North Devon and Somerset Coastal Advisory Group (NDASCAG)

Shoreline Management Plan Review (SMP2)
Hartland Point to Anchor Head

Appendix J – Appropriate Assessment

Halcrow

The Supporting Appendices

These appendices and the accompanying documents provide all of the information required to support the Shoreline Management Plan. This is to ensure that there is clarity in the decision-making process and that the rationale behind the policies being promoted is both transparent and auditable. The appendices are:

A: SMP Development	This reports the history of development of the SMP, describing more fully the plan and policy decision-making process.
B: Stakeholder Engagement	All communications from the stakeholder process are provided here, together with information arising from the consultation process.
C: Baseline Process Understanding	Includes baseline process report, defence assessment, NAI and WPM assessments and summarises data used in assessments.
D: SEA Environmental Baseline Report (Theme Review)	This report identifies and evaluates the environmental features (human, natural, historical and landscape).
E: Issues & Objectives Evaluation	Provides information on the issues and objectives identified as part of the Plan development, including appraisal of their importance.
F: Initial Policy Appraisal & Scenario Development	Presents the consideration of generic policy options for each frontage, identifying possible acceptable policies, and their combination into 'scenarios' for testing. Also presents the appraisal of impacts upon shoreline evolution and the appraisal of objective achievement.
G: Preferred Policy Scenario Testing	Presents the policy assessment and appraisal of objective achievement towards definition of the Preferred Plan (as presented in the Shoreline Management Plan document).
H: Economic Appraisal and Sensitivity Testing	Presents the economic analysis undertaken in support of the Preferred Plan.
I: Strategic Environmental Assessment (SEA) Report	Presents the various items undertaken in developing the Plan that specifically relate to the requirements of the EU Council Directive 2001/42/EC (the Strategic Environmental Assessment Directive), such that all of this information is readily accessible in one document.
J: Appropriate Assessment Report	Presents the Appropriate Assessment of SMP policies upon European designated sites (SPAs and SACs) as well as Ramsar sites, where policies might have a likely significant effect upon these sites. This is carried out in accordance with the Conservation of Habitats and Species Regulations 2010
K: Water Framework Development Report	Presents assessment of potential impacts of SMP policies upon coastal and estuarine water bodies, in accordance with the requirements of EU Council Directive 2000/60/EC (the Water Framework Directive).
L: Metadatabase and Bibliographic database	All supporting information used to develop the SMP is referenced for future examination and retrieval.
M: Action Plan Summary Table	Presents the Action Plan items included in Section 6 of the main SMP document (The Plan) in tabular format for ease of monitoring and reporting action plan progress.

Within each appendix cross-referencing highlights the documents where related appraisals are presented. The broad relationships between the appendices are illustrated below.

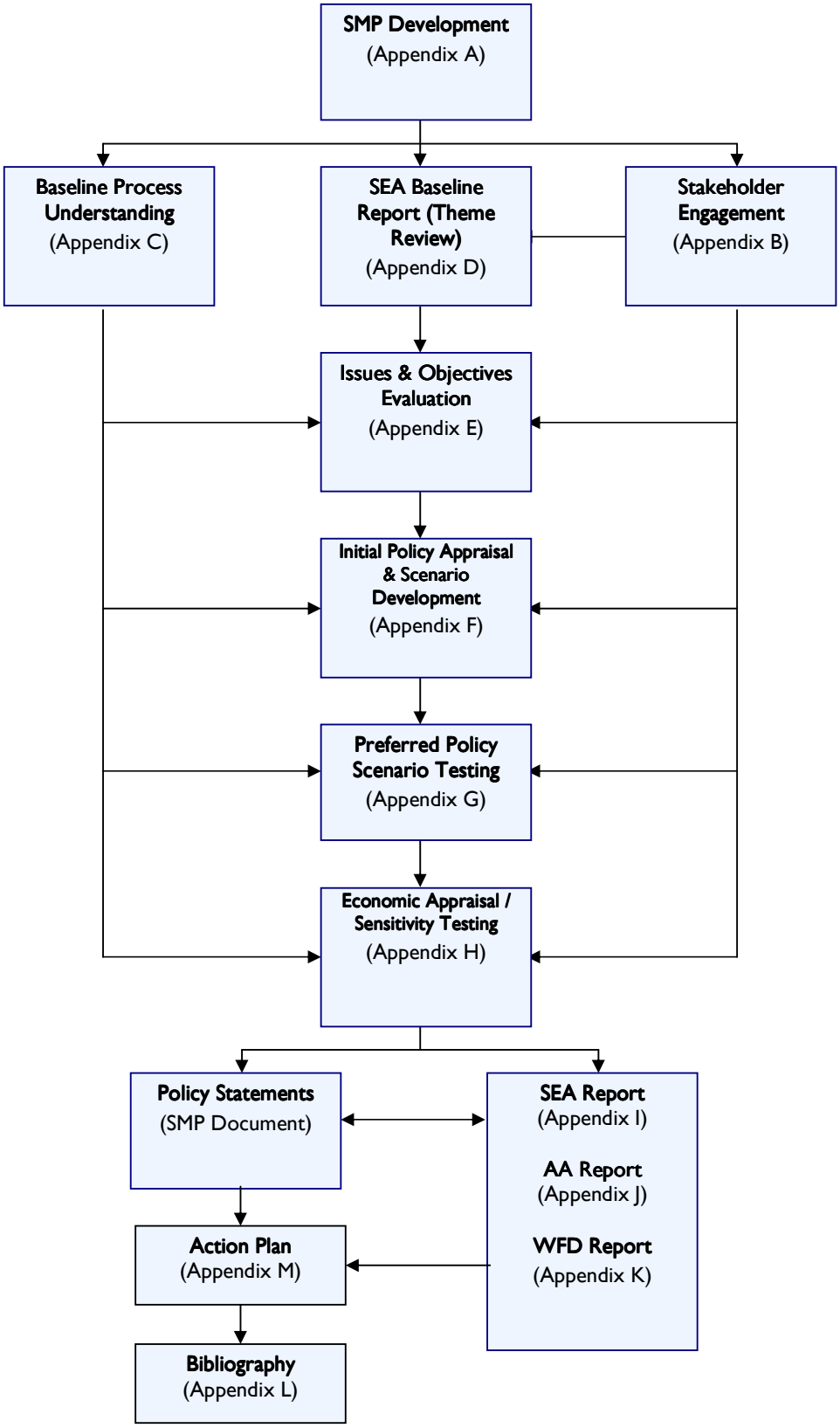
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Table of Contents

I.1 Introduction

The Shoreline Management Plan has the potential to affect several European sites (Special Protection Areas (SPA), Ramsar sites and a Special Area of Conservation (SAC)). Consequently, the requirements of the European Union Habitats Directive (92/43/EEC) and European Union Birds Directive (79/409/EEC), as implemented in the UK by the Conservation of Habitats and Species regulations 2010 (and the Wildlife and Countryside Act 1981), have to be addressed. The implications of the plan on these European sites and the interaction with the requirements of the Habitats Regulations are critical to the development of a realistic and legally viable strategy.

Regulation 61of the Habitats Regulations requires that a plan or project likely to have a significant effect on a European site be subject to Appropriate Assessment by a Competent Authority. Defra and the Environment Agency have agreed that CFMPs (Coastal Flood Management Plans), SMPs (Shoreline Management Plans) and flood risk management strategies constitute land use plans, as per the Directive.

For an SMP, the objective of Appropriate Assessment is to determine the impact of the preferred policy options proposed by the plan where there is a likelihood of an adverse effect on the integrity of a European site, either alone or in combination with other plans, programmes and projects.

There are four stages in the Appropriate Assessment process:

- ***Stage 1:*** Establish whether Habitat Regulations apply. Where relevant agree lead Competent Authority.
- ***Stage 2:*** Assess whether the plan or project is likely to have a significant effect on a European site, alone or in combination with other plans or projects.
- ***Stage 3:*** Where required, assess adverse effect on site integrity.
- ***Stage 4:*** Consent or refusal of consent for proposal/application.

This appendix presents the results of Stages 2 and 3 of the Appropriate Assessment Process, which has been undertaken using guidance published in the Environment Agency's Habitats Directive Handbook and supporting information. The results are presented using standard Environment Agency proformae:

- Stage 2 is presented on Form HR01 (Appendix 11 of the Habitats Directive Handbook); this is located in Annex 1.
- Stage 3 is presented on Form HR02 (Appendix 12 of the Habitats Directive Handbook); this is located in Annex 2.

The results of the first three stages of the Appropriate Assessment are summarised in Sections 1.2 to 1.4 respectively, and the conclusions of the assessment are presented in Section 1.5.

I.2 Stage 1 Assessment

The Environment Agency is the 'Competent Authority' with respect to Flood Risk Management (FRM) plans and strategies; the SMP falls under this category.

As discussed in 1.1 above, it has been agreed between Defra and the Environment Agency that SMPs constitute land use plans under Regulation 61of the Habitat Regulations, and the Regulations will therefore apply to this plan.

I.3 Stage 2 - Assessment of likely significant effect

The results of the Stage 2 Assessment of likely significant effect are presented in Annex 1 (form HR01).

The assessment has considered nine European sites that have the potential to be affected by the SMP. Details of these, and the interest features for which they have been designated, are provided below:

Lundy SAC

Annex I habitats:

- Reefs
- Sandbanks which are slightly covered by sea water all the time [not a primary reason for selection of this site]
- Submerged or partially submerged sea caves [not a primary reason for selection of this site]

Annex II species:

- Grey seal *Halichoerus grypus* [not a primary reason for selection of this site]

Tintagel-Marlsand-Clovelly Coast SAC:

Annex I habitats:

- Vegetated sea cliffs of the Atlantic and Baltic coasts
- Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles
- European dry heaths [not a primary reason for selection of this site]

Braunton Burrows SAC:

Annex I habitats:

- Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes)
- Fixed dunes with herbaceous vegetation (grey dunes)
- Dunes with *Salix repens* ssp.*argenta (Salicion arenariae)*
- Humid dune slacks
- Mudflats and sandflats not covered by seawater at low tide [not a primary reason for selection of this site]

Annex II species:

- Petalwort *Petalophyllum ralfsii*

Exmoor Heaths SAC:

Annex I habitats:

- North Atlantic Wet Heaths with *Erica tetralix*
- European dry heaths
- Vegetated sea cliffs along the Atlantic and Baltic Coasts [not a primary reason for selection of the site]
- Blanket bogs [not a primary reason for selection of the site]
- Alkaline fens [not a primary reason for selection of the site]
- Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [not a primary reason for selection of the site]

Mendip Limestone Grasslands SAC:

Annex I habitats:

- Semi natural dry grasslands and scrubland facies: on calcareous substrates *(Festuco-Brometalia)*
- European dry heaths [not a primary reason for selection of the site]
- Caves not open to the public [not a primary reason for selection of the site]

- *Tilio-Acerion f*orests of slopes, screes and ravines [not a primary reason for selection of the site]

Annex II species:

- Greater horseshoe bat *Rhinolophus ferrumequinum* [not a primary reason for selection of the site]

Severn Estuary SPA:

Under Article 4.1 of the Directive (79/409/EEC):

Over winter;

- Bewick's Swan *Cygnus columbianus bewickii*

Under Article 4.2 of the Directive (79/409/EEC):

On passage;

- Ringed Plover *Charadrius hiaticula*

Over winter;

- Curlew *Numenius arquata*
- Dunlin *Calidris alpina alpina*
- Pintail *Anas acuta*
- Redshank *Tringa totanus*
- Shelduck *Tadorna tadorna*

Under Article 4.2 of the Directive (79/409/EEC) by regularly supporting at least 20,000 waterfowl:

- Over winter, the area regularly supports 93,986 individual waterfowl (5 year peak mean 1991/2 - 1995/6).

Severn Estuary Ramsar Site:

Criterion 1 – Immense tidal range affecting the physical environment and biological communities.

Criterion 3 – Due to unusual estuarine communities, reduced diversity and high productivity.

Criterion 4 – Important migratory fish populations that pass through the estuary between the sea and river, and important migratory bird populations.

Criterion 8 – Important fish populations within the whole estuary and river system, with over 110 species recorded.

Criterion 5 – Bird assemblages of international importance:

- 70919 waterfowl (5 year peak mean 1998/99-2002/2003)

Criterion 6 – Bird species with peak counts in winter:

- Tundra (Bewick's) swan *Cygnus columbianus bewickii*
- Greater white-fronted goose *Anser albifrons albifrons*
- Common shelduck *Tadorna tadorna*
- Gadwall *Anas strepera strepera*

- Dunlin *Calidris alpina alpina*
- Common redshank *Tringa totanus totanus*

Severn Estuary SAC:

Annex I habitats:

- Estuaries
- Mudflats and sandflats not covered by seawater at low tide
- Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)
- Sandbanks which are slightly covered by sea water all the time [not a primary reason for selection of this site]
- Reefs [not a primary reason for selection of this site]

Annex II species:

- Sea lamprey *Petromyzon marinus*
- River lamprey *Lampetra fluviatilis*
- Twaite shad *Alosa fallax*

Somerset Levels and Moors SPA:

Under Article 4.1 of the Directive (79/409/EEC):

Over winter;

- Bewick's Swan *Cygnus columbianus bewickii*
- Golden Plover *Pluvialis apricaria*

Under Article 4.2 of the Directive (79/409/EEC):

Over winter;

- Shoveler *Anas clypeata*
- Teal *Anas crecca*
- Wigeon *Anas penelope*

Under Article 4.2 of the Directive (79/409/EEC) by regularly supporting at least 20,000 waterfowl:

- Over winter, the area regularly supports 72,874 individual waterfowl (5 year peak mean 1991/2 - 1995/6)

Somerset Levels and Moors Ramsar Site:

Criterion 2 – Supports 17 species of British Red Data Book invertebrates.

Criterion 5 – Assemblages of international importance species with peak counts in winter: 70919 waterfowl (5 year peak mean 1998/99-2002/2003).

Criterion 6 – Species occurring at internationally important levels.
Species with peak counts in winter:

- Bewick's swan (*Cygnus columbianus bewickii*)
- Teal (*Anas creecca*)
- Northern lapwing (*Vanellus vanellus*)

The assessment considers whether significant effects are likely, either alone or in combination with other plans or projects. This concludes that likely significant effects are not foreseen for:

- Tintagel-Marsland-Clovelly Coast SAC
- Exmoor Heaths SAC
- Mendip Limestone Grasslands SAC

For each of these sites, policies of 'no active intervention' or 'managed realignment' apply, and it is concluded that any adverse effects that might occur, for example due to sea level rise, would not be as a result of SMP policy.

In-combination effects

No likely significant in-combination effects with other plans or projects have been identified for any of the European sites. Plans considered include Catchment Flood Management Plans, River Basin Management Plans, the Parrett Estuary Flood Risk Management Strategy, local planning documents for Districts within the SMP area and the South West Regional Spatial Strategy. In all cases, however, it is considered that any-in combination effects would not be significant, as each plan contains policies that seek to protect and enhance biodiversity.

The Severn Estuary CHaMP and Strategy identify the potential habitat losses within the estuary as a result of sea level rise and the means by which these losses can be offset. The Strategy will reflect the policies of the SMP. The Severn Estuary SMP considers the management of the shoreline for the Severn Estuary adjoining the North Devon and Somerset SMP area. For the Severn Estuary, therefore, it is considered that whilst no in-combination effects are foreseen with the Severn Estuary CHaMP, Strategy and SMP *per se*, all of these documents reflect the wider management proposals for the Seven Estuary, and this is the basis for the Stage 3 Appropriate Assessment for this SMP.

In-combination effects have also been considered for the new deep sea terminal at the Port of Bristol. The Appropriate Assessment for this development concluded that there would be a significant impact on the Severn Estuary designated sites, as a result of habitat loss and hydrodynamic changes, but that the project has been approved on the grounds of imperative reasons of overriding public interest (IROPI). Compensatory measures will be provided to ensure that the integrity of the site is maintained; these will include the creation of new intertidal habitat at the Steart Peninsula or elsewhere.

New projects have been identified that have the potential to affect the designated sites. However, the detail of these projects is not yet known and no Habitat Regulations Assessment is available for them. These are the proposed expansion of Hinkley Point Nuclear Power Station and industrial development at Avonmouth / Severnside. There is also the potential that proposals for Severn tidal power project may be brought forward in the future. However, as the detail of these schemes is not yet known the in-combination effects cannot be considered; it will be for those projects to consider in-combination effects once details are known and appropriate assessments undertaken, if required.

Conclusion of the Stage 2 assessment

The Stage 2 assessment therefore concludes that a 'likely significant effect' could occur at the following sites, which will be considered in the Stage 3 assessment:

- Lundy SAC
- Braunton Burrows SAC
- Severn Estuary SPA / Ramsar Site

- Severn Estuary SAC
- Somerset Levels and Moors SPA / Ramsar Site

I.4 Stage 3 – Assessment of adverse effect on site integrity

The results of the Stage 3 assessment of adverse effect on site integrity are presented in Annex 2 (form HR02).

This considers the effects of the preferred SMP policies on the interest features of the European sites where a 'likely significant effect' has been identified in Stage 2. A summary of the findings is presented below:

- ***Lundy SAC*** – No adverse effects are foreseen for this site. The Stage 2 assessment concluded a likely significant effect on reef and sandbank habitats. However, these effects would result from a 'hold the line' policy for the Landing Beach policy unit, which comprises only a small proportion of the Lundy Coastline. This policy is unchanged from the existing; there is no evidence to suggest that this is adversely affecting this interest feature at present, and therefore no adverse effects on site integrity are foreseen.
- ***Braunton Burrows SAC*** – For the great majority of the site, a policy of 'no active intervention' or 'managed realignment' applies. This should allow natural processes, and promote favourable condition of Dune habitats and their associated species. A 'hold the line' policy applies between Crow Point and Horsey Island in the short term, but it is not considered that this would have an adverse effect on the interest features of the site within this epoch. In the medium-term a policy of 'managed realignment' should promote natural processes. No significant effects on the interest features of the SAC are therefore foreseen.
- ***Severn Estuary SAC, SPA and Ramsar Site*** – Within the Severn Estuary designated area, a long term policy of 'hold the line' applies at the key areas of human habitation (Weston-super-Mare and Burnham-on-Sea), and around Hinkley Point nuclear power station. In some areas a policy of 'hold the line' applies in the short or medium term, but a policy of 'managed realignment' or 'no active intervention' applies in the medium / long term; for example, at the Steart peninsula and along parts of the outer Parrett Estuary. A policy of 'no active intervention' applies at Brean Down and between Lilstock and Hinkley Point for all epochs, while 'managed realignment' applies between Stolford and Wall Common, and between Berrow and Brean.

  Where 'hold the line' policy applies, this will lead to a progressive loss of intertidal habitat as a result of coastal squeeze. This would have an adverse effect on some habitat interest features (particularly saltmarsh) and the wintering / passage bird populations that are dependent on them. In order for the plan to be progressed, therefore, it will be necessary to demonstrate that no alternative solutions exist and that the plan is necessary due to imperative reasons of overriding public interest. Through this process, it will also be necessary to demonstrate that appropriate compensation measures can be put in place to offset any habitat losses. New estuarine/intertidal habitat can be created through managed realignment and this will be achieved through the *Severn Estuary Flood Risk Management Study Habitat Delivery Plan*, which is currently being developed by the Environment Agency. The Coastal Group will be committed to ensuring that such measures are implemented to ensure that there are no net adverse effects on integrity of European sites as a result of SMP policy.

