internationally important sites for habitats and/or species, designated as required under the EC Habitats Directive. A candidate SAC is currently under consideration for its inclusion under the EC Habitats Directive. SACs are protected for their internationally important habitat and non-bird species. They also receive SSSI designation under The Countryside and Rights of Way (CRoW) Act 2000; and The Wildlife and Countryside Act 1981 (as amended). For further details refer to The Joint Nature Conservation Committee website http://www.incc.gov.uk

Compensation: The provision of like for like habitat to replace *Natura 2000* Site habitat which would be lost as a result of a plan or policy.

Competent Authority: The organisation which prepares a plan or programme subject to the Directive and is responsible for the AA.

Department for Communities and Local Government (DCLG): The department that is responsible for local communities and social issues. For further information please view the website: //www.communities.gov.uk/corporate/

Habitats Directive: The Habitats Directive (Council Directive 92/43/EEC of 21 May 1992) requires EU Member States to create a network of protected wildlife areas, known as *Natura 2000*, across the European Union. This network consists of Special Areas of Conservation (SACs) and Special Protection Areas (SPAs), established to protect wild birds under the Birds Directive (Council Directive 79/409/EEC of 2 April 1979). These sites are part of a range of measures aimed at conserving important or threatened habitats and species.

Habitats Regulations Assessment (HRA): An assessment to determine whether a likely significant effect will or will not arise as a result of a proposed plan, policy or project. Also referred to as an Appropriate Assessment (AA).

Indicator: A measure of variables over time often used to measure achievement of objectives.



Local Biodiversity Action Plan (LBAP): A local agenda (produced by the local authority) with plans and targets to protect and improve biodiversity and achieve sustainable development.

Local Development Documents (LDD): These documents make up the Local Development Framework (LDF).

Mitigation: Measures to avoid or reduce significant adverse effects on the Natura 2000 Site, but measures must be within the Site boundary and avoid or reduce effects on features within the Site boundary.

Objective: A statement of what is intended, specifying the desired direction of change in trends.

Plan or Programme: For the purposes of this Guide, the term "plan or programme" covers any plans or programmes to which the Directive applies.

Ramsar Site: The Ramsar Convention on Wetlands of International Importance, especially as Waterfowl Habitat (1971) requires the UK Government to promote using wetlands wisely and to protect wetlands of international importance. This includes designating certain areas as Ramsar sites, where their importance for nature conservation (especially with respect to waterfowl) and environmental sustainability meet certain criteria. Ramsar sites receive SSSI designation under The Countryside and Rights of Way (CRoW) Act 2000 and The Wildlife and Countryside Act 1981 (as amended). Further information can be located on the Ramsar convention on wetlands website: http://www.ramsar.org/

Regional Planning Guidance (RPG): Planning Guidance issued for the South West by the Government Office for the South West Regional Assembly.

Regional Spatial Strategy (RSS): This will replace the RPG. It sets out a regional framework that addresses the 'spatial' implications of broad issues like healthcare, education, crime, housing, investment, transport, the economy and environment.

Scoping: The process of deciding the scope and level of detail of an AA, including the environmental effects and alternatives which need to be considered, the assessment methods to be used, and the structure and contents of the Appropriate Assessment Report.

Shoreline Management Plan (SMP): Non-statutory plans to provide sustainable coastal defence policies (to prevent erosion by the sea and flooding of low-lying coastal land) and to set objectives for managing the shoreline in the future. They are prepared by the Environment Agency or maritime local authorities, acting individually or as part of coastal defence groups.

Site of Special Scientific Interest (SSSI): Sites of Special Scientific Interest (SSSIs) are notified under the Wildlife and Countryside Act 1981 (as amended) and the Countryside and Rights of Way (CRoW) Act 2000 for their flora, fauna, geological or physiographical features. Notification of a SSSI includes a list of work that may harm the special interest of the site. The Wildlife and Countryside Act 1981 (provisions relating to SSSIs) has been replaced by a new Section 28 in Schedule 9 of the CROW Act. The new Section 28 provides much better protection for SSSIs. All cSACs, SPAs



and Ramsar sites are designated as SSSIs. For further information refer to English Nature's website: http://www.english-nature.com

Special Protection Area (SPA): A site of international importance for birds, designated as required by the EC Birds Directive. SPAs are designated for their international importance as breeding, feeding and roosting habitat for bird species. The Government must consider the conservation of SPAs in all its planning decisions. SPAs receive SSSI designation under The Countryside and Rights of Way (CRoW) Act 2000 and The Wildlife and Countryside Act 1981 (as amended). For further details refer to the European Commission: website: http://europa.eu.int/ and the Joint Nature Conservation Committee website.

Structure Plan: A statutory plan made up of part of the development Plan, prepared by County Councils or a combination of unitary authorities, containing strategic policies that cover main planning issues over a broad area and provide a framework for local planning, including Unitary Development Plans (UDPs).

Sustainability: A concept, which deals with man's effect, through development, on the environment. Sustainable development is 'development which meets the needs of the present without compromising the ability of future generations to meet their own needs' (Brundland, 1987). The degree to which flood risk management options avoid tying future generations into inflexible or expensive options for flood defence. This usually includes considering other defences and likely developments as well as processes within a catchment. It should also take account of, for example, the long-term demands for non-renewable materials.



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10 LIST OF ABBREVIATIONS

AA Appropriate Assessment

BAP Biodiversity Action Plan

DCLG Department for Communities and Local Government

ECJ European Court of Justice

HRA Habitats Regulations Assessment

IPPC Integrated Pollution Prevention and Control

IROPI Imperative Reasons of Overriding Public Interest

JNCC Joint Nature Conservation Committee

LBAP Local Biodiversity Action Plan

LDF Local Development Framework

RSPB Royal Society for the Protection of Birds

Ramsar The Ramsar Convention on Wetlands of International Importance

RPG Regional Planning Guidance

RSS Regional Spatial Strategy

SAC Special Area for Conservation

SMP Shoreline Management Plan

SPA Special Protection Area

SSSI Site of Special Scientific Interest



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