  The Severn Estuary Flood Risk Management Study Habitat Delivery Plan will be delivered through the South West Regional Habitat Creation Programme. The delivery plan predicts a loss of 3650ha of intertidal habitat across the Severn Estuary by 2105, but with the potential to create in excess of 7,500ha through managed realignment. This indicates that there is a sufficient area of potentially good habitat available to compensate for losses due to flood risk management actions, through coastal squeeze and sea level rise. In the short term, four priority sites have been identified that can be progressed within the next 10 to 20 years; Steart, Congresbury, Slimbridge and Awre. These can provide potential habitat creation of between 550 and 700ha. This therefore provides the potential to meet the potential short term intertidal habitat losses for the Severn of 639ha.
- ***Somerset Levels and Moors SPA and Ramsar Site*** – This site lies approximately 12km inland of SMP policy units at its closest point, and it is not considered that SMP policies will have a significant effect on the designated features within the boundary of the site. However, bird populations for which the site is

designated are also dependent on areas outside the site boundary, particularly the Severn Estuary. Where a 'hold the line' policy applies within the Severn Estuary this is likely to result in coastal squeeze in the medium to long term, reducing the extent of intertidal habitat. This could adversely affect feeding and roosting habitats which support the designated bird populations, potentially altering bird population size, density and distribution on the Somerset Levels and Moors.

I.5 Conclusion of Stage 3 Assessment

This assessment had been carried out considering the likely effects of the implementation of policies identified in the draft North Devon and Somerset Coast Shoreline Management Plan (SMP) alone and in-combination, on site integrity of a number of European sites. The policies, are, by their nature, high level and lack specific detail. However, in the absence of mitigation there is the potential that interest features, and hence the integrity of some European sites, may be adversely affected. The Stage 3 Appropriate Assessment makes the following conclusions for those sites and features 'scoped in' by the Stage 2 assessment:

- No adverse effects are foreseen for Lundy SAC or Braunton Burrows SAC.
- No adverse effects are foreseen for reef and sandbank features designated within the Severn Estuary SAC.
- There would be a potentially adverse effect on estuary, mudflat and Atlantic salt meadow habitats designated within the Severn Estuary SAC, and the wintering and passage bird populations that these support designated within the Severn Estuary SPA and Ramsar site.
- There would be a potentially adverse effect on wintering bird populations of the Somerset Levels and Moors SPA and Ramsar site.

The predicted adverse effects will be as a result of coastal squeeze, causing the progressive loss of habitats and their associated species through sea level rise against coastal defences. In order for the plan to be progressed, therefore, it will be necessary to demonstrate that no alternative solutions exist and that the plan is necessary due to imperative reasons of overriding public interest. Through this process, it will also be necessary to demonstrate that appropriate compensation measures can be put in place to offset any habitat losses. New estuarine/intertidal habitat can be created through managed realignment and this will be achieved through the *Severn Estuary Flood Risk Management Strategy Habitat Delivery Plan*, which is currently being developed by the Environment Agency. The Coastal Group will be committed to ensuring that such measures are implemented to ensure that there are no net adverse effects on integrity of European sites as a result of SMP policy.

This assessment at the plan level does not remove the need for an assessment at the project level. This SMP has been signed off as setting the strategic direction for managing coastal flood and erosion risk, on the basis that it cannot be put into effect until more detailed appraisal and assessment has taken place on plans or projects arising out of this SMP to show it and they have met the requirements of the Habitats Regulations.

If a project is not consistent with the plan then a new Habitats Regulations Assessment may well be required. Furthermore, a project may be entirely consistent with this plan but still require further Appropriate Assessment as detail emerging at the scheme-design stage may identify additional impacts that have not been assessed here. Any project arising out of the plan will ensure any adverse effects on integrity of European site are avoided.

Annex J1 – Form HR01 (Assessment of likely significant effect)

Form HR01: Proforma for new applications within Stage 2 criteria.

ENVIRONMENT AGENCY

ENVIRONMENT AGENCY RECORD OF ASSESSMENT OF LIKELY SIGNIFICANT EFFECT ON A EUROPEAN SITE (STAGE 2)
The North Devon and Somerset Shoreline Management Plan, detailed below, is within the Stage 1 criteria of Plans or Strategies that, in accordance with Environment Agency policy, should be subject to Appropriate Assessment under the Conservation of Habitats and Species regulations 2010 (the Habitats Regulations). In order to progress the plan a Stage 2 assessment and consultation with Natural England is required.

PART A

To be completed by relevant technical/project officer in consultation with Conservation/Ecology section and Natural England/CCW

1. Type of permission/activity:	Plan / Strategy
2. Agency reference no:	N/A
3. National Grid reference:	N/A
4. Site reference:	North Devon and Somerset (Hartland Point to Anchor Head)
5. Brief description of proposal:	Shoreline Management Plan (SMP2)
6. European site name(s) and status:	Lundy Special Area of Conservation (SAC), Tintagel-Marsland-Clovelly Coast SAC, Braunton Burrows SAC, Exmoor Heaths SAC, Severn Estuary Special Protection Area (SPA), SAC and Ramsar site, Mendip Limestone Grasslands SAC, Somerset Levels and Moors SPA and Ramsar Site.
7. List of interest features:	**Lundy SAC:** Annex I habitats: • Reefs • Sandbanks which are slightly covered by sea water all the time [not a primary reason for selection of this site] • Submerged or partially submerged sea caves [not a primary reason for selection of this site] Annex II species: • Grey seal *Halichoerus grypus* [not a primary reason for selection of this site] **Tintagel-Marlsand-Clovelly Coast SAC:** Annex I habitats: • Vegetated sea cliffs of the Atlantic and Baltic coasts • Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles • European dry heaths [not a primary reason for selection of this site] **Braunton Burrows SAC:** Annex I habitats: • Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) • Fixed dunes with herbaceous vegetation (grey dunes) • Dunes with *Salix repens* ssp.*argenta (Salicion arenariae)* • Humid dune slacks • Mudflats and sandflats not covered by seawater at low tide [not a primary reason for selection of this site] Annex II species: • Petalwort *Petalophyllum ralfsii*

	Exmoor Heaths SAC: Annex I habitats: • North Atlantic Wet Heaths with *Erica tetralix* • European dry heaths • Vegetated sea cliffs along the Atlantic and Baltic Coasts [not a primary reason for selection of the site] • Blanket bogs [not a primary reason for selection of the site] • Alkaline fens [not a primary reason for selection of the site] • Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [not a primary reason for selection of the site] **Mendip Limestone Grasslands SAC:** Annex I habitats: • Semi natural dry grasslands and scrubland facies: on calcareous substrates *(Festuco-Brometalia)* • European dry heaths [not a primary reason for selection of the site] • Caves not open to the public [not a primary reason for selection of the site] • *Tilio-Acerion f*orests of slopes, screes and ravines [not a primary reason for selection of the site] Annex II species: • Greater horseshoe bat *Rhinolophus ferrumequinum* [not a primary reason for selection of the site] **Severn Estuary SPA:** Under Article 4.1 of the Directive (79/409/EEC): *Over winter;* • Bewick's Swan *Cygnus columbianus bewickii* Under Article 4.2 of the Directive (79/409/EEC): *On passage;* • Ringed Plover *Charadrius hiaticula* *Over winter;* • Curlew *Numenius arquata* • Dunlin *Calidris alpina alpina* • Pintail *Anas acuta* • Redshank *Tringa totanus* • Shelduck *Tadorna tadorna* Under Article 4.2 of the Directive (79/409/EEC) by regularly supporting at least 20,000 waterfowl: • Over winter, the area regularly supports 93,986 individual waterfowl (5 year peak mean 1991/2 - 1995/6). **Severn Estuary Ramsar Site:** *Criterion 1 – Immense tidal range affecting the physical environment and biological communities* (including those identified for the SAC, below). *Criterion 3 – Due to unusual estuarine communities, reduced diversity and high productivity.*

	Criterion 4 – Important migratory fish populations that pass through the estuary between the sea and river, and important migratory bird populations. *Criterion 8 – Important fish populations within the whole estuary and river system, with over 110 species recorded.* *Criterion 5 – Bird assemblages of international importance:* • 70919 waterfowl (5 year peak mean 1998/99-2002/2003) *Criterion 6 – Bird species with peak counts in winter:* • Tundra (Bewick's) swan *Cygnus columbianus bewickii* • Greater white-fronted goose *Anser albifrons albifrons* • Common shelduck *Tadorna tadorna* • Gadwall *Anas strepera strepera* • Dunlin *Calidris alpina alpina* • Common redshank *Tringa totanus totanus* **Severn Estuary SAC:** Annex I habitats: • Estuaries • Intertidal mudflats and sandflats not covered by seawater at low tide • Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) • Subtidal sandbanks which are slightly covered by sea water all the time [not a primary reason for selection of this site] • Reefs [not a primary reason for selection of this site] Annex II species: • Sea lamprey *Petromyzon marinus* • River lamprey *Lampetra fluviatilis* • Twaite shad *Alosa fallax* Under Article 4.1 of the Directive (79/409/EEC): *Overwinter;* • Bewick's swan (*Cygnus columbianus bewickii*) (2.7% of wintering population in GB) • Golden Plover (*Pluvialis apricaria*) (1.2% of wintering population in GB) **Somerset Levels and Moors SPA** Under Article 4.1 of the Directive (79/409/EEC): *Over winter;* • Bewick's Swan *Cygnus columbianus bewickii* • Golden Plover *Pluvialis apricaria* Under Article 4.2 of the Directive (79/409/EEC):

	Over winter; • Shoveler *Anas clypeata* • Teal *Anas crecca* • Wigeon *Anas penelope* Under Article 4.2 of the Directive (79/409/EEC) by regularly supporting at least 20,000 waterfowl: • Over winter, the area regularly supports 72,874 individual waterfowl (5 year peak mean 1991/2 - 1995/6) **Somerset Levels and Moors Ramsar Site** *Criterion 2* – Supports 17 species of British Red Data Book invertebrates. *Criterion 5* – Assemblages of international importance species with peak counts in winter: 70919 waterfowl (5 year peak mean 1998/99-2002/2003). *Criterion 6* – Species occurring at internationally important levels. *Species with peak counts in winter:* • Bewick's swan (*Cygnus columbianus bewickii*) • Teal (*Anas creecca*) • Northern lapwing (*Vanellus vanellus*)
8. Is the proposal directly connected with or necessary to the management of the site for nature conservation?	No

9. What potential hazards are likely to affect the interest features? (Refer to relevant sensitivity matrix and only include those to which the interest features are sensitive). **Are the interest features potentially exposed to the hazard?**

Lundy SAC: This SAC lies within coastal unit A, and policy units 7c01 and 7c02. The preferred policy for all epochs within 7c01 (Landing beach) is 'hold the line', and within 7c02 (Lundy except landing beach) is 'no active intervention'. This is unchanged from SMP1.

Sensitive Interest Feature:	**Potential hazard:**	**Potential exposure to hazard and mechanism of effect/impact if known:** **[LSE = Likely Significant Effect** **No LSE = No Likely Significant Effect]**
Lundy SAC: Reefs	Changes in sediment supply	'Hold the line' has potential to affect natural sediment supply. There is a low risk that this could affect reef habitats, for example by smothering, in the medium to long term. **LSE**
Lundy SAC: Sandbanks which are slightly covered by sea water all the time	Changes in sediment supply	'Hold the line' has potential to affect natural sediment supply. This could affect the extent and distribution of

		sandbanks in the long term. **LSE**
Lundy SAC: Submerged or partially submerged sea caves	Sea level rise	Sea level rise could affect the extent and duration of inundation for sea caves in the long term. However, this would not be the result of a change in SMP policy. **No LSE**
Lundy SAC: Grey seal	Sea level rise	Sea level rise could affect the availability of caves used by pupping seals. However, this would not be the result of a change in SMP policy. **No LSE**

Tintagel-Marlsand-Clovelly Coast SAC: This SAC lies within Coastal Unit B, and policy units 7c03 and 7c05. The preferred policy for all epochs for 7c03 (Hartland Point to Clovelly) and 7c05 (Clovelly to Westward Ho! (Seafield House)) is 'no active intervention'. This is unchanged from SMP1.

Sensitive Interest Feature:	**Potential hazard:**	**Potential exposure to hazard and mechanism of effect/impact if known:**
Tintagel-Marlsand-Clovelly Coast SAC: Vegetated sea cliffs of the Atlantic and Baltic coasts	Sea level rise	Sea level rise may accelerate natural erosion patterns, resulting in the loss of cliff habitats in the long term. However, this would not be the result of a change in SMP policy. **No LSE**
Tintagel-Marlsand-Clovelly Coast SAC: Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles	These habitats lie mainly on landward slopes of the site, and are unlikely to be affected by SMP policy.	No effects foreseen. **No LSE**
Tintagel-Marlsand-Clovelly Coast SAC: European dry heaths	These habitats lie mainly on landward slopes of the site, and are unlikely to be affected by SMP policy.	No effects foreseen. **No LSE**

Braunton Burrows SAC: This SAC lies within Coastal Unit C, and policy units 7c28, 7c29 and 7c30. It is considered that the preferred policies within units 7c07 and 7c08 also have the potential to affect this site. The preferred policies of these units are:

- 7c28 (Horsey Island to Crow Point): 'hold the line' in the short term, 'managed realignment' in the medium term and 'hold the line' (of the realigned defence) in the long term; this is a change from the SMP1 policy of 'observe and monitor'
- 7c29 (Crow Point & Crow Neck): 'managed realignment' for all epochs, although implementation of this will be dependent on investigations to its importance in protecting the wider estuary ; this is a change from the SMP1 policy of 'observe and monitor'
- 7c30 (Braunton Burrows): 'no active intervention'. This is unchanged from SMP1.
- 7c07 (Northam Burrows): 'managed realignment'. This is unchanged from SMP1 ('retreat').
- 7c08 (Skern saltmarsh to Appledore (west)): 'hold the line'; this is a change from the SMP1 policy of 'retreat'.

Sensitive Interest Feature:	**Potential hazard:**	**Potential exposure to hazard and mechanism of effect/impact if known:**
Braunton Burrows SAC: All interest	Coastal squeeze	If natural processes

features (dune habitats, intertidal habitats, petalwort)		arising from sea level rise (e.g. rolling back of dune habitats and species) are constrained by human intervention, this may have a significant effect on these features (e.g. through habitat loss) in the medium / long term. **LSE**
Braunton Burrows SAC: All interest features (dune habitats, intertidal habitats, petalwort)	Managed realignment	Managed realignment at Northam Burrows or Crow Point may affect the geomorphological regime at Braunton Burrows. This could have significant effects on the interest features of the site. **LSE**
Braunton Burrows SAC: All interest features (dune habitats, intertidal habitats, petalwort)	No active intervention	'No active intervention' at Braunton Burrows should benefit natural processes within the site, and hence its interest features. However, significant effects may occur if processes are constrained (see above), particularly to those features on the seaward side of the site. However, these effects would not be as a result of SMP policy. **No LSE**

Exmoor Heaths SAC: This SAC lies within Coastal Unit E, and policy units 7d11 (Combe Martin to Lynmouth), 7d13 (Lynmouth to Foreland Point), 7d14 (Foreland Point to Gore Point), and 7d18 (Hurlstone Point to Minehead (west)). The policy in all of these units is 'no active intervention' for all epochs, and is unchanged from SMP1.

Sensitive Interest Feature:	**Potential hazard:**	**Potential exposure to hazard and mechanism of effect/impact if known:**
Exmoor Heaths SAC: European dry heaths	These habitats lie mainly on landward slopes of the site, and are unlikely to be affected by SMP policy.	No effects foreseen. **No LSE**
Exmoor Heaths SAC: Vegetated sea cliffs of the Atlantic and Baltic coasts	Sea level rise	Sea level rise may accelerate natural erosion patterns, resulting in the loss of cliff habitats in the long term. However, this would not be the result of a change in SMP policy. **No LSE**
Exmoor Heaths SAC: North Atlantic Wet Heaths with *Erica tetralix* Blanket bogs Alkaline fens	These habitats lie mainly on landward slopes of the site, and are unlikely to be affected by SMP policy.	No effects foreseen. **No LSE**
Exmoor Heaths SAC: Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles	These habitats lie mainly on landward slopes of the site, and are unlikely to be affected by SMP policy.	No effects foreseen. **No LSE**

Severn Estuary SPA, Ramsar Site and SAC: This site lies within Coastal units F, G and H. The policy units and preferred policies within this area are:

- 7d30 (Lilstock to Hinkley Point): 'no active intervention' (unchanged from SMP1).
- 7d31 (Hinkley Point): 'hold the line' (unchanged from SMP1)
- 7d32 (Hinkley Point to Stolford): 'hold the line' in the short term, 'managed realignment' in the medium term and 'hold the line' (of the realigned defence) in the long term. SMP1 policy was 'hold the line'.
- 7d33 (Stolford): 'hold the line' in the short term, 'managed realignment' in the medium term and 'hold the line' (of the realigned defence) in the long term. SMP1 policy was 'observe and monitor'.
- 7d34 (Stolford to Wall Common): 'managed realignment' in the short term and 'hold the line' (of the realigned defence) in the medium to long term, or potentially 'no active intervention' in the long term. SMP1 policy was 'observe and monitor'.
- 7d35 (Steart Village): 'hold the line' in the short term and 'no active intervention' in the medium and long term. SMP1 policy was 'observe and monitor'.
- 7d36 (South of Steart Village to north of Combwich (line of national grid power lines)): 'hold the line' in the short term and 'no active intervention' in the medium and long term. SMP1 policy was 'observe and monitor'.
- 7d37 (Parrett Estuary from line of national grid power lines to Combwich): 'hold the line' in the short term and 'no active intervention' in the medium and long term. SMP1 policy was 'observe and monitor'.
- 7d38 (Combwich): 'hold the line' (unchanged from SMP1)
- 7d39 (Combwich to Bridgwater (Parrett west)): 'hold the line' in the short and medium term, and 'managed realignment' in the long term. This area was not included in SMP1.
- 7d42 (Dunball to River Brue): 'hold the line' in the short term; 'managed realignment' along Pawlett Hams and hold the line' along Pawlett and Huntspill Levels in the medium term; and 'hold the line' (of the realigned defence) at Pawlett Hams / 'managed realignment' along Pawlett and Huntspill Levels in the long term. SMP1 policy was 'hold the line'.
- 7d43 (Burnham-on-Sea and Highbridge): 'hold the line'. SMP1 policy was 'hold the line / observe and monitor'.
- 7d44 (Berrow to Brean (north): 'managed realignment'. SMP1 policy was 'observe and monitor'.
- 7d45 (Brean (north) to Brean Down): 'hold the line' in the short and medium term, and 'no active intervention' in the long term. SMP1 policy was 'hold the line'.
- 7d46 (Brean Down (south side)): 'no active intervention' (unchanged from SMP1).
- 7e01 (Brean Down (north side) to Axe Estuary mouth (west): 'no active intervention' (unchanged from SMP1).
- 7e02 (Axe Estuary left (west) bank (mouth to near Diamond Farm)): 'hold the line' in the short and medium term and managed realignment' in the long term. SMP1 policy was 'hold the line (locally retreat)'.
- 7e03 (Axe Estuary right (east) bank (near Diamond Farm to mouth)): 'hold the line' in the short term, 'managed realignment' in the medium term and 'hold the line' (of the realigned defence) in the long term. SMP1 policy was 'hold the line (locally retreat)'.
- 7e04 (Axe Estuary mouth to Uphill): 'hold the line' in the short term, 'managed realignment' in the medium term and 'hold the line' (of the realigned defence) in the long term. SMP1 policy was 'hold the line (possibly retreat in the long term)'.
- 7e05 (Uphill to Weston-super-Mare (south)): 'managed realignment' for all epochs. SMP1 policy was 'hold the line (possibly retreat in the long term)'.
- 7e06 (Weston-super-Mare): 'hold the line' (unchanged from SMP1).

Sensitive Interest Feature:	**Potential hazard:**	**Potential exposure to hazard and mechanism of effect/impact if known:**
Severn Estuary SPA and Ramsar Site: All interest features (wintering and passage bird populations)	Coastal squeeze	In areas where 'hold the line' policies apply, sea level rise will result in the progressive loss of intertidal and supratidal habitats. This will reduce the availability of feeding and roosting sites for bird

		populations in the estuary. **LSE**
	Sea level rise	In areas where 'no active intervention' policy applies, there may be the progressive loss of intertidal and supratidal habitats used by birds, particularly where constrained by natural features that prevent the natural roll-back of habitats. However, in most cases the losses would not be the result of SMP policy. There is also the potential that terrestrial habitats outside of the designated site that support its interest features could be affected by changes in salinity and tidal inundation. This may affect use of these areas by bird species; such changes could be negative or positive. In most cases the changes would not be the result of SMP policy. **No LSE**
	Managed realignment	Where 'managed realignment' policies apply, this should allow the creation of new intertidal habitat that can be used by feeding and roosting birds from the estuary. This will mitigate for losses due to coastal squeeze, and has the potential to increase the available resource, providing a net benefit. **No LSE**
Severn Estuary SAC and Ramsar Site: • Estuaries • Mudflats and sandflats not covered by seawater at low tide • Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)	Coastal squeeze	In areas where 'hold the line' policies apply, sea level rise will result in the progressive loss of intertidal and supratidal habitats. **LSE**
	Sea level rise	In areas where 'no active intervention' policy applies, there may be the progressive loss of intertidal and supratidal habitats, particularly where constrained by natural features that

		prevent the natural roll-back of habitats. However, in most cases the losses would not be the result of SMP policy. **No LSE**
	Managed realignment	Where 'managed realignment' policies apply, this should allow the creation of new intertidal habitat. This will mitigate for losses due to coastal squeeze, and has the potential to increase the available resource, providing a net benefit. **No LSE**
Severn Estuary SAC and Ramsar Site: Sandbanks which are slightly covered by sea water all the time	Coastal squeeze / sea level rise / managed realignment	Natural geomorphological processes have the potential to be influenced or disrupted by coastal management and other, semi-natural processes, such as sea level rise. This may lead to changes in the extent and distribution of sandbanks in the medium or long term; which could result in significant impacts on this interest feature. **LSE**
Severn Estuary SAC: Reefs	Coastal squeeze / sea level rise / managed realignment	Reefs have the potential to be affected by a variety of mechanisms; for example, changes in sediment regime could smother reef habitats, or expose new substrate where reefs could develop. Similarly, sea level rise may increase or decrease areas suitable for reef habitats. There may therefore be significant effects on this interest feature as a result of SMP policy. **LSE**
Severn Estuary SAC and Ramsar Site: Fish populations, including Sea Lamprey, River Lamprey, Twaite Shad	The main hazards to these species are obstacles to migration and pollution. It is not considered that these hazards will be significantly affected by SMP policy	No effects foreseen. **No LSE**

Mendip Limestone Grasslands SAC: This site lies on the boundary of Coastal Areas G and H, and lies within policy units 7d46 (Brean Down (south side)) and 7e01 (Brean Down (north side) to Axe Estuary mouth (west). The policy in both of these units is 'no active intervention' for all epochs, and is unchanged from SMP1.

Sensitive Interest Feature:	Potential hazard:	Potential exposure to hazard and mechanism of effect/impact if known:
Mendip Limestone Grasslands SAC: Semi natural dry grasslands and scrubland facies: on calcareous substrates *(Festuco-Brometalia)*	Sea level rise	Sea level rise may accelerate natural erosion patterns, resulting in the loss of grassland habitats on Brean Down in the long term. However, this would not be the result of a change in SMP policy. **No LSE**
Mendip Limestone Grasslands SAC: European dry heaths	These habitats occur on the landward parts of the site, and are unlikely to be affected by SMP policy.	No effects foreseen. **No LSE**
Mendip Limestone Grasslands SAC: Caves not open to the public	These features occur on the landward parts of the site, and are unlikely to be affected by SMP policy.	No effects foreseen. **No LSE**
Mendip Limestone Grasslands SAC: *Tilio-Acerion f*orests of slopes, screes and ravines	These habitats occur on the landward parts of the site, and are unlikely to be affected by SMP policy.	No effects foreseen. **No LSE**
Mendip Limestone Grasslands SAC: Greater horseshoe bat	The habitats and features on which this species depends occur on the landward parts of the site, and are unlikely to be affected by SMP policy.	No effects foreseen. **No LSE**

Somerset Levels and Moors SPA and Ramsar Site: The site lies outside the study area, (located approximately 12 km inland of Bridgwater Bay) but is potentially hydraulically linked to the study area via flooding from the Severn Estuary. The levels are currently at risk from extreme flood events from the estuary (e.g. 1 in 1000 year events). The preferred SMP2 policies will not increase tidal flood risk to the site.

Sensitive Interest Feature:	Potential hazard:	Potential exposure to hazard and mechanism of effect/impact if known:
Somerset Levels and Moors SPA and Ramsar Site: Wintering bird populations (Including Bewick's Swan, Golden Plover, Shoveler, Teal, Wigeon and Lapwing, and bird assemblage).	Coastal squeeze	Although direct effects on the site are not likely to occur, there is the potential that in areas where 'hold the line' policies apply on the Severn Estuary, sea level rise will result in the progressive loss of intertidal and supratidal habitats. These habitats may provide feeding and roosting habitat for bird populations that use the Levels and Moors. Effects on these supporting features for the designated bird populations may therefore result in a significant effect on the interest features of the site.

		LSE
Somerset Levels and Moors Ramsar Site: Red Data Book invertebrates	No mechanisms have been identified that are likely to affect these populations. In the long-term, increased tide locking as a result of sea level rise may affect fluvial water levels; however, this would not be as a result of SMP policy.	No effects foreseen. **No LSE**

10. Is the potential scale or magnitude of any effect likely to be significant?

a) Alone?

Lundy SAC:
Yes
The policy of 'hold the line' at the landing beach may affect reef and sandbank features at this site. Although the risk of such an effect is considered low, it cannot be discounted at this stage.

Tintagel-Marlsand-Clovelly Coast SAC:
No
The policy of 'no active intervention', which is unchanged from SMP1, is not considered to affect the interest features of this site. Although the progressive loss of cliff habitats due to sea level rise can be foreseen, this loss is not the result of SMP policy.

Braunton Burrows SAC:
Yes
SMP policy of 'no active intervention', or 'managed realignment' has the potential to affect geomorphological processes that are critical to maintenance of interest features on the site. Such effects may be positive or negative.

Exmoor Heaths SAC:
No
The policy of 'no active intervention', which is unchanged from SMP1, is not considered to affect the interest features of this site. Although the progressive loss of cliff habitats due to sea level rise can be foreseen, this loss is not the result of SMP policy.

Severn Estuary SPA / Ramsar Site:
Yes
Where a policy of 'hold the line' applies, this will lead to the progressive loss of intertidal and supratidal habitats, due to coastal squeeze, that may be used by feeding and roosting birds. Where 'managed realignment' policy applies, this will result in the creation of new habitat that can mitigate or compensate for loss, and may increase the available resource.

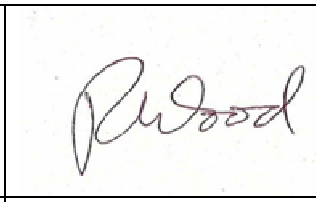
Severn Estuary SAC:
Yes
SMP policies, particularly where 'hold the line' applies, may affect the extent and distribution of estuary habitats, for example as a result of coastal squeeze or through geomorphological changes. These effects may have

	significant effects on the interest features of the site. **Mendip Limestone Grasslands SAC:** **No** The policy of 'no active intervention', which is unchanged from SMP1, is not considered to affect the interest features of this site. Although the progressive loss of grassland habitats caused by erosion as a result of sea level rise can be foreseen, this loss is not the result of SMP policy. **Somerset Levels and Moors SPA and Ramsar Site:** **Yes** Policies within the Severn Estuary that affect the availability of roosting and feeding habitat for birds that use the Somerset Levels and Moors have the potential to adversely affect these interest features.
b) In combination with other Environment Agency permissions and/or other plans or projects?	**No** The following Environment Agency plans are considered to have the potential to interact with the policies of the SMP: • River Basin Management Plans (RBMPs) (draft) for the Severn and the South West. • Catchment Flood Management Plans (CFMPs) for North Devon, West Somerset, Parrett and North & Mid Somerset. • The Severn Estuary Coastal Habitat Management Plan (CHaMP), which is informing the Severn Estuary Strategy (in prep.) • The Parrett Estuary Flood Risk Management Strategy (FRMS) • Severn Estuary Shoreline Management Plan The objectives of the RBMPs are focussed towards achieving 'good ecological status' of watercourses within the plan areas, in order to meet the requirements of the Water Framework Directive. The effects on internationally designated sites are therefore likely to be neutral or positive, and no in combination effects with the SMP are foreseen. It is not considered that there will be in-combination effects with CFMPs. The Appropriate Assessment for the North Devon CFMP considers potential effects on Braunton Burrows SAC and concludes that there will be no adverse effect on the integrity of the site as a result of CFMP policy. Similarly, the CFMPs for North and Mid Somerset and The Parrett have considered effects on the Severn Estuary European Sites and the Somerset Levels and Moors SPA / Ramsar site. It is concluded that measures resulting from the implementation of the CFMPs can incorporate appropriate protection for these sites, and that there will be no adverse effects on integrity. This SMP is adjacent to the Severn Estuary SMP2 study area. An HRA for this SMP2 is also being prepared and there is the potential for in-combination effects on the Severn Estuary European Sites, particularly cumulative and in-combination effects that could arise from coastal squeeze and habitat loss arising from footprint of defences.

	The Severn Estuary CHaMP and FCRM Strategy identify the potential habitat losses within the estuary as a result of sea level rise and the means by which these losses can be offset. The Strategy will reflect the policies of the SMP. For the Severn Estuary, therefore, it is considered that whilst no in-combination effects are foreseen with the Severn Estuary CHaMP and Strategy *per se*, all of these documents reflect the wider management proposals for the Seven Estuary, and this is the basis for the Stage 3 Appropriate Assessment for this SMP. The Appropriate Assessment for the Parrett Estuary FRMS identifies significant effects on the interest features of the Severn Designated sites as a result of coastal squeeze against coastal defences, resulting in the loss of saltmarsh and effects on wintering bird populations that it supports. The strategy has been approved on the grounds of imperative reasons of overriding public interest (IROPI). Compensatory habitat will be provided to offset these losses through managed realignment at Steart, Pawlett Hams or elsewhere.
c) In combination with permissions and/or plans/projects of other Competent Authorities?	**No** The following plans are considered to have the potential to interact with the policies of the SMP: • Draft Revised Regional Spatial Strategy for the South West • North Devon District Local Plan • Torridge District Local Plan • North Somerset Replacement Local Plan • Sedgemoor District Local Plan • West Somerset District Local Plan In all cases, however, it is considered that any-in combination effects would not be significant, as each plan contains policies that seek to protect and enhance biodiversity. This should therefore ensure that there are no significant effects on these sites. The Habitat Regulations Assessment for the Draft Revised Regional Spatial Strategy for the South West identifies the potential effects of coastal squeeze and port development on the Severn Estuary designated sites. However, it concludes that through the implementation of policy safeguards, the integrity of the sites can be protected. There is uncertainty regarding effects of water quality, water abstraction and air quality on these sites, but it is not considered that there would be a significant interaction between these effects, should they occur, and those from the SMP. A Harbour Revision Order has recently been granted for the creation of a new deep sea terminal at the Port of Bristol. The Appropriate Assessment for this development concluded that there would be a significant impact on the Severn Estuary designated sites, as a result of habitat loss and hydrodynamic changes, but that the project has been approved on the grounds of imperative reasons of overriding public interest (IROPI). Compensatory measures will be provided to ensure that the integrity of the site is maintained; these will include the creation of

	new intertidal habitat at the Steart Peninsula or elsewhere. New projects have been identified that have the potential to affect the designated sites. However, the detail of these projects is not yet known and no Habitat Regulations Assessment is available for them. These are the proposed expansion of Hinkley Point Nuclear Power Station, and industrial development at Avonmouth / Severnside. There is also the potential that proposals for Severn tidal power project may be brought forward in the future. However, as the detail of these schemes is not yet known the in-combination effects cannot be considered; it will be for those projects to consider in-combination effects once details are known and appropriate assessments undertaken, if required.
11.Conclusion: **Is the proposal likely to have a significant effect 'alone and/or in combination' on a European site?**	**Lundy SAC:** **Yes** There is the potential that reef and sandbank features could be affected by SMP policy. **Tintagel-Marlsand-Clovelly Coast SAC:** **No** No significant effects on the site are foreseen as a result of SMP policy. **Braunton Burrows SAC:** **Yes** SMP policy has the potential to affect geomorphological processes, which in turn may affect the interest features of the site. **Exmoor Heaths SAC:** **No** No significant effects on the site are foreseen as a result of SMP policy. **Severn Estuary SPA / Ramsar Site:** **Yes** SMP policy has the potential to affect the extent and distribution of habitats within the site, which in turn will affect the ability of the site to support wintering and passage bird species. **Severn Estuary SAC:** **Yes** SMP policy has the potential to affect the extent and distribution of habitats within the site. **Mendip Limestone Grasslands SAC:** No No significant effects on the site are foreseen as a result of SMP policy. **Somerset Levels and Moors SPA and Ramsar Site:** **Yes** Policies within the Severn Estuary that affect the availability of roosting and feeding habitat for birds that use the Somerset Levels and Moors have the potential to adversely affect these interest features.
12. Justification for Reduced Consultation review process :	The SMP includes a thorough consultation process. An 'elected members forum' and 'key stakeholders forum' are consulted via meetings, emails and the internet. The Plan is also subject to a 3 month consultation period with the

	general public. Any potential impacts of policy implementation that arise from the SMP will be subject to further assessment at the strategy and/or project stages.

13. Name of EA Officer:		**Date:** 11/08/2010
14. <Natural England comment on assessment: (If the Natural England officer disagrees with the conclusion of 10c, please include details of the other Competent Authorities which should be consulted)>	For use when the Appendix 11 is to be sent to Natural England **for consultation**.	
15. <Name of Natural England Officer:>		**Date:** 27 August 2010
16. <CCW comment on assessment: (If the CCW officer disagrees with the conclusion of 10c, please include details of the other Competent Authorities which should be consulted)>	For use when the Appendix 11 is to be sent to CCW **for consultation**.	
17. <Name of CCW Officer:>		**Date: 29th September 2010**

Annex J2 – Form HR02 (assessment of adverse effect on site integrity)

Form HR02: Proforma for FRM stage 3 Appropriate Assessment

PART A: Technical Consideration

1 Table 1 – Plan summary

Type of plan:	Shoreline Management Plan (SMP)								
Site reference:	North Devon and Somerset (Hartland Point to Anchor Head)								
Date, version and author	6 July 2010, Version 5, Ross Bower, Halcrow Group Ltd								
Plan Elements/Components (refs)	**Hazard (SMP)**								
	Habitat loss	**Changes in physical regime**	**Physical damage**	**Changes in turbidity**	**Habitat and community simplification**	**Disturbance**	**Changes in sediment supply**	**Watercourse modification**	**Shorter/longer duration of inundation**
SMP Plan Component assessed as having 'likely significant effect' (HR01)									
a) 'Hold the line' Apples in parts of coastal units A (Lundy SAC), C (Braunton Burrows SAC) and F/G/H (Severn Estuary SPA, Ramsar site and SAC).	✓	✓	✓	✓	✓	✓	✓	✓	✓
b) 'Managed realignment' Applies in parts of coastal units C (Braunton Burrows SAC) and F/G/H (Severn Estuary SPA, Ramsar site and SAC).	✓	✓	?	?	✓	?	✓	✓	✓

2 Table 2 – Features List*:*

Features (current status)	Plan has associated hazards to which features are sensitive?	Details of Hazard (plan component reference)
Lundy SAC		
Reefs	✓	• Habitat loss • Changes in sediment supply
Sandbanks which are slightly covered by sea water all the time [not a primary reason for selection of this site]	✓	• Habitat loss • Changes in sediment supply
Submerged or partially submerged sea caves [not a primary reason for selection of this site]	×	n/a
Grey seal *Halichoerus grypus* [not a primary reason for selection of this site]	×	n/a
Braunton Burrows SAC		

Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes)	✓	• Habitat loss / physical damage • Changes in physical regime • Habitat and community simplification • Disturbance • Changes in sediment supply • Shorter / longer duration of inundation
Fixed dunes with herbaceous vegetation (grey dunes)	✓	• Habitat loss / physical damage • Changes in physical regime • Habitat and community simplification • Disturbance • Changes in sediment supply • Shorter / longer duration of inundation
Dunes with *Salix repens* ssp.*argenta (Salicion arenariae)*	✓	• Habitat loss / physical damage • Changes in physical regime • Habitat and community simplification • Disturbance • Changes in sediment supply • Shorter / longer duration of inundation
Humid dune slacks	✓	• Habitat loss / physical damage • Changes in physical regime • Habitat and community simplification • Disturbance • Changes in sediment supply • Shorter / longer duration of inundation
Mudflats and sandflats not covered by seawater at low tide [not a primary reason for selection of this site]	✓	• Habitat loss / physical damage • Changes in physical regime • Habitat and community simplification • Disturbance • Changes in sediment supply • Shorter / longer duration of inundation
Petalwort *Petalophyllum ralfsii*	✓	• Habitat loss / physical damage • Changes in physical regime • Habitat and community simplification • Disturbance • Changes in sediment supply • Shorter / longer duration of inundation
Severn Estuary SPA & Ramsar Site		
SPA: Under Article 4.1 of the Directive (79/409/EEC): *Over winter;* • Bewick's Swan *Cygnus columbianus bewickii* Under Article 4.2 of the Directive (79/409/EEC): *On passage;* • Ringed Plover *Charadrius hiaticula* *Over winter;* • Curlew *Numenius arquata* • Dunlin *Calidris alpina alpina* • Pintail *Anas acuta* • Redshank *Tringa totanus* • Shelduck *Tadorna*	✓	• Habitat loss / physical damage • Changes in physical regime • Habitat and community simplification • Disturbance • Changes in sediment supply • Watercourse modification • Shorter / longer duration of inundation

tadorna Under Article 4.2 of the Directive (79/409/EEC) by regularly supporting at least 20,000 waterfowl: • Over winter, the area regularly supports 93,986 individual waterfowl (5 year peak mean 1991/2 - 1995/6). **Ramsar Site:** *Bird assemblages of international importance:* • 70919 waterfowl (5 year peak mean 1998/99-2002/2003) *Bird species with peak counts in winter:* • Tundra (Bewick's) swan *Cygnus columbianus bewickii* • Greater white-fronted goose *Anser albifrons albifrons* • Common shelduck *Tadorna tadorna* • Gadwall *Anas strepera strepera* • Dunlin *Calidris alpina alpina* • Common redshank *Tringa totanus totanus*		
Severn Estuary SAC & Ramsar Site		
• Estuaries • Mudflats and sandflats not covered by seawater at low tide • Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) (SAC and Ramsar site)	✓	• Habitat loss / physical damage • Changes in physical regime • Habitat and community simplification • Disturbance • Changes in sediment supply • Watercourse modification • Shorter / longer duration of inundation
Sandbanks which are slightly covered by sea water all the time [not a primary reason for selection of the SAC] (SAC and Ramsar site)	✓	• Habitat loss • Changes in physical regime • Changes in sediment supply
Reefs [not a primary reason for selection of this site] (SAC)	✓	• Habitat loss • Changes in physical regime • Changes in sediment supply
Migratory and resident fish populations (Ramsar Site) Sea Lamprey (SAC) River Lamprey (SAC) Twaite Shad (SAC)	×	n/a
Somerset Levels and Moors SPA and Ramsar Site		

SPA Under Article 4.1 of the Directive (79/409/EEC): *Over winter;* • Bewick's Swan *Cygnus columbianus bewickii* • Golden Plover *Pluvialis apricaria* Under Article 4.2 of the Directive (79/409/EEC): *Over winter;* • Shoveler *Anas clypeata* • Teal *Anas crecca* • Wigeon *Anas penelope* Under Article 4.2 of the Directive (79/409/EEC) by regularly supporting at least 20,000 waterfowl: • Over winter, the area regularly supports 72,874 individual waterfowl (5 year peak mean 1991/2 - 1995/6) **Ramsar Site** Assemblages of international importance species with peak counts in winter. Species occurring at internationally important levels. Species with peak counts in winter: • Bewick's swan *Cygnus columbianus bewickii* • Teal *Anas creecca* • Northern lapwing *Vanellus vanellus*	✓	• Habitat loss / physical damage • Changes in physical regime • Habitat and community simplification • Disturbance • Changes in sediment supply • Watercourse modification • Shorter / longer duration of inundation
Ramsar Site 17 species of British Red Data Book invertebrates.	×	n/a

3 Introduction

The North Devon and Somerset SMP is a non-statutory policy document for coastal flood and erosion risk management planning. It takes account of other existing planning initiatives and legislative requirements, and is intended to inform wider strategic planning. The SMP does not set policy for anything other than coastal defence management.

The SMP promotes management policies for the coastline into the 22nd Century, to achieve long-term objectives, while being technically sustainable, environmentally acceptable and economically viable. It is, however, recognised that given the differences between short and long term objectives, changes to management policy in the short term may be unacceptable. Thus, the SMP provides an approach for meeting objectives through appropriate management change, i.e. a 'route map' for decision makers to move from the present situation towards the future.

The SMP covers the area between Hartland Point, in North Devon, and Anchor Head at Weston-Super-Mare in Somerset, and also includes Lundy Island. It will replace SMPs that covered this area in two parts; Hartland Point to Brean Down (including Lundy Island) (adopted 1998); and the Severn Estuary (Brean Down and Anchor Head) (adopted 2000).

The SMP area is divided into eight coastal units, and each of these is sub-divided into a total of 91 policy units, defined by geographical boundaries. Within each policy unit, an appraisal of four potential policy options has been undertaken:

- **Hold the Line**: defences are maintained and upgraded/replaced in their current position or renewed. "Renewed defences" refers to the construction of new, more robust defences, immediately landward of the existing shoreline. This may require some land take. The aim of this is to retain the existing character and form of the coast with minimal disruption while maintaining all existing assets. An example of how this could be implemented is by placing the new defences immediately behind those existing and planning for any losses that may be incurred.

- **Advance the Line**: new defences are built seaward of existing defences, involving a significant reclamation of land in the process.

- **Managed Realignment**: allow retreat (or advance) of the shoreline, with management to control or limit that movement. Any increase of flood risk will also be managed. This policy typically applies to low-lying areas at risk of flooding, but can equally apply to cliffed areas, whereby management intervention slows or limits cliff recession for a period of time.

- **No Active Intervention**: a decision not to invest in providing or maintaining any defences. Where there are presently no defences, this policy means that the shoreline will continue to evolve naturally. However, this policy can mean areas that are currently defended, may not be defended in the future, meaning such areas will be at increased risk of flooding and coastal erosion in the future.

Note that an 'advance the line' policy does not apply within any of the policy units likely to influence European sites.

Through the policy appraisal process, a preferred policy for each policy unit has been determined, based on fulfilment of objectives for a variety of human, biodiversity, historic environment and economic factors. The preferred policies have been considered over three epochs, to reflect the potential changes in environment and policy that are foreseen in coming decades. These are:

- **Short term**: present day to 20 years
- **Medium term**: 20 to 50 years
- **Long term**: 50 to 100 years

This assessment considers the impacts of the preferred policies on the interest features of European sites where a Likely Significant Effect could not be screened out at Stage 2 (HRO1). For the following European sites, it was considered that there was no Likely Significant Effect, and therefore no further assessment is being undertaken:

- Mendip Limestone Grasslands SAC
- Exmoor Heaths SAC
- Tintagel-Marlsand-Clovelly Coast SAC

The HRO1 has also concluded that there are no Likely Significant Effects on some interest features of European sites within the plan area, and similarly these are not being considered further (see Table 2).

4 Table 3 – Appendix 12: Proforma for Stage 3 (Appropriate Assessment Record)

Summarised Conclusions:

Hazard	Interest feature	Favourable condition target for relevant attribute[1] based on conservation objectives *(taken from underlying SSSI VAM plans or Regulation 33 advice)*	Contribution of attribute[1] to ecological structure and function of site	Contribution of management[2] or other unauthorised sources to attribute and /or feature condition	Adverse Effect of proposal alone and in-combination on attribute[1] and/or feature	Can adverse affects be avoided?	Adverse affect on integrity; long term, medium term, short term. Yes, No or uncertain?
Lundy SAC Applicable policies: 7c01 (Landing beach) 'hold the line' [all epochs] 7c02 (Lundy except landing beach) 'no active intervention' [all epochs] Condition assessment: n/a (SSSI and SAC boundaries not concurrent)							
• Habitat loss • Changes in sediment supply	1170 - Reefs	Favourable condition is dependent on extent of reef habitats, water quality (which includes clarity, temperature and salinity), and the range of biotopes present within the site.	Granite reefs are the most important marine habitat around Lundy. They are very varied in nature, extend well over 1 km offshore, and drop steeply into deep water in some areas. They are biologically extremely rich, and are considered some of the best examples of this habitat in the UK.	Anthropogenic influences are not significant in the management of this feature. In the past, fishing activities may have adversely affected reef habitats, but these are now controlled through the site's designation as a marine nature reserve. Activities that affect sediment supply and water quality may adversely affect reef habitats. This may include impediment to natural geomorphological processes, or pollution from agricultural pesticides and fertilisers.	- A policy of 'hold the line' at the Landing Beach has the potential to affect sediment supply, which could affect reef habitats by restricting sediment availability or smothering habitats where sediment levels increase. However, the Landing Beach occupies only a small section of the Lundy coastline, and this policy is unchanged from the existing; there is no evidence to suggest that this is adversely affecting this interest feature at present. Therefore, no adverse effects are foreseen. - A policy of 'no active intervention' applies around most of the Lundy coastline. This is unchanged from the existing policy, and will allow natural processes. No adverse effects on this interest feature are therefore foreseen as a result of this policy.	**Yes** Adverse effects are not foreseen.	**No**
• Habitat loss • Changes in sediment supply	1044 - Sandbanks which are slightly covered by sea water all the time [not a primary reason for selection of this site]	Favourable condition is dependent on: • Extent, community composition and age structure. • Availability of suitable substrates. • Supply of larvae. • Abundance of food in the water column.	Sandbanks on Lundy occur primarily on the more sheltered, eastern side of the island. They support species that are tolerant of the shifting seabed and scouring action of suspended sand, including a range of worms, shrimps, snails and bivalves. The species diversity of these habitats is often low but overall biomass can be high.	Anthropogenic influences are not significant in the management of this feature. Activities that affect sediment supply and water quality may adversely affect sandbank habitats. This may include impediment to natural geomorphological processes, or pollution	- Where a 'hold the line' policy applies this has the potential to affect natural geomorphological processes, affecting sediment supply and distribution. However, the Landing Beach occupies only a small section of the Lundy coastline, and this policy is unchanged from the existing; there is no evidence to suggest that this is adversely affecting this interest feature. Therefore, no adverse effects are foreseen.	**Yes** Adverse effects are not foreseen.	**No**

Hazard	Interest feature	Favourable condition target for relevant attribute[1] based on conservation objectives *(taken from underlying SSSI VAM plans or Regulation 33 advice)*	Contribution of attribute[1] to ecological structure and function of site	Contribution of management[2] or other unauthorised sources to attribute and /or feature condition	Adverse Effect of proposal alone and in-combination on attribute[1] and/or feature	Can adverse affects be avoided?	Adverse affect on integrity; long term, medium term, short term. Yes, No or uncertain?
				from agricultural pesticides and fertilisers.	- A policy of 'no active intervention' applies around most of the Lundy coastline. This is unchanged from the existing policy, and will allow natural processes. No adverse effects on this interest feature are therefore foreseen as a result of this policy.		
Braunton Burrows SAC Applicable policies: 7c28 (Horsey Island to Crow Point): 'hold the line' in the short term, 'managed realignment' in the medium term and 'hold the line' (of the realigned defence) in the long term 7c29 (Crow Point & Crow Neck): 'managed realignment' for all epochs, although implementation of this will be dependent on investigations to its importance in protecting the wider estuary 7c30 (Braunton Burrows): 'no active intervention' [all epochs]. 7c07 (Northam Burrows): 'managed realignment' [all epochs] 7c08 (Skern saltmarsh to Appledore (west)): 'hold the line' [all epochs] Condition assessment: (Braunton Burrows SSSI) 23% favourable; 70% unfavourable recovering; 7% unfavourable declining							
• Habitat loss / physical damage • Changes in physical regime • Habitat and community simplification • Disturbance • Changes in sediment supply • Shorter / longer duration of inundation	• 2120 - Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) • 2130 - Fixed dunes with herbaceous vegetation (grey dunes) • 2170 - Dunes with *Salix repens* ssp.*argenta (Salicion arenariae)* • 2190 – Humid dune slacks • 1395 - Petalwort *Petalophyllum ralfsii*	- management should maintain the range of habitats and associated species reflecting the different stages of succession by maintaining, or restoring where necessary, the natural processes and dynamics of dune development and succession. - Selective scrub management and grazing or mowing may be necessary. - Management should aim to promote the creation of new slacks and avoid the artificial stabilisation of dunes. In particular the areas of bare ground associated with the early successional dune slacks on this site are important for a number of plant species including fen orchid, water germander and petalwort.	Maintenance of natural processes is critical in maintaining the quality and extent of dune habitats within the site, and the species that they support (including petalwort).	- Currently, dune habitats within the site are considered to be in 'favourable' or 'unfavourable recovering' condition. - Management may be required to control scrub or other invasive plant species. - Dune vegetation can be vulnerable to erosion from trampling or other disturbance. - Natural processes can be disrupted by activities such as construction of defences or abstraction of material. Disruption can be the result of activities within or outside of the site.	- A policy of 'hold the line' can constrain natural processes, and may therefore adversely affect the interest features of the site. However, such a policy will only apply in the short term in 7c25. The effects of a 'hold the line' policy at the Skern (7c08), which lies outside the site, are not known. As dune habitats within the site are considered to be in 'favourable' or 'unfavourable recovering' condition, it is considered that current policy is not significantly adversely affecting these interest features; no adverse effects are foreseen in the short term. - A policy of 'managed realignment' may allow natural processes to establish where they have previously been constrained. This should bring long-term benefits to the interest features of the site.	**Yes** Adverse effects are not foreseen.	**No**
• Habitat loss / physical damage • Changes in physical regime • Habitat and	1140 - Mudflats and sandflats not covered by seawater at low tide [not a	- Management should enable natural processes and ensure landward roll-back can take place in response to sea-level rise.	Estuarine habitats occur on the southern side of the site, at the mouth of the Taw-Torridge estuary. They form an important transition	Natural England has assessed the management unit at the southern end of the site as 'unfavourable	In the short term, a continued policy of 'hold the line' is being applied in unit 7c25 while further investigation of the options for managed realignment is undertaken. It is not	**Yes** No significant adverse effects are foreseen.	**No**

Hazard	Interest feature	Favourable condition target for relevant attribute[1] based on conservation objectives *(taken from underlying SSSI VAM plans or Regulation 33 advice)*	Contribution of attribute[1] to ecological structure and function of site	Contribution of management[2] or other unauthorised sources to attribute and /or feature condition	Adverse Effect of proposal alone and in-combination on attribute[1] and/or feature	Can adverse affects be avoided?	Adverse affect on integrity; long term, medium term, short term. Yes, No or uncertain?
community simplification • Disturbance • Changes in sediment supply • Shorter / longer duration of inundation	primary reason for selection of this site]	- Good water quality and sediment quality should be maintained, and sediment budget within the estuarine or coastal system should not be restricted by anthropogenic influences. - Significant disturbance to roosting and feeding birds should be avoided, particularly during periods of peak stress (e.g. severe winter weather).	between dune habitats and the estuary. This area is geomorphologically dynamic, and includes Crow Point, a sand spit.	declining' due to 'inappropriate coastal management'. This is due to the presence of rock armour along the spit, installed during the 1990s to prevent overtopping. The rock armour is thought to constrain natural processes.	thought that this short term policy would have a significant effect on mudflat and sandflat habitats. In the medium and long term, a 'managed realignment' policy should allow natural development of this feature.		
Severn Estuary SPA & Ramsar site Applicable policies: 7d30 (Lilstock to Hinkley Point): 'no active intervention' [all epochs] 7d31 (Hinkley Point): 'hold the line' [all epochs] 7d32 (Hinkley Point to Stolford): 'hold the line' in the short term, 'managed realignment' in the medium term and 'hold the line' (of the realigned defence) in the long term 7d33 (Stolford): 'hold the line' in the short term, 'managed realignment' in the medium term and 'hold the line' (of the realigned defence) in the long term 7d34 (Stolford to Wall Common): 'managed realignment' in the short term and 'hold the line' (of the realigned defence) in the medium to long term, or potentially 'no active intervention' in the long term 7d35 (Steart Village): 'hold the line' in the short term and 'no active intervention' in the medium and long term 7d36 (South of Steart Village to north of Combwich (line of national grid power lines)): 'hold the line' in the short term and 'no active intervention' in the medium and long term 7d37 (Parrett Estuary from line of national grid power lines to Combwich): 'hold the line' in the short term and 'no active intervention' in the medium and long term 7d38 (Combwich): 'hold the line' [all epochs] 7d39 (Combwich to Bridgwater (Parrett west)): 'hold the line' in the short and medium term, and 'managed realignment' in the long term 7d42 (Dunball to River Brue): 'hold the line' in the short term; 'managed realignment' along Pawlett Hams and hold the line' along Pawlett and Huntspill Levels in the medium term; and 'hold the line' (of the realigned defence) at Pawlett Hams / 'managed realignment' along Pawlett and Huntspill Levels in the long term 7d43 (Burnham-on-Sea and Highbridge): 'hold the line' [all epochs] 7d44 (Berrow to Brean (north): 'managed realignment' [all epochs] 7d45 (Brean (north) to Brean Down): 'hold the line' in the short and medium term, and 'no active intervention' in the long term 7d46 (Brean Down (south side)): 'no active intervention' [all epochs] 7e01 (Brean Down (north side) to Axe Estuary mouth (west): 'no active intervention' [all epochs] 7e02 (Axe Estuary left (west) bank (mouth to near Diamond Farm)): 'hold the line' in the short and medium term and 'managed realignment' in the long term 7e03 (Axe Estuary right (east) bank (near Diamond Farm to mouth)): 'hold the line' in the short term, 'managed realignment' in the medium term and 'hold the line' (of the realigned defence) in the long term 7e04 (Axe Estuary mouth to Uphill): 'hold the line' in the short term, 'managed realignment' in the medium term and 'hold the line' (of the realigned defence) in the long term 7e05 (Uphill to Weston-super-Mare (south)): 'managed realignment' [all epochs] 7e06 (Weston-super-Mare): 'hold the line' [all epochs] Condition assessment: Bridgwater Bay SSSI – 90% favourable; 8% unfavourable recovering; 1% unfavourable no change; 1% unfavourable declining Severn Estuary SSSI – 96% favourable; 2% unfavourable no change; 2% unfavourable declining							
• Habitat loss / physical damage • Changes in physical regime • Habitat and community simplification • Disturbance • Changes in	SPA: Under Article 4.1 of the Directive (79/409/EEC): Over winter; • Bewick's Swan Cygnus columbianus bewickii	- Wintering and passage bird populations are dependent on an adequate supply of food and undisturbed areas where they can feed and roost during the tidal cycle. Therefore, in order to maintain populations in a	The quality of estuarine habitats is critical to the internationally important bird populations that the Severn supports.	Estuarine habitats upon which birds are dependent do not usually require active management to maintain their interest. A variety of unauthorised human activities may adversely affect bird populations,	- Where a 'hold the line' policy applies this will result in the progressive loss of intertidal habitat due to coastal squeeze. This will result in the modification or loss of habitat used by feeding and roosting birds. There may also be disturbance to birds during maintenance or construction of flood defence	**Partly** - Disturbance during maintenance or construction can be avoided, for example by timing works outside of key wintering / passage times for birds. - Progressive implementation of managed realignment policies would reduce the potential effects of sudden	**Yes - short, medium and long term**

Hazard	Interest feature	Favourable condition target for relevant attribute[1] based on conservation objectives *(taken from underlying SSSI VAM plans or Regulation 33 advice)*	Contribution of attribute[1] to ecological structure and function of site	Contribution of management[2] or other unauthorised sources to attribute and /or feature condition	Adverse Effect of proposal alone and in-combination on attribute[1] and/or feature	Can adverse affects be avoided?	Adverse affect on integrity; long term, medium term, short term. Yes, No or uncertain?
sediment supply • Watercourse modification • Shorter / longer duration of inundation	Under Article 4.2 of the Directive (79/409/EEC): On passage; • Ringed Plover *Charadrius hiaticula* Over winter; • Curlew *Numenius arquata* • Dunlin *Calidris alpina alpina* • Pintail *Anas acuta* • Redshank *Tringa totanus* • Shelduck *Tadorna tadorna* Under Article 4.2 of the Directive (79/409/EEC) by regularly supporting at least 20,000 waterfowl: • Over winter, the area regularly supports 93,986 individual waterfowl (5 year peak mean 1991/2 - 1995/6). Ramsar Site: Assemblages of international importance: • 70919 waterfowl (5 year peak mean 1998/99-2002/2003)	favourable condition, the extent and quality of feeding and roosting habitat should be maintained. Quality will include the availability of food prey (which will vary between species), water and sediment quality, and frequency of human disturbance.		particularly through disturbance. This includes a variety of recreational activities such as jet skiing, bait digging and walking. Sediment / water quality, and hence prey availability, is sensitive to pollution, for example pesticides and fertilisers used both within and outside the site. Man-made features, such as flood banks or walls, have the potential to prevent natural movement of estuarine habitats, which may lead to a progressive loss of extent due to sea level rise / coastal squeeze. They may also affect bird populations by affecting sight lines; many birds seek areas where they have uninterrupted views so that they are able to maintain vigilance against predators, and will avoid areas where structures restrict visibility.	structures. This policy is restricted mainly to areas of human habitation. - Where a 'no active intervention' policy applies, this should enable natural processes, including the roll back of habitats where sea level rise results in the loss of intertidal areas. However, this may not be the case where habitats are constrained by natural features, such as hard cliffs. In this case, there may be a net loss of intertidal habitats, but it is not considered that this would be the result of SMP policy. - Where a 'managed realignment' policy applies, this will allow new intertidal habitat to be created, providing new areas where birds can feed or roost. This can mitigate for losses due to coastal squeeze, and has the potential to enhance the value of the designated sites. There may be temporary adverse effects during the managed realignment process, for example through disturbance where engineered structures are removed or modified, or during the likely 'settling in' period after realignment, where new habitats establish and, potentially, some localised areas of habitat are lost where water flow patterns change.	changes to water flow and geomorphology. For example, through creation of regulated tidal exchange initially, followed by full removal of defences. The appropriateness of different implementation policies will need to be considered on a case by case basis. - It may not be possible to avoid habitat loss due to coastal squeeze in all cases. Where this is the case, adverse effects on the designated bird populations may occur as a result of loss of foraging or roosting habitat. Where adverse effects are foreseen, it will be necessary to demonstrate that no alternative solutions exist and that the plan should be progressed due to imperative reasons of overriding public interest (IROPI). Through this process, it will also be necessary to demonstrate that appropriate compensation measures can be put in place to offset any habitat losses. New estuarine/intertidal habitat can be created through managed realignment, although in some cases it may not be possible to achieve an exact like-for-like replacement. This will be achieved through the *Severn Estuary Flood Risk Management Study Habitat Delivery Plan*, which is currently being developed by the Environment Agency. Further detail of this plan is provided below. In considering the effects on the designated features of Severn Estuary, it is important to consider the cumulative effects of the North Devon and Somerset SMP and the Severn Estuary SMP. Therefore, the delivery plan considers the estuary as a whole, rather than just those areas affected by this SMP. **Severn Estuary Flood Risk Management Study Habitat Delivery Plan:**	

<table>
<tr><th>Hazard</th><th>Interest feature</th><th>Favourable condition target for relevant attribute[1] based on conservation objectives (taken from underlying SSSI VAM plans or Regulation 33 advice)</th><th>Contribution of attribute[1] to ecological structure and function of site</th><th>Contribution of management[2] or other unauthorised sources to attribute and /or feature condition</th><th>Adverse Effect of proposal alone and in-combination on attribute[1] and/or feature</th><th>Can adverse affects be avoided?</th><th>Adverse affect on integrity; long term, medium term, short term. Yes, No or uncertain?</th></tr>
<tr><td></td><td>Species with peak counts in winter:
Tundra (Bewick's) swan Cygnus columbianus bewickii
Greater white-fronted goose Anser albifrons albifrons
Common shelduck Tadorna tadorna
Gadwall Anas strepera strepera
Dunlin Calidris alpina alpine
Common redshank Tringa totanus tetanus
[A037; A137; A160; A149; A054; A162; A048; and A394]</td><td></td><td></td><td></td><td></td><td>This plan, currently being drafted by the Environment Agency, assesses habitat loss within the Severn Estuary due to flood risk management actions, through coastal squeeze and sea level rise. This change is predicted for 20, 50 and 100 years from a 2005 baseline, based on a conservative assessment of estimated sea level rise. The loss of the three key habitat types (mudflat & sandflat, saltmarsh and transitional grassland) has been calculated for each epoch. Note that transitional grassland is not a qualifying feature of the designated sites, and has not been included:

<table>
<tr><th rowspan="2">Habitat</th><th rowspan="2">2005 Area (ha)</th><th colspan="3">Change in Area (ha) compared to 2005 baseline</th></tr>
<tr><th>2025</th><th>2055</th><th>2105</th></tr>
<tr><td>Mudflat and Sandflat</td><td>20,216</td><td>-606</td><td>-1,212</td><td>-2,628</td></tr>
<tr><td>Saltmarsh</td><td>1,654</td><td>-33</td><td>-215</td><td>-1,042</td></tr>
<tr><td>Total Area</td><td>21,870</td><td>-639</td><td>-1,427</td><td>-3,670</td></tr>
</table>

A screening process has been undertaken to establish the potential areas for habitat creation in the estuary:

<table>
<tr><th rowspan="2"></th><th colspan="3">Intertidal habitat creation opportunities</th></tr>
<tr><th>2025</th><th>2055</th><th>2105</th></tr>
<tr><td>Number of Sites</td><td>13</td><td>11</td><td>25</td></tr>
<tr><td>Area (ha)</td><td>2,492</td><td>1,300</td><td>3,768</td></tr>
<tr><td>Total area</td><td>2,492</td><td>3,792</td><td>7,560</td></tr>
</table>

In some cases, however, the delivery of these areas may not be achievable, and therefore a second screening exercise has been undertaken to identify a realistic habitat delivery programme for the next 20 years. This has concluded that:

4 priority sites can be progressed within the next 10 to 20 years; Steart, Congresbury, Slimbridge and</td><td></td></tr>
</table>

Hazard	Interest feature	Favourable condition target for relevant attribute[1] based on conservation objectives *(taken from underlying SSSI VAM plans or Regulation 33 advice)*	Contribution of attribute[1] to ecological structure and function of site	Contribution of management[2] or other unauthorised sources to attribute and /or feature condition	Adverse Effect of proposal alone and in-combination on attribute[1] and/or feature	Can adverse affects be avoided?	Adverse affect on integrity; long term, medium term, short term. Yes, No or uncertain?
						Awre. • These can provide potential habitat creation of between 550 and 700ha. This therefore provides the potential to meet the intertidal target for the Severn of 639ha. The Environment Agency will deliver habitat replacement through the SW Regional Habitat Creation Programme, and will aim to keep pace with habitat loss on a 1 to 1 basis in the long term.	
Severn Estuary SAC Applicable policies: See Severn Estuary SPA & Ramsar Site Condition assessment: See Severn Estuary SPA & Ramsar Site							
• Habitat loss / physical damage • Changes in physical regime • Habitat and community simplification • Disturbance • Changes in sediment supply • Watercourse modification • Shorter / longer duration of inundation	1130 – Estuaries 1140 - Mudflats and sandflats not covered by seawater at low tide 1330 - Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)	Favourable condition will be dependent on the extent and quality of estuarine habitats, and their ability to support the species that are dependent on them. Quality is dependent on good water and sediment quality, levels of disturbance to birds and other species, and the ability of the estuary to exhibit natural change.	The extent and quality of estuarine habitats is key to the integrity of the site and the important plant and animal populations that it supports, including internationally important bird populations.	Estuarine habitats do not usually require active management to maintain their interest. Saltmarsh habitats have traditionally been grazed, and may reduce in diversity if this is not maintained. Sediment / water quality is sensitive to pollution, for example pesticides and fertilisers used both within and outside the site. Man-made features, such as flood banks or walls, have the potential to prevent natural movement of estuarine habitats, which may lead to a progressive loss of extent due to sea level rise / coastal squeeze.	- Where a 'hold the line' policy applies this will result in the progressive loss or modification of intertidal habitat due to coastal squeeze. There may also be physical loss of habitat within the footprint of flood defence structures. This policy is restricted mainly to areas of human habitation. - Where a 'no active intervention' policy applies, this should enable natural processes, including the roll back of habitats where sea level rise results in the loss of intertidal areas. However, this may not be the case where habitats are constrained by natural features, such as hard cliffs. In this case, there may be a net loss of intertidal habitats, but it is not considered that this would be the result of SMP policy. - Where a 'managed realignment' policy applies, this will allow new intertidal habitat to be created, providing new areas where birds can feed or roost. This can mitigate for losses due to coastal squeeze, and has the potential to enhance the value of the designated site. There may be temporary adverse effects during the managed realignment	**Partly** - Progressive implementation of managed realignment policies would reduce the potential effects of sudden changes to water flow and geomorphology. For example, through creation of regulated tidal exchange initially, followed by full removal of defences. The appropriateness of different implementation policies will need to be considered on a case by case basis. - It may not be possible to avoid habitat loss due to coastal squeeze in all cases, with saltmarsh habitats being particularly vulnerable as they lie in the upper section of the tidal range. Therefore, it will be necessary to progress the plan under IROPI, with compensatory habitat provided under the *Severn Estuary Flood Risk Management Study Habitat Delivery Plan* (see above for further detail), which is currently being developed by the Environment Agency.	**Yes – short, medium and long term**

Hazard	Interest feature	Favourable condition target for relevant attribute[1] based on conservation objectives *(taken from underlying SSSI VAM plans or Regulation 33 advice)*	Contribution of attribute[1] to ecological structure and function of site	Contribution of management[2] or other unauthorised sources to attribute and /or feature condition	Adverse Effect of proposal alone and in-combination on attribute[1] and/or feature	Can adverse affects be avoided?	Adverse affect on integrity; long term, medium term, short term. Yes, No or uncertain?
					process, for example through disturbance where engineered structures are removed or modified, or during the likely 'settling in' period after realignment, where new habitats establish and, potentially, some localised areas of habitat are lost where water flow patterns change.		
• Habitat loss / physical damage • Changes in physical regime • Habitat and community simplification • Disturbance • Changes in sediment supply • Watercourse modification • Shorter / longer duration of inundation	1110 - Sandbanks which are slightly covered by sea water all the time [not a primary reason for selection of this site]	Favourable condition is dependent on: • Extent, distribution and composition of sandbank habitats and communities. • Distribution of sediment types across the site. • Depth, distribution and profile of sandbank features across the site.	Sandbanks within the Severn Estuary include some more permanent, stable areas and more mobile, ephemeral features. Sandbanks support species that are tolerant of the shifting seabed and scouring action of suspended sand, including a range of worms, shrimps, snails and bivalves. The species diversity of these habitats is often low but overall biomass can be high. Sandbanks also play an important role in holding and supplying sediment for other habitats; notably the intertidal mud and sandflats, saltmarshes and reef features and it is likely that subtidal invertebrate communities play a role as a food resource for some species of the fish assemblage feature of the SAC and Ramsar Site.	Anthropogenic influences are not significant in the management of this feature. Activities that affect sediment supply and water quality may adversely affect sandbank habitats. This may include impediment to natural geomorphological processes, or pollution from agricultural pesticides and fertilisers.	- Where a 'hold the line' policy applies this has the potential to affect sandbank habitats through the progressive effects of coastal squeeze. There is the potential that natural geomorphological processes could be constrained, affecting sediment supply and distribution. However, although there may be localised effects, it is considered unlikely that these would be significant in terms of the overall resource within the site. - Where a 'no active intervention' policy applies, this should enable natural processes, and no adverse effects on sandbank habitats would be expected due to SMP policy. - Where a 'managed realignment' policy applies, this should promote natural processes, and remove constraints that have previously existed. There is the potential that this could affect geomorphological processes, resulting in a change to sediment supply. However, such effects are likely to be localised and unlikely to be significant.	**Yes** - Any effects on sandbank habitats are likely to be localised and are unlikely to be significant.	**No** Any effects on sandbank habitats are likely to be localised and are unlikely to be significant.
• Habitat loss • Changes in physical regime • Changes in sediment supply	1170 - Reefs [not a primary reason for selection of this site]	Favourable condition is dependent on: • Extent, community composition and age structure. • Availability of suitable substrates. • Supply of larvae. • Abundance of food in the	The Severn Estuary has areas of biogenic reefs, formed by the tube-dwelling polychaete worm *Sabellaria alveolata*. *Sabellaria alveolata* reefs in the UK are predominantly an intertidal habitat but the Severn Estuary is one of the few places where *Sabellaria*	Anthropogenic influences are not significant in the management of this feature. Activities that affect sediment supply and water quality may adversely affect reef	- Where a 'hold the line' policy applies this has the potential to affect reef habitats through the progressive effects of coastal squeeze. However, as this habitat occurs primarily within the subtidal zone the extent of such effects are likely to be localised, and unlikely to be significant.	**Yes** - Any effects on reef habitats are likely to be localised and are unlikely to be significant.	**No** Any effects on reef habitats are likely to be localised and are unlikely to be significant.

Hazard	Interest feature	Favourable condition target for relevant attribute[1] based on conservation objectives *(taken from underlying SSSI VAM plans or Regulation 33 advice)*	Contribution of attribute[1] to ecological structure and function of site	Contribution of management[2] or other unauthorised sources to attribute and /or feature condition	Adverse Effect of proposal alone and in-combination on attribute[1] and/or feature	Can adverse affects be avoided?	Adverse affect on integrity; long term, medium term, short term. Yes, No or uncertain?
		water column.	*alveolata* reefs occur extensively in the subtidal, as well as the intertidal. These biogenic reefs tend to increase habitat diversity for other species, sometimes leading to higher species diversity within *Sabellaria* reefs compared to the surrounding sediment or rock habitats.	habitats. This may include impediment to natural geomorphological processes, or pollution from agricultural pesticides and fertilisers.	- Where a 'no active intervention' policy applies, this should enable natural processes, and no adverse effects on reef habitats would be expected due to SMP policy. - Where a 'managed realignment' policy applies, this should promote natural processes, and remove constraints that have previously existed. There is the potential that this could affect geomorphological processes, resulting in a change to sediment supply. However, such effects are likely to be localised and unlikely to be significant.		
Somerset Levels and Moors SPA & Ramsar site Applicable policies: n/a – site does not directly adjoin SMP boundary. Condition assessment: Catcott, Edington and Chilton Moors SSSI – 6% favourable; 92.5% unfavourable recovering; 1.5% unfavourable no change Curry and Hay Moors SSSI – 2% favourable; 98% unfavourable no change King's Sedgemoor SSSI – 27% favourable; 73% unfavourable no change Moorlinch SSSI – 16% favourable; 84% unfavourable recovering Shapwick Heath SSSI – 72% favourable; 28% unfavourable recovering Southlake Moor SSSI – 99% favourable; 1% unfavourable no change Tealham and Tadham Moors SSSI – 11% favourable; 86% unfavourable recovering; 3% unfavourable no change West Moor SSSI – 3% favourable; 97% unfavourable recovering West Sedgemoor SSSI – 99% unfavourable recovering; 1% unfavourable no change Westhay Heath SSSI – 55% favourable; 45% unfavourable recovering Westhay Moor SSSI – 24% favourable; 3% unfavourable recovering; 73% unfavourable no change Wet Moor SSSI – 42% favourable; 39% unfavourable recovering; 19% unfavourable no change At this site unfavourable condition is principally as a result of water quality issues, such as high phosphate levels, as a result of agricultural activities.							
• Habitat loss / physical damage • Changes in physical regime • Habitat and community simplification • Disturbance • Changes in sediment supply • Watercourse modification • Shorter / longer	SPA: Under Article 4.1 of the Directive (79/409/EEC): *Over winter;* • Bewick's Swan *Cygnus columbianus bewickii* • Golden Plover *Pluvialis apricaria* Under Article 4.2 of the Directive	Favourable condition is dependent on the extent, quality and distribution of wetland / grazing marsh communities used by wintering birds and levels of human disturbance, particularly during periods of high stress (i.e. cold weather). Birds require adequate areas to feed and roost throughout daily and seasonal cycles.	The extent and quality of wetland habitats, and levels of human disturbance, are key to the survival of bird populations during the winter period. Birds will also be dependent on areas outside the designated site to provide feeding and roosting habitat, particularly on the Severn Estuary.	The site lies within the flood plains of a number of large rivers and drains with many areas below high tide levels. Peat extraction occurs over part of the site. This is not currently thought to pose a risk, and future extraction will be subject to controls under the Habitats Regulations. The majority of land is farmed and under private	- It is not considered that SMP policies will have a significant effect on the designated features within the boundary of the site, which lies approximately 12km inland of SMP policy units at its closest point. - Where a 'hold the line' policy applies this is likely to result in coastal squeeze in the medium to long term, reducing the extent of intertidal habitat; This could adversely affect feeding and roosting habitats on the Severn Estuary which	**Partly** – see Severn Estuary SPA / Ramsar site above.	**Yes - short, medium and long term**

Hazard	Interest feature	Favourable condition target for relevant attribute[1] based on conservation objectives *(taken from underlying SSSI VAM plans or Regulation 33 advice)*	Contribution of attribute[1] to ecological structure and function of site	Contribution of management[2] or other unauthorised sources to attribute and /or feature condition	Adverse Effect of proposal alone and in-combination on attribute[1] and/or feature	Can adverse affects be avoided?	Adverse affect on integrity; long term, medium term, short term. Yes, No or uncertain?
duration of inundation	(79/409/EEC): *Over winter;* • Shoveler *Anas clypeata* • Teal *Anas crecca* • Wigeon *Anas penelope* Under Article 4.2 of the Directive (79/409/EEC) by regularly supporting at least 20,000 waterfowl: • Over winter, the area regularly supports 72,874 individual waterfowl (5 year peak mean 1991/2 - 1995/6) Ramsar Site: Assemblages of international importance species with peak counts in winter. Species occurring at internationally important levels. Species with peak counts in winter: • Bewick's swan *Cygnus columbianus bewickii* • Teal *Anas creecca* • Northern lapwing *Vanellus*			ownership. Most farms have dairy or beef herds. Trends in agriculture and support schemes have a critical influence as improvement with conversion of grassland to arable, land drainage, increased applications of inorganic fertilisers and cutting of silage are major threats to vulnerable peat soils and the nature conservation value of the site. Less intensive practices are encouraged through the ESA scheme, WES and Section 15 agreements. Water Level Management is critical and is being addressed through the Water Level Management Plans process and the development of Raised Water Level Areas and Environmentally Sensitive Area (ESA).	support bird populations on the site, potentially altering bird population size, density and distribution on the Somerset Levels and Moors.		

Hazard	Interest feature	Favourable condition target for relevant attribute[1] based on conservation objectives *(taken from underlying SSSI VAM plans or Regulation 33 advice)*	Contribution of attribute[1] to ecological structure and function of site	Contribution of management[2] or other unauthorised sources to attribute and /or feature condition	Adverse Effect of proposal alone and in-combination on attribute[1] and/or feature	Can adverse affects be avoided?	Adverse affect on integrity; long term, medium term, short term. Yes, No or uncertain?
	vanellus						

Notes:
1 ATTRIBUTE = Quantifiable aspects of interest features (subject to natural variation in some cases) that can be used to help define favourable condition for that feature. See Site Conservation Objectives
2 MANAGEMENT = in this context management refers to management of the European site
3 If uncertain consider time-limited consent, or other legally enforceable modifications

Stage 3 Environment Agency conclusion

Can it be ascertained that the plan will not adversely affect the integrity of the European site(s)?

No

This assessment had been carried out considering the likely effects of the implementation of policies identified in the draft North Devon and Somerset Coast Shoreline Management Plan (SMP) alone and in-combination, on site integrity of a number of European sites. The policies, are, by their nature, high level and lack specific detail. However, in the absence of mitigation there is the potential that interest features, and hence the integrity of some European sites, may be adversely affected. The Stage 3 Appropriate Assessment makes the following conclusions for those sites and features 'scoped in' by the Stage 2 assessment:

- **No adverse effects** are foreseen for **Lundy SAC** and **Braunton Burrows SAC**.

- **No adverse effects** are foreseen for **reef and sandbank features** designated within the **Severn Estuary SAC**.

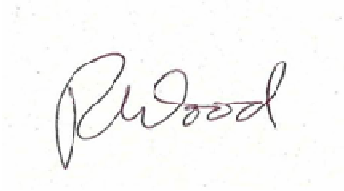
- There would be a **potentially adverse effect** on estuary, mudflat and Atlantic salt meadow habitats designated within the **Severn Estuary SAC**, the wintering and passage bird populations that these support designated within the **Severn Estuary SPA and Ramsar site** and wintering bird populations within the **Somerset Levels and Moors SPA and Ramsar site**.

The predicted adverse effects will be as a result of coastal squeeze, causing the progressive loss of habitats and their associated species through sea level rise against coastal defences. In order for the plan to be progressed, therefore, it will be necessary to demonstrate that no alternative solutions exist and that the plan is necessary due to imperative reasons of overriding public interest. Through this process, it will also be necessary to demonstrate that appropriate compensation measures can be put in place to offset any habitat losses. New estuarine/intertidal habitat can be created through managed realignment and this will be achieved through the *Severn Estuary Flood Risk Management Study Habitat Delivery Plan*, which is currently being developed by the Environment Agency. The Coastal Group will be committed to ensuring that such measures are implemented to ensure that there are no net adverse effects on integrity of European sites as a result of SMP policy.

This assessment at the plan level does not remove the need for an assessment at the project level. This SMP has been signed off as setting the strategic direction for managing coastal flood risk, on the basis that it cannot be put into effect until more detailed appraisal and assessment has taken place on plans or projects arising out of this SMP to show it and they have met the requirements of the Habitats Regulations.

If a project is not consistent with the plan then a new Habitats Regulations Assessment may well be required. Furthermore, a project may be entirely consistent with this plan but still require further Appropriate Assessment as detail emerging at the scheme-design stage may identify additional impacts that have not been assessed here. Any project arising out of the plan will ensure any adverse effects on integrity of European site are avoided.

Name of EA officer undertaking appropriate assessment:

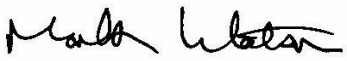


Signed: **Date:** 11/08/2010

Endorsed by (if appropriate)

NE COMMENTS ON APPROPRIATE ASSESSMENT:
IS THERE AGREEMENT WITH THE CONCLUSION? YES/~~NO~~
(Please provide summary and explanation for answer given)

Signed: (NE local team manager) **Date:** 6.9.10



CCW COMMENTS ON APPROPRIATE ASSESSMENT:
IS THERE AGREEMENT WITH THE CONCLUSION? YES/~~NO~~
(Please provide summary and explanation for answer given)

Signed: (CCW Regional Director) **Date: 24.09.2010**

PART B: Final Appropriate Assessment Record

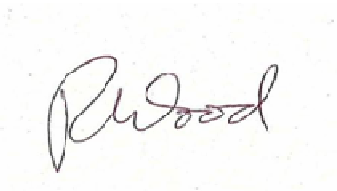
- North Devon and Somerset Shoreline Management Plan
- 7th May 2010

This is a record of the appropriate assessment required by Regulation 61 of the Conservation of habitats and Species regulations 2010, undertaken by the Environment Agency in respect of the above plan, in accordance with the Habitats Directive (Council Directive 92/43/EEC). Having considered that the plan would be likely to have a significant effect on Lundy SAC, Braunton Burrows SAC and Severn Estuary SAC, SPA and Ramsar Site and that the plan was not directly connected with or necessary to the management of the sites for nature conservation, an appropriate assessment has been undertaken of the implications of the proposal in view of the site's conservation objectives.

Natural England and CCW were consulted under Regulation 61 between October 2009 and January 2010. The conclusions of this appropriate assessment are in accordance with the advice and recommendations of Natural England and CCW, attached at Annex 1..

The assessment has concluded that, providing avoidance measures are put in place as set out in Table 3:

- The plan as proposed **can** be shown to have **no adverse effect** on the integrity of Lundy SAC and Braunton Burrows SAC.
- The plan as proposed is shown to have a **potentially adverse effect** on the Severn Estuary SPA, SAC and Ramsar site and Somerset Levels and Moors SPA and Ramsar Site.



Signed (EA officer): **Date**: 11/08/2010

Annex 1

Date: 9 June 2010
Our ref:

Angela Proctor
The Environment Agency
Manley House
Kestrel Way
Exeter
Devon EX2 7LQ

Riverside Chambers
Castle Street
Taunton
TA1 4AP

barry.phillips@naturalengland.org.uk

01934 - 713864

Dear Angela,

Habitats Regulations Assessment of North Devon and Somerset (Harland Point to Anchor Head) Shoreline Management Plan 2 (NDAS SMP2)

This is Natural England's response to the draft HRA of the North Somerset and Devon SMP2 in accordance with its statutory responsibilities under The Conservation of Habitats and Species Regulations 2010.

The SMP2 is considered as a "plan" for the purpose of Regulation 61 of The Conservation of Habitats and Species Regulations 2010 (which has replaced The Conservation (Natural Habitats, &c.) Regulations 1994 (as amended) as the principal means by which the Habitats Directive is transposed in England and Wales) for which an appropriate assessment will be required if there is a probability or risk that it will have a significant effect on the Natura 2000 network of European protected areas.

We agree with the findings of the Stage 3 Appropriate Assessment that it cannot be shown that SMP policies will not have an adverse effect on the Severn Estuary suite of European protected sites (SPA, SAC and Ramsar sites) due to the potentially adverse effects on designated features as a result of sea level rise against coastal flood defences causing progressive loss of habitats and their associated species.

We have compared this HRA with the one produced for the Severn Estuary SMP2 and agree that their conclusions are now aligned.

For the Plan to be adopted it will need to meet the requirements of Regulation 103 (Considerations of Overriding Public Interest) and Regulation 105 (Compensatory Measures) as required by The Conservation of Habitats and Species Regulations 2010.

It must be established whether alternative solutions can be found which will not compromise the integrity of European sites, and if none can be found, then the Secretary of State needs to consider whether there are Imperative Reasons of Overriding Public Interest (IROPI) that would enable the Plan to go forward to adoption.

If the Secretary of State decides that the Plan should be implemented despite a negative assessment of the implications for European site integrity, then the Environment Agency as the competent authority must secure any necessary compensatory measures to ensure the overall coherence of the Natura 2000 network of sites.

We understand from recent discussions with the EA and CCW (7 June 2010) that the EA will instruct its consultants to prepare a single IROPI case for all of the SMPs which cover the Severn Estuary suite of European sites.

We expect that compensatory habitat required for the adoption of the SMP2 will be delivered by the EA's South West Regional Habitat Creation Programme (RHCP). Sites identified by the RHCP as suitable for the creation of habitat to compensate for losses to the Severn suite of European sites must be clearly linked to the SMP2 and compensatory habitat must be ecologically functional before any damage has occurred. We recognise that for losses which are predicted to occur in Epochs 2 and 3, it is currently not possible to predict with confidence how much compensatory habitat will be required. However, the SMP2 Action Plan must state clearly that an appropriate monitoring process will be established to estimate accurately the scale of future losses for each epoch as soon as possible, in order for compensatory habitat to be secured through the RHCP before such losses occur.

Natural England will work with the Environment Agency and CCW to advise on the IROPI process and the development of the SW RHCP to progress the adoption of the SMP2.

Specific comments on the HR01 and HR02 forms:

Note: the most critical amendments required are highlighted in yellow.

HRO1

Page		
Section 7	*List of interest features*	
2	Severn Estuary SPA	We note that the NDAS SMP2 HRA uses the latest SPA review data, whereas the Severn Estuary SMP2 HRA uses the original SPA data sheet.
	SE Ramsar Site	Identify the Ramsar criteria listed with the criteria numbers
		Ramsar criterion (3) "Estuarine Communities" Omitted
3		Ramsar criterion (5) "Supports an assemblage of international importance" Omitted
		Under RC6: European White-fronted Goose not Greater w-f goose
	SE SAC	Insert "Intertidal" before "mudflats and sandflats not covered ..."
		Insert "Subtidal" before "sandbanks which are slightly covered ..."
		INCLUDE: The Somerset Levels & Moors (SL&M) SPA and Ramsar Site is still not included. The Severn Estuary SMP2 HRA has correctly included the SL&M SPA and Ramsar Site and identified correctly LSEs. This HRA should replicate this approach. It may have been assumed that assessment of impacts on the SL&M SPA and Ramsar Site will be addressed in the FRMS and subsequent Project HRAs, but this does mean that these European sites should not have been included in the HRA for this high-level strategy.

Section 9	*Potential hazards*	
3 - 8		Would like to see a clear indication of LSE or No LSE related to the policy chosen as presented in the Severn Estuary SMP2 HRA. In this HRA the wording is sometimes vague.
6	SE SPA, Ramsar Site & SAC	7d36 and 7d37: "line of national grid power lines" has been inserted. Why? The cells haven't changed.
7		Sea Level Rise: *"However, in most cases the losses would not be the result of a change in SMP policy"*. But, there are losses that will derive from the HTL policy. The difference between "natural losses" and man-made (i.e. coastal squeeze) losses should be stated.
6 - 8	SE SPA & Ramsar Site	Potential effects arising from changes in water chemistry (e.g. salinity changes) have not been considered.
		INCLUDE: SL&M SPA & Ramsar Site.
Section 10	*a) Effect likely to be significant?*	
9	Braunton Burrows SAC	State the policies.
	Severn Estuary SAC	State the policies.
		INCLUDE: SL&M SPA & Ramsar Site.
Section 10	*b) In combination*	The analysis of "in combination" effects is not very thorough.
		Interaction of policies with the SE SMP2 hasn't been explored. The reference here appears to concern the previous SMP.
		Interaction of policies with all CFMPs listed hasn't been analysed. Assumptions are made which are not supported by presentation of evidence. It is surprising that there isn't consideration of the interaction between the policies set by the Parrett CFMP and the NDAS SMP2 given that the tidal limit of the Parrett is 32 km inland at Oath Lock, and for the River Tone, 35 km inland at Newbridge Sluice. There appears to be a tendency to defer consideration of "in combination" effects to FRMS and Project levels.
		OMITTED: LDF Core Strategies: interaction with emerging policies should have been considered as well as the existing local plans which end in 2011 (shortly after adoption of the SMP2). The HRA argues that there will be no significant "in combination" effects because the local plans contain "policies that seek to protect and enhance biodiversity". This section should have provided an analysis of the possible "in combination" effects arising from interaction of the SMP2 and the Core Strategy policies.
		New nuclear build at Hinkley Point: we agree with CCW's comments that the analysis of "in combination" effects should have been more detailed.

HRO2

Page		
9, 11	SE SPA & Ramsar Site	Reference to progressive coastal realignment using RTE as an intermediate state: NB: this may not be desirable and its use should be evaluated on a case-by-case basis.
6 - 13	Table 3 - Appendix 12: Proforma for Stage 3 (Appropriate Assessment Record)	The last column does not state in which epochs (short/medium/long-term), adverse effects are predicted to occur, although the policies for each epoch are stated in relation to the cells which lie within the European sites. The heading for the last column in the table only states "long-term" and "short-term", omitting "medium-term". We appreciate that the penultimate column does summarise the findings of the Severn Estuary FRMS Habitat Delivery Plan which has calculated the loss of intertidal habitats for each epoch.

The most important amendment required is the inclusion of the Somerset Levels and Moors SPA and Ramsar Site in the assessment. It has been included in the HRA of the Severn Estuary SMP2, and given the local agreement between Defra family agencies (the EA, NE and CCW) that work should begin on preparation of a single IROPI case for the Secretary of State to consider, then this anomaly between the two SMP2 HRAs covering the Severn suite of European sites must be addressed now.

The amended form will be signed-off by Natural England without any delay. Please contact me if you need further advice.

Yours sincerely

Barry Phillips

Natural England - Somerset

01934 713864

07887 553050

Lead contact for NE Somerset on:

Steart Managed Realignment Project
Wetland Vision Projects
SMPs & CFMPs
Climate Change
Biodiversity - Chair of Somerset Biodiversity Partnership
Local Government - SSP & LAA - Chair of SSP Environmental Leaders Group

4

Cyngor Cefn Gwlad Cymru
Countryside Council for Wales

CADEIRYDD/CHAIRMAN: JOHN LLOYD JONES OBE
PRIF WEITHREDWR/CHIEF EXECUTIVE: ROGER THOMAS

Anfonwch eich ateb at/Please reply to:
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Devon
EX2 7LQ

Ein cyf/Our Ref: 10/682/MH/KR/MP

26 January 2010

Email: angela.proctor@environment-agency.gov.uk.

Dear Ms Proctor

NORTH DEVON AND SOMERSET (HARTLAND POINT TO ANCHOR HEAD) SHORELINE MANAGEMENT PLAN (SMP2) – APPROPRIATE ASSESSMENT (HABITATS REGULATIONS ASSESSMENT (HRA))

Thank you for informing the Countryside Council for Wales about the impending completion of the North Devon and Somerset (Hartland Point To Anchor Head) SMP2. We note that the above Plan affects the Severn Estuary Special Area of Conservation (SAC), Special Protection Area (SPA) and Ramsar which are all cross-border sites between England and Wales. Therefore, CCW should have been involved in the Plan development in our capacity as a consultant body under the Conservation (Natural Habitats &c) Regulations 1994 and advisers to the Welsh Assembly Government on the natural heritage of Wales and its coastal waters. While we understand that this was a genuine oversight, we are disappointed not to have been consulted and feel that this raises a number of issues which may leave the Plan itself open to challenge.

We understand that there is now limited capacity to input or alter this assessment or the Plan itself, therefore, the following comments do not constitute the detailed advice we would normally provide on the HRA content and methodology, but are intended to assist you in developing a consistent approach for this Plan in line with other SMP2s which potentially affect European and international sites around the Welsh Coast.

CCW welcomes and supports the efforts made by the Environment Agency, The North Devon and Somerset Coastal Group and your consultants, in respect of this HRA process. Please note that our comments are limited to those sites which lie wholly or partly within Wales and do not cover those sites which lie entirely within England. However, they should be read in conjunction with comments from Natural England as the issues raised may be relevant to the assessment as a whole.

We note that this report is described as the "appropriate assessment" rather than a Habitats Regulations Appraisal (HRA). The Appropriate assessment only forms part of the HRA along with the "screening" and "test for likely significant effects". It should be noted that while the Environment Agency may act as the lead competent authority for the SMP2 process for plans that are "cross border" between England and Wales, the Welsh Assembly Government (WAG) are the Competent Authority with respect to those elements of the SMP2 that lie within Wales at the current time. While the coastal policy units of this Plan lie entirely within England, given the impacts on the Severn Estuary suite of international and European cross-border sites you should clarify if this plan will, therefore, also need to be agreed with the WAG.

We understand and appreciate that this HRA has concentrated on the impacts of the proposed SMP2 policies on the European and international sites identified rather than project level impacts that may occur as a result of implementing those polices. We also appreciate that the level of detail that can be considered as part of a plan level assessment is not the same as would be the case for a project level appraisal. **However, we must emphasise that this assessment must still address the potential adverse effects as far as is practicable before deferring assessment down to the project level.** It should also show that the three prerequisites for deferment are met before adopting this approach; these are that it is not possible for the plan to determine the effects at this level, that the lower tier plan or project is subject to HRA through legislation or policy and that the Plan is capable of being amended subject to the findings of the more detailed assessment. We welcome, therefore, the firm recommendation that there will be a need to carry out more detailed, project level, HRAs on the coastal flood risk strategies and scheme proposals and specific SMP2 policies will only be implemented subsequent to the findings of those assessments.

There appears to be some confusion in the Assessment over the difference between mitigation measures and compensation measures. Mitigation and avoidance measures will prevent the identified likely significant effects from manifesting themselves as adverse effects, thus enabling site integrity to be maintained (as defined by the Sites' conservation objectives). Compensation implies that an adverse effect will occur and site integrity will be compromised (for example, the loss of inter-tidal habitat as result of coastal squeeze and its replacement outside the site boundary). Mitigation should be considered as part of the appropriate assessment process and included with the outcomes and recommendations. Compensation forms part of the consideration for any case for Imperative Reasons of Over-riding Public Interest (IROPI) which is put forward and must not be considered as part of the appropriate assessment. There are numerous points within this Assessment where "compensation" is referred to and the implication is that features within the sites are likely to be compromised by the implementation of a certain policy (subject to more detailed assessment) and that alternative habitat will need to be created.

We aware that the Severn Estuary Risk Management Study Habitat Delivery Plan sets out a system for addressing the issues of potential habitat loss due to "coastal squeeze" around the Estuary but we understand that this is predominantly outside the boundary of the European and international sites and therefore should be only considered, in the context of losses resulting from the implementation of this plan, as "compensation measures". This may be simply confusion of terminology and the references to "compensation" actually should read "mitigation", but this needs to be clarified as a matter of some urgency.

Given these concerns, CCW feel that the assessment should be further clarified before we could fully concur with an assessment finding of "no adverse effects". These particularly relate to issues of mitigation and compensation outlined above, but there are also a number of potential effects in

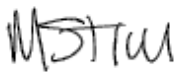
combination with other plans, policies and programmes that need to be further considered or, if already considered, then a more comprehensive rationale for their exclusion should be included.

It may be possible to resolve many of the points raised by clarifying the methodology or text but as it currently stands we feel that this HRA appropriate assessment is not completely consistent with other SMP2s being developed and contains some significant discrepancies that may leave it open to challenge.

We have copied this letter to Peter Jones at the Welsh Assembly Government (WAG) because of our understanding that WAG is the competent authority for this plan in Wales.

I trust these comments are of assistance to you. Should you have any queries please contact Kerry Rogers in our Swansea office or Alison Brown in our Bangor office.

Yours sincerely



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A: Administration details

Date: 30th September 2010

Plan/project reference:
Severn Estuary Shoreline Management Plan Review (SMP2)
North Devon & Somerset Shoreline Management Plan Review (SMP2)

Contact person:
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B: Site details

Name of European site affected: Severn Estuary

This site is:
- ✓ a designated Special Area of Conservation (SAC)
- ✓ a classified Special Protection Area (SPA)
- ✓ a Ramsar site

Name of European site affected: Somerset Levels and Moors

This site is:
- ✓ a classified Special Protection Area (SPA)
- ✓ a Ramsar site

C: Summary of the plan or project having an effect on the site

Details on the plan/project:

Shoreline Management Plan Reviews (SMP2s) have been prepared for the Severn Estuary and North Devon and Somerset coasts. This Statement of Case (SoC) addresses the effects of both of these plans as they affect the same sites and have been developed to address the same issues – namely coastal flooding and erosion.

SMP2s are large scale non-statutory plans that assess the risks from coastal flooding and erosion and set out policies relating to shoreline alignment over a 100 year timeframe, to help manage those risks.

SMP2s are developed by the Coastal Groups around England and Wales and provide guidance to the relevant coastal operating (Local) Authorities and the Environment Agency. . They should be used to help plan for and manage change at the coast. The development of SMP2s follows the procedures set out in the SMP2 Procedual Guidance documents (Defra, 2006), with input from Coastal Group partners and stakeholders. The policies considered are those set out in the guidance, namely – No Active Intervention (NAI), Hold the Line (HTL), Managed Realignment (MR) and Advance the Line (ATL).

The Severn Estuary SMP2 (SE SMP2) is a cross-border plan, covering both England and Wales. It follows the shoreline from Lavernock Point, near Penarth (Wales) to Anchor Head, near Weston Bay (England). It includes the islands of Steep Holm and Flat Holm. The upstream boundary is at Haw Bridge, near Gloucester (England). From the shoreline, the SE SMP2 extends inland one kilometre or to the extent of the 1 in 1,000 year flood event (whichever is greatest). Figure A1 in Appendix A shows the area covered by the SE SMP2.

The North Devon and Somerset SMP2 (ND&S SMP2) is wholly within England and abuts the SE SMP2. It follows the shoreline from Anchor Head to Hartland Point and includes Lundy Island. Figure A2 in Appendix A shows the area covered by the ND&S SMP2.

Based on the assessments undertaken in accordance with the Habitats Regualtions, it cannot be concluded that the SE SMP2 or the ND&S SMP2, either alone or in combination with other plans or projects will not adversely affect the European sites listed in Section B.

The SE SMP2 and ND&S SMP2 are due to be adopted in 2010.

D: Summary of the assessment of the negative effects on the site

This SoC only considers those impacts that have not been ruled out by the HRAs (Habitats Regulations Assessments) undertaken for the two SMP2s or would be more appropriately determined at a subsequent level of the planning process – ie. strategy or individual project (scheme) .

The following signficant adverse effects on the European sites listed in Section B cannot be ruled out:

- Loss of intertidal habitat as a result of Hold the Line policies leading to coastal squeeze;
- Potential impacts on bird population size, distribution and density (Severn SPA/Ramsar; Somerset Levels and Moors SPA/Ramsar), principally as a result of loss / impacts to supporting habitat within the protected sites as a result of policies leading to habitat changes;
- Changes to the form and function of the estuary as a whole as a result of all combined policies and the above impacts.

The estuary is a key feature of the designations and maintenance of estuary form and function is critical to maintaining the Severn sites in favourable condition.

Further information on these impacts, the features of the site affected and the relevant conservation objectives is provided in the HRAs undertaken for the two SMP2s (Appendix C) Appendix D summarises the features of the sites potentially affected by the SMP2 and details their conservation objectives, whilst Appendix E provides a full list of all features and conservation objectives.

Potential impacts that cannot be addressed at the SMP2 level and have therefore been deferred are:

- Impacts arising as a result of how HTL is implemented i.e. what the Standard of Protection (SoP) of defences will be – this will be considered by the Severn Estuary Flood Risk Management Strategy (SEFRMS), its associated HRA and any IROPI SoC;
- Impacts arising to supporting habitat outside the protected sites, as a result of Managed Realignment policies leading to habitat changes brought about by inundation of sea water – this will be considered at individual project level. The SMP2 HRA identifies the need to carry out project level HRAs on specific development proposals and these may ultimately influence the implementation of specific policies and the creation of habitat on a site by site basis;
- impacts that may occur as a result of implementing policies i.e. from construction works – this will also be considered at the project level. The SMP2 HRA identifies the need to carry out project level HRAs on specific development proposals.

All Policy Units from the SE SMP2 (66 Policy Units) and the 23 Policy Units from the ND&S SMP2 where impacts to the sites listed in Section B could not be ruled out have been included in this SoC. Other Policy Units in the ND&S SMP2 have been

assessed as not adversely affecting European sites. Figure A3 in Appendix A shows the ND&S SMP2 Policy Units included in this SoC.

For the purpose of the assessment, the Severn Estuary has been divided into six Habitat Behaviour Units (HBUs), as this most accurately describes the way the estuary functions (see Figure B1 in Appendix B). These divide the estuary into cross-sections that cover both banks. Habitat loss predictions are based on the updated Coastal Habitat Management Plan (CHaMP) model which predicts how the estuary might respond to changes in the estuary form or conditions. Predictions are at a strategic scale and do not take account of site specific and localised parameters. Predictions based on smaller subdivisions are not currently possible, as the margin of error within the calculations would be too great. The updated CHaMP predictions are considered the best available predictions at this time

The table below shows the percentage of coastline allocated to each Policy Option, broken down by HBU and SMP2 epoch.

	SMP2 Epoch								
	0 – 20 years			20 – 50 years			50 – 100 years		
HBU	HTL	MR	NAI	HTL	MR	NAI	HTL	MR	NAI
	%	%	%	%	%	%	%	%	%
1	11	6	1	11	3	2	7	7	4
2	5	0	1	3	1	1	3	0	3
3	33	3	7	34	3	7	33	3	7
4	4	0	1	4	0	1	4	0	1
5	11	0	8	11	0	8	9	2	8
6	3	2	2	5	0	2	5	0	2
Total	**68**	**11**	**21**	**70**	**8**	**22**	**62**	**12**	**26**

As can be seen from the table above, 68% of the coastline has a HTL policy in the short term (0 – 20 years), 70% in the medium term (20 – 50 years) and 62% in the long term (50 – 100 years). These policies could lead to coastal squeeze and the loss of intertidal habitat. The predicted habitat losses in hectares (Ha) within the Natura 2000 sites (N2K) are set out in the table below.

	SMP2 Epoch					
	0 – 20 years		20 – 50 years		50 – 100 years	
HBU	Saltmarsh	Mudflat /Sandflat	Saltmarsh	Mudflat /Sandflat	Saltmarsh	Mudflat /Sandflat
1	-18	+159	-137	0	-343	-398
2	-22	+26	-59	+13	-147	-65
3	-49	-669	-76	-1,147	-255	-2,486
4	-1	-3	+1	-14	-27	-14
5	+23	-202	+24	-135	-59	-270
6*	+29	+48	+29	+113	-205	+599
Total by habitat type	-38	-641	-218	-1170	-1036	-2634
Overall Total Intertidal**	-679		-1388		-3670	

*only 10% of HBU6 is within the N2K site. We have quoted the total HBU6 predictions as it is not possible to look at smaller subdivisions. The predicted habitat change in HBU6 show that a further 599Ha of mudflat would exist by 2110 (i.e. the 3rd epoch), as saltmarsh becomes increasingly flooded and converts to mudflat.
** intertidal = mudflat + sandflat + saltmarsh

These predicted habitat losses are not based on the preferred SMP2 policy options detailed above, but have been predicted assuming a HTL policy for all Policy Units, which overestimates total losses and is, therefore, a worst case scenario.

Six Policy Units have a MR policy option in the short term, ten have a MR policy option in the medium term and eight have a MR policy option in the long term. These policies could lead to a loss of, or impacts to, supporting habitat.

The combination of HTL, MR and NAI policies could lead to changes in the form and function of the estuary as the total area, relative proportions and location of different habitat types changes. This could impact on the 'estuary' feature of the SAC and Ramsar sites.

ATL has not been chosen as a policy option for any of the Policy Units within this assessment and is not considered further. The development of the Bristol Deep Water Container Terminal (DWCT) will involve land reclamation. An EIA, HRA and IROPI SoC have been prepared separately for this development as part of the consenting process. The DWCT does not affect the overall choice of policy option for the SMPs. The DWCT is not considered further in this SoC.

In many areas key drivers for the selection of SMP2 policies have been public health and safety and socio-economic reasons – more detail is set out in Sections F and G.

No priority habitats are affected by the SMP2 policies.

E: Modifications or restrictions considered

All four policy options were assessed for each Policy Unit as part of the development of the SMP2s and the associated SEAs (Strategic Environmental Assessments), while the HRAs specifically concentrated on the impacts to the European and Ramsar sites. Possible modifications or restrictions were assessed to avoid or mitigate the potential adverse effects of the SMP2s on the European sites listed in Section B. Preventative and mitigation measures that have been identified and must be undertaken in order to ensure that no adverse effects arise are set out in the SMP2s' Action Plans and the HRA. These measures are:

- Ensure nature conservation and geomorphological issues are taken into account in the design / construction of new defences. This should include ensuring that an EIA is undertaken, the footprint of defences is minimised, projects seek to work with natural processes and timing of works to minimise disturbance to features of the sites e.g. works will only be permitted at the appropriate time of year (April – September) to avoid disturbance to wintering birds.
- Ensure nature conservation issues are taken into account in the management and maintenance of new defences.

- Ensure that all studies, strategies and schemes give adequate consideration to nature conservation issues in order to fully understand and manage implications of future management decisions as well as to seek, where practical, opportunities to improve the condition of the natural environment;
- The creation of new intertidal habitat along the Steart Peninsula through the South West Regional Habitat Creation Programme will offset losses of saltmarsh and provide supporting freshwater habitat in the short term (planned completion by March 2015). Future habitat creation projects within the Axe Estuary, at the mouthof the Congressbury Yeo and along the Parrett estuary will be investigated over the next 25 years with a view to providing new intertidal and freshwater habitat to support the conservation interests of the European sites. Over the timeframe of the two SMPs there are 24 policy units where No Active Intervention is recommended. This policy will assist the natural evolution of the estuary and allow coastal processes to proceed unhindered thus reducing overall losses to coastal squeeze.
- The Environment Agency and other operating authorities have produced water level management plans for the component SSSIs that form the Somerset Levels and Moors SPA. These plans have, and continue to be, delivered as part of a planned programme to improve the overall quality of bird habitat within this SPA, and to support the bird populations using both the Somerset Levels and Moors and the Severn Estuary European sites.

Some impacts cannot be addressed at the SMP2 level and have been deferred for consideration by the SEFRMS, its associated HRA and any IROPI SoC (see Section D for details). The HRAs also make it clear that there will be a need to carry out more detailed, project level HRAs on specific development proposals.

F: Alternative solutions considered

It is not possible to identify individual policy options that are the cause of adverse impacts. This is due to the interlinkages between Policy Units, based on geomorphological processes and flood cells; and the whole-estuary basis of the Severn Estuary SAC, SPA and Ramsar sites.

All four available policy options were assessed for each Policy Unit as part of the development of the SMP2s and the associated SEAs, in line with SMP Procedual Guidance.

No Active Intervention – Do Nothing
It is worth noting that even if no further active management of the shoreline were undertaken, it would not possible to rule out damage to the European sites listed in Section B due to:

- Coastal squeeze against natural hard substrate (e.g. cliffs) and existing built structures. Coastal squeeze would still occur at least in the short term against existing structures even in the absence of management / maintenance, due to the residual life of these structures;
- Migration of features of the site (habitats and species) beyond the boundary of the site due to natural progression. This can be thought of as ‘imaginary coastal squeeze’ against the existing boundary of the site, rather than against physical structures such as sea walls;

- The inability to guarantee that natural progression / roll back of the coast would replace lost habitats in the proportions and locations where they would be lost;
- The inability to guarantee that the form and function of the estuary as a whole would be maintained in the absence of management / human intervention.

Managed Realignment

Managed realignment implemented around the whole estuary would have a significant adverse effect on land use, property and businesses impacting on agriculture, power stations, ports, marinas and critical infrastructure around the estuary. As with the do nothing option, the migration of features of the site (habitats and species) beyond the boundary of the site due to natural progression ('imaginary coastal squeeze' against the existing boundary of the site) would affet the European and Ramsar sites. This option would also adversely affect freshwater SSSIs currenlty proteted from tidal flooding.

Hold the Line

It is also inapporaraite to apply a Hold the Line policy around the whole of the estuary as this is neither a cost effetctive nor a sustainable option as the costs and resources required to provide an ever increasing level of protection in the face of climate change would soon far outweigh the economic benefits. In addition, coastal squeeze around the estuary and the inability of the estuary to retain its current form and function would adversely affect the Severn European Sites.

It is inevitable that whatever the combination of SMP policies selected they would not avoid the adverse effect of theSevern European and Ramsar sites. No sinlge policy can provide an acceptable solution around the whole estuary, and as a consequence the preferred SMP2 invovles a combination of the above policies. We have looked at all the alternative options, but there is no solution that entirely avoids impacts on the European sites, we chave therefore sought to minimise these impacts through sensitive implementation and mitigation (see E previously).

No Active Intervention along with the other three alternative SMP2 policy options, were assessed as part of the SE SMP2 and ND&S SMP2 process and are documented with the SMP2 reports. These assessments demonstrated that alternatives would not meet the flood and coastal erosion risk management nor the environmental (SEA) objectives of the Shoreline Management Plans.

G: Imperative reasons of overriding public interest

The reasons to approve and implement the ND&S SMP2 and SE SMP2, notwithstanding that negative impacts to the sites listed in Section B cannot be ruled out are summarised below:

1. <u>Protection of Human Health</u>

Assessment has shown that 114000 properties are at risk within the 0.1% AEP 2110 floodplain. Of these 84,000 are residential properties (equating to approximately 200,000 people). The SMP2s protect key infrastructure that are vital to the protection

of human health, including water supply, sewerage assets, hospitals and electricity generation and distribution infrastructure.

HBU	Infrastructure at risk in the absence of SE SMP2 and ND&S SMP2
1	Substations and power lines between Hinkley Point and Anchor Head; Hinkley Point nuclear power station
2	Drainage outfalls, Penarth Lifeboat Station, electricity sub-stations, Kingston Seymour STW
3	Portbury, Avon and Bedwick STW, lighthouses, electricity distribution crossing the Severn, substations and distribution network through Gwent levels and areas around Severn crossings and Clevedon, Uskmouth power station, drainage outfalls, Seabank power station
4	Electricity substations and distribution network through Gwent levels, drainage outfalls, Clevedon pumping station
5	Drainage outfalls, Sedbury, and Lydney STWs, Alvington and East March pumping stations, Sharpness lifeboat station, lighthouses; Oldbury and Berkely nuclear power stations
6	Drainage outfalls, Slimbridge and Frampton STW, Blakeney and Westbury-on-Severn STW, Purton WTW

In addition, the SMP2 policy options will reduce the indirect impacts from coastal erosion and flooding. For example, research has shown that flooding events cause considerable stress with an associated reduction in health and well being (Exploring the Social Impacts of Flood Risk and Flooding in Scotland - Research Findings, (February 2007), Professor Alan Werritty, Dr Donald Houston, Dr Tom Ball, Dr Andrew Black and Ms Amy Tavendale, University of Dundee. Commissioned by Scottish Executive's Rural and Environmental Affairs Department; The Health Effects of Flooding: Social Research Results from England and Wales Sylvia Tunstall, Sue Tapsell, Colin Green (Flood Hazard Research Centre, Middlesex University) & Peter Floyd and Carolyn George (Risk and Policy Analysts Ltd); Journal of Water and Health; 04.3; 2006)

2. Socio-economic reasons (in the absence of priority habitats and species)

The SE SMP2 and ND&S SMP2 policies will protect properties, assets, commercially important infrastructure (including ports, roads, railways), agricultural land and socially important infrastructure, including schools and recreational assets.

HBU	Assets at risk in the absence of SE SMP2 and ND&S SMP2
1	- Residential housing - Burnham-on-Sea, BridgwaterHoliday parks / coastal resorts - Bridgwater, Brean, Berrow, Weston-super-Mare - Roads - Sections of the A38, A39, M5, A370, access road to Steart - Railway lines / stations – Highbridge, Burnham-on-Sea Ports / harbours / quays – Dunball Wharf, Combwich, Knightstone - Recreational assets - Burnham and Berrow golf course, River Parrett Trail, West Somerset Coast Path, - Agricultural land - The above assets amount to a capital value of £2,144 million.

2	- Residential housing – Penarth, Cardiff Bay, Kewstoke, Weston-super-Mare, amounting to a value of - Holiday parks / coastal resorts – Middle Hope - Weston-super-Mare, main line to Bristol - Roads – local roads around Cardiff Bay and docks areas, Beach Road, Kewstoke - Ports / harbours / quays – Cardiff marina, Cardiff docks - Recreational assets – Coastal path and access in Cardiff Bay - The above assets amount to a capital value of £7,341 million.
3	- Residential housing – Peterstone, St. Brides, Newport Beach, Goldcliffe, Redwick, Clevedon, Avonmouth - Roads – M5, M49, Severn road crossing (M4), - Railway lines / stations – Newport-Cardiff main line, Severn rail crossing - Ports / harbours / quays – Avonmouth docks - Recreational assets – Coastal path, Peterstone Golf club - Agricultural land - Willowbrook School - The above assets amount to a capital value of at least £6,872 million.
4	- Residential housing – Mathern, Aust - Railway lines / stations –main line to Gloucester, Severn rail crossing - Recreational assets – Coastal path - Agricultural land - The above assets amount to a capital value of at least £50 million
5	- Residential housing – Wibdon, Stroat, Oldbury-on-Severn - Roads – A38, M4 - Railway lines / stations – main line to Gloucester - Nuclear power stations – Oldbury and Berkeley - Ports / harbours / quays – Lydney harbour - Recreational assets – yacht club - Agricultural land - The above assets amount to a capital value of at least £408 million
6	- Residential housing – Rodley, Newnham, Minsterworth, Elmore, Arlingham, Longney, Upper Framilode, Frampton-on-Severn - Holiday parks / coastal resorts - WWT Slimbridge - Roads – A48, - Railway lines / stations – main line to Gloucester - Ports / harbours / quays – Sharpness docks - Agricultural land - Gloucester and Sharpness canal - Longney School - The above assets amount to a capital value of at least £545 million

3. Protection from pollution / degradation in water quality

The SMP2s protect the Severn Estuary SAC, SPA and Ramsar sites from pollution and / or degradation in water quality from a number of operating and historic landfill sites. The SMP2 policies also manage the risks of flooding and erosion to, and therefore the pollution risks from, a number of conventional and nuclear power stations.

HBU	Potential sources of pollution in the absence of SE SMP2 and ND&S SMP2
1	Hinkley Point, Brean, Burnham-on-Sea and Highbridge landfill sites Hinkley Point nuclear power station
2	-
3	Lamby Way landfill site (Cardiff)
4	-
5	Oldbury and Berkeley nuclear power stations
6	Frampton landfill

4. Protection of existing nature conservation resources

Protection of Newport Wetlands

Newport Wetlands was created as compensation for the construction of the Cardiff Bay Barrage and the loss of intertidal and wetlands of importance to birds. Although not part of the designated Severn Estuary SPA site, it is considered to be a functioning part of the Severn Estuary SPA. The SMP2s' policy options protect the wetlands from coastal flooding and erosion, thereby supporting the bird species for which the Severn Estuary SPA and Ramsar sites have been designated.

Additional benefits

In addition, the ND&S SMP2 and SE SMP2 will protect:

- Terrestrial and freshwater conservation sites of national and local importance from loss and salt water inundation,including Walsmore Common SPA and Ramsar site, the Gwent Levels SSSI complex, Uphill SSSI and Gordano Valley SSSI.
- Historic environment assets from loss and / or damage due to flooding and coastal erosion, including the Gwent Levels Landsape of Historic Importance, over 10 scheduled monuments and hundreds of listed structures.

H: Compensatory measures

1. Coastal squeeze losses

This compensation package only relates to the losses of intertidal habitats that are due to coastal squeeze arising from the SE SMP2 and the ND&S SMP2.. It is based on the worst case scenario of HTL policies around the whole estuary generating losses of up to 639 ha of intertidal habitats within the estuary over the first epoch (0-20 years).

These compenastory measures only consider specific sites that have been identified for managed realignment over the first SMP2 epoch (0 – 20 years). Reference is made to more general areas (whole Policy Units) for the second and third epochs (20 – 50 and 50 – 100 years), where no specific sites have yet been identified. Specific

sites for the second and third epochs will be considered as part of any future revision of the SMP2, which should take place within the next 10 years.

The search for compensatory habitat has only looked at sites within the immediate area of the Severn Estuary and this has identified a large number of potentially viable sites. Areas further south and west of Penarth and Hinkley Point have not been considered as these areas are more exposed, less likely to create suitable (like for like) habitat and it is unclear if birds in particular would use such areas, as they are further away from the 'estuary proper'.

Sites identified for interitidal habitat compensation in the short term are:

- Tidenham
- Blakeney
- Awre
- Slimbridge
- Congresbury Yeo
- Steart

A further site has been identified higher up in the estuary at Minsterworth Ham, this could provide freshwater wetalnds to support the SPA interests in the short term, moving to saltmarsh in the long term (50+ years) as sea levels rise. Additional sites have also been identified that could be brought forward in the programme if it appeared that any of the sites listed above were not likely to progress during the first SMP2 epoch (0 – 20 years), however, the above 6 sites are considered the most viable.

Policy Units where compensatory habitat could be created through MR projects in the second and third SMP2 epochs are set out in the table below.

HBU	Medium term MR Policy Units (20 – 50 years)	Long term MR Policy Units (50 – 100 years)
1	7d42	7d39, 7d42
2	7e03, 7e04	7e03, 7e04
3	KIN1	NEW3, KIN1
4	-	-
5	-	TID2
6	SHAR1, SHAR2, SHAR4	SHAR1, SHAR4
Estimated Potential Area (Ha)	2,100	3,900

There is also potential to explore additional areas for longer term MR / habitat creation in the Wentlooge and Caldicot Levels in the WEN1, WEN2, CALD1 and CALD3 Policy Units within the SE SMP2 area, which are in HBU 3 and 4. The SE SMP2 Action Plan identifies specific actions in these areas to work with stakeholders and landowners regarding identifying longer term suitable areas and a more sustainable defence line. The SE SMP2 Action Plan also requires that the potential for MR is considered in these areas where actions to implement the HTL policy option is implemented.

The table below sets out the potential intertidal habitat that could be created in short term, also shown in Figure 5. The is the best estimate of areas available at this time - it is not possible to predict exactly how much habitat will be created due to:

- Securing final agreements with landowners;
- The exact alignments of set back defences;
- The time it will take for new habitat to develop.

HBU	Site name	Saltmarsh (Ha)	Mudflat / Sandflat (Ha)	Total (Ha)
1	Steart	269	0	**269**
2	-	0	0	**0**
3	Congresbury Yeo	86	0	**86**
4	-	0	0	**0**
5	Tidenham Blakeney	40 20	0 0	**40** **20**
6	Awre Slimbridge	152 230	0 0	**382**
Total*		**797**	**0**	**797**

* The issue of mudflats/sandbank loss and creation is not specifically dealt with in the table above. It is anticipated that by ensuring estuarine form and function is maintained so will the dynamic relationship between mudflat, sanbank and salt marsh formation; the potential loss of salt marsh indicated in the HRA as a result of coastal squeeze effectively leading to the creation of new sandbanks and mudflats. The exact nature of this relationship and the evolving habitats will be monitored as part of the implementation of the Plans; if the replacement rates are not being met then it may be necessary to review the area and timing of compensation measures; this will be undertaken as an integral part of future plan reviews, to ensure the provision of these features keeps pace with losses.

Maintinaing estuary form and function is critical to retaining the Severn sites in favourable condition. There is a complex relationship between the salt marsh, mudflats and sand banks, and some areas of salt marsh lost to coastal squeeze will inevitably end up as new mudflats and sandbanks. The rates of conversion/creation of saltmarsh, mudflats and sandbacks will be monitoired to ensure rates and areas match predictions. and that estuarine processes, form and function are maintined.

The Regional Habitat Creation Programme will be the delivery mechanism for the compensatory habitat. identified by the SMP. Providing the programme for delivery is achieved, compensatory habitat will be in place before losses due to coastal squeeze occur. In delivering compensatory habitat, the principle is to maintain the form and function of the estuary and, therefore, site integrity by ensuring that similar compensatory habitat is created in areas close to where it is lost i.e. as like for like as possible.

2. Monitoring

The Action Plan includes actions regarding the monitoring both of the overall habitat losses and gains in the estuary through the regional coastal monitoring programmes and the monitoring of the progress of individual habitat creation sites. Such monitoring should enable adaptive management of the individual habitat creation sites to ensure that:

- Appropriate habitat is being created (i.e. like for like);
- Habitat is created in a timely manner to replace habitat losses;
- Overall form and function of the estuary is maintained.

Monitoring criteria will be selected to ensure that the relative rates of conversion/ creation of saltmarsh, mudflats and sand banks are as expected, that estuarine process dynamics are being maintained, and that there is no increased loss of mudflats and sandbanks as a consequence of implementing the SMP2 policies.

Loss of or impacts arising to supporting habitat outside the protected sites, as a result of MR / habitat creation leading to habitat changes brought about by the inundation of sea water cannot be addressed at the SMP2 and have been deferred to the project level. The SMP2 HRA identifies the need to carry out project level HRAs on specific development proposals and these may ultimately influence the implementation of specific policies on a site by site basis (see Section D).

I: Supporting documentation

Appendix A - Maps showing SMP2 Study Areas (Figures A1-A3)

Appendix B - Additional Informaton on Compensatory Habitat (Figures B1- B3)

Appendix C – Habitat Regulations Assessment for the Severn and North Devon and Somerset SMP2s (appended separately)

Appendix D – Summary of Features Potentially Adversely Affected by the SMP2s

Appendix E - Full list of Features and their Conservation Objectives

The SMPs are available to view online:

- Severn Estuary Coastal Group - Shoreline Management Plan Review Page
- http://www.ndascag.org/SMP2.html

Appendix A – Maps showing SMP2 Study Areas

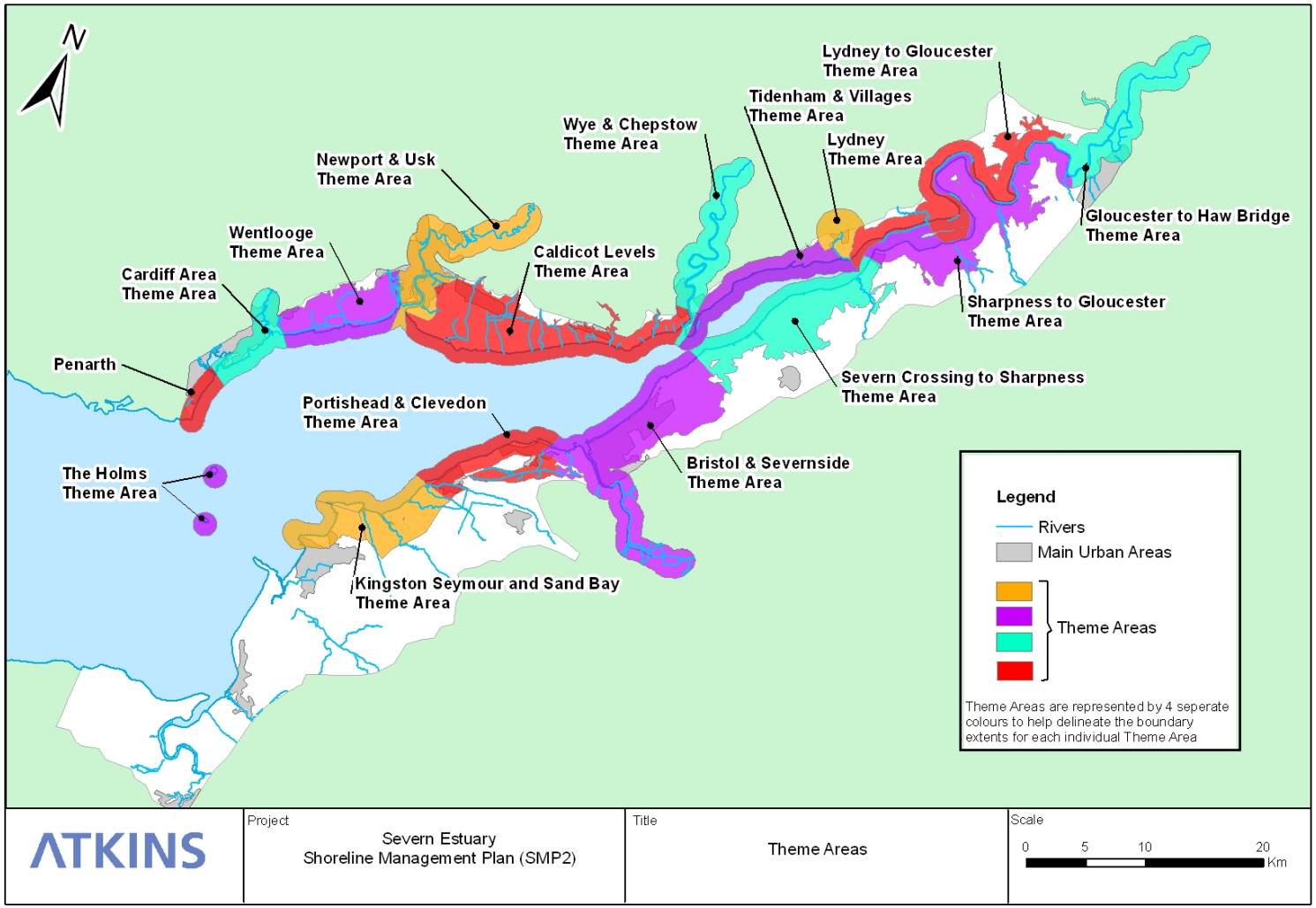

Figure A1 - Severn Estuary SMP2 Extent, showing Theme Areas

Hartland Point to Anchor Head Shoreline Management Plan Review
Figure 1.1 - Location of North Devon and Somerset SMP2

SMP Extent

Figure A2 – Extent of North Devon and Somerset SMP2 (ND&S SMP2)

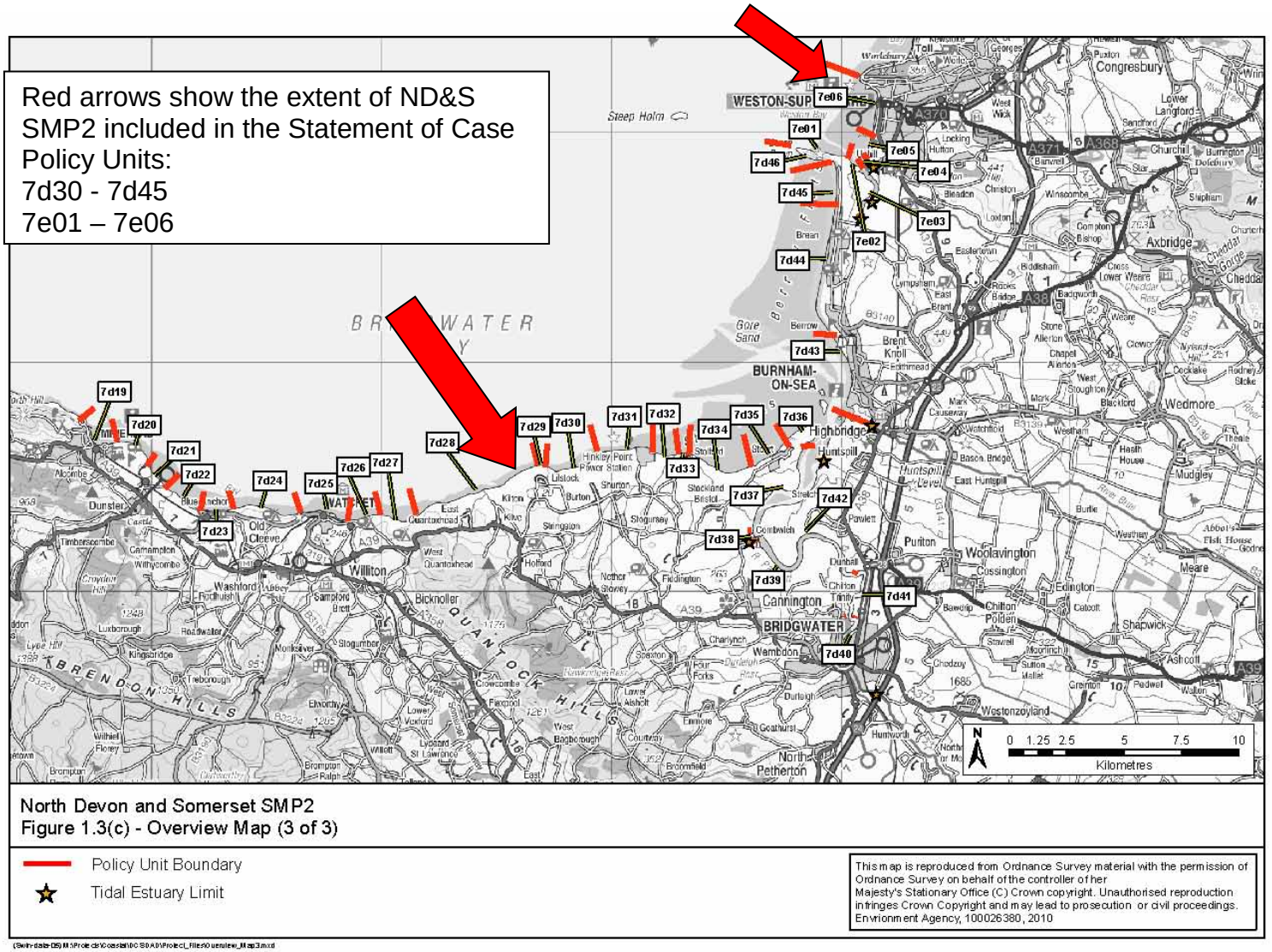

Figure A3 - ND&S SMP2 Policy Units included in the Statement of Case

Appendix B – Additional Inforamtion on Location of Habitats Losses, Gains and Compensation

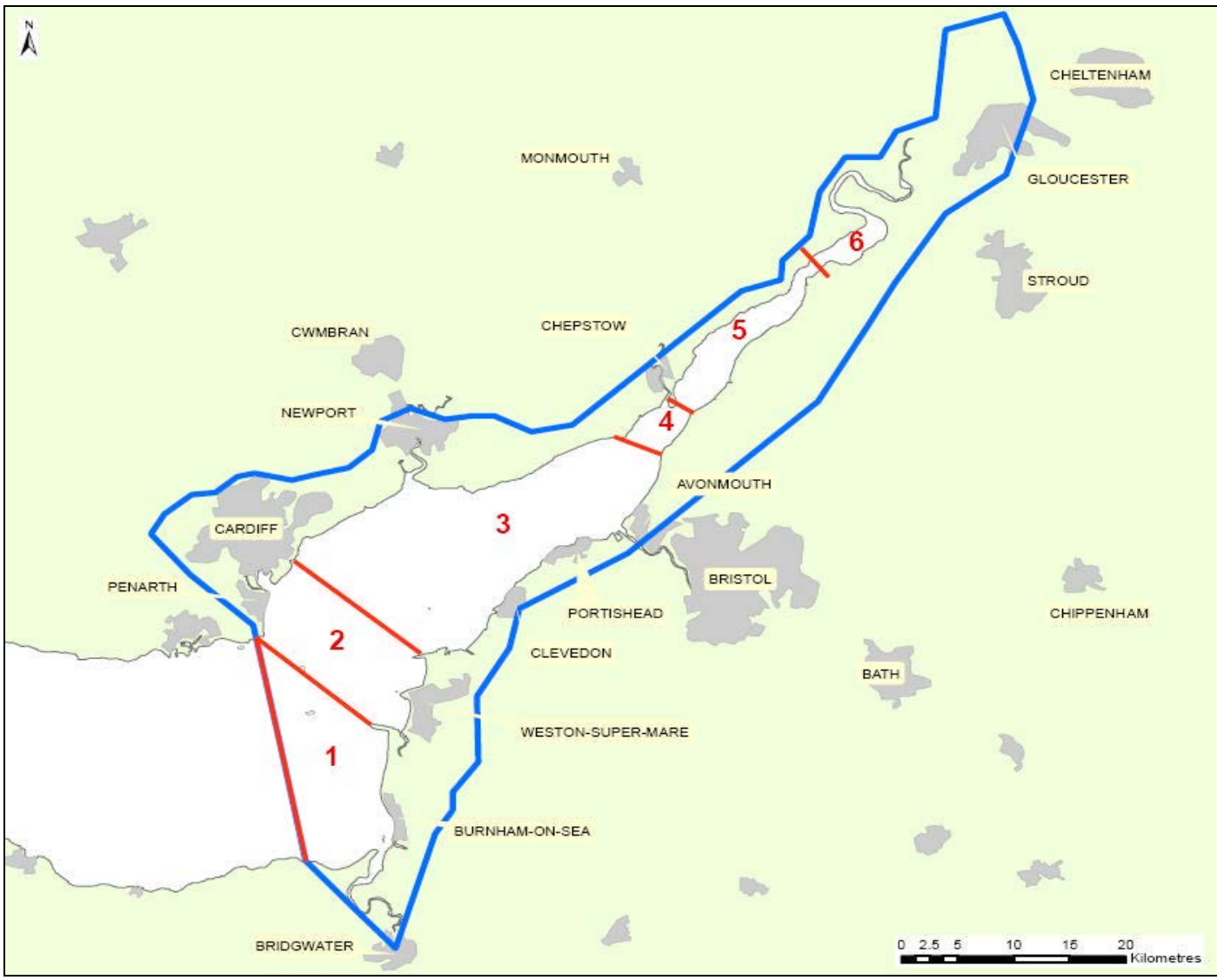

Figure B1 - Habitat Behaviour Units (HBUs) (Severn Estuary Flood Risk Management Strategy Habitat Delivery Plan; Environment Agency; April 2009)

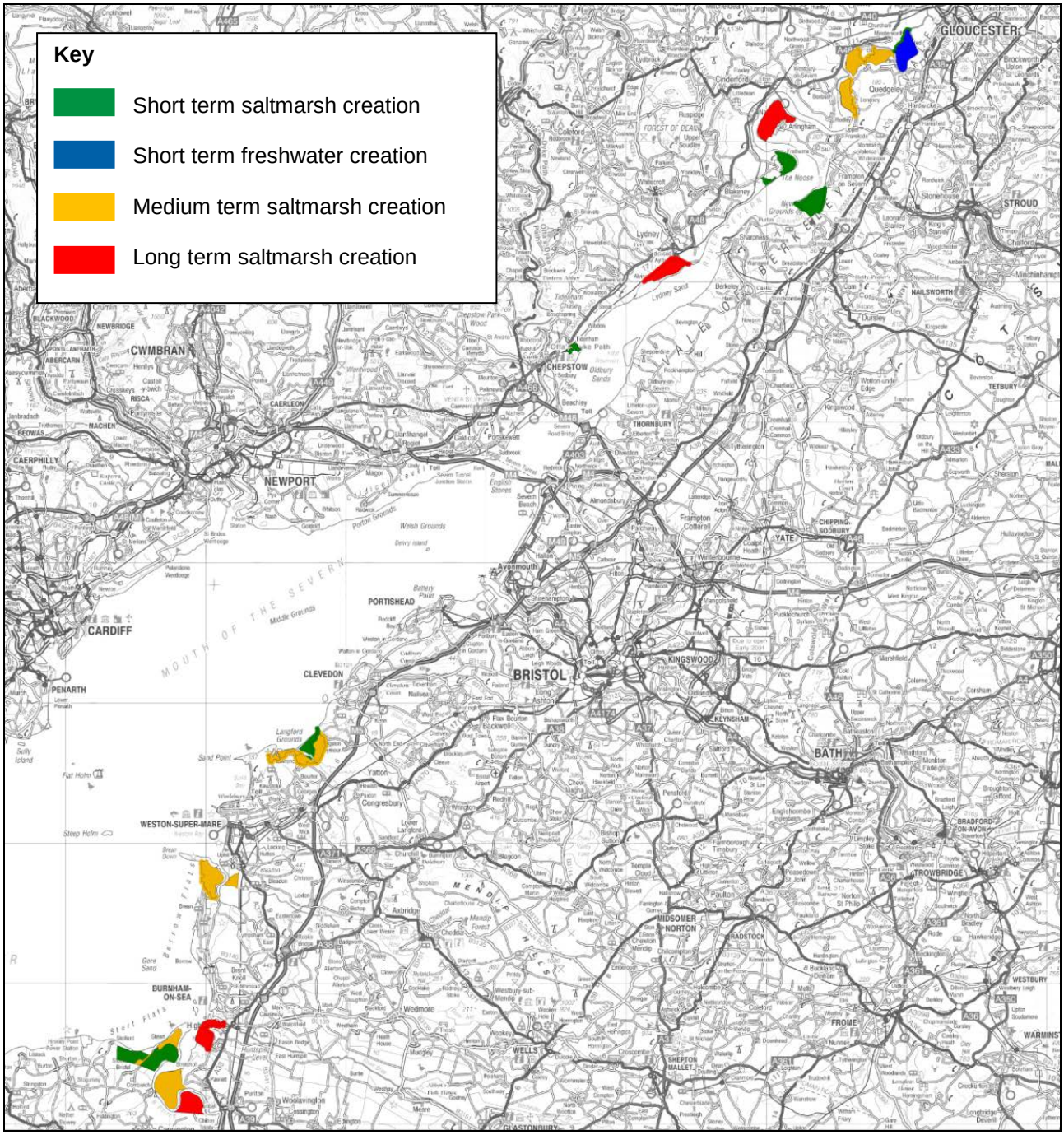

Figure B2 – Potential Habitat Creation Areas (Severn Estuary Flood Risk Management Strategy Habitat Delivery Plan; Environment Agency; April 2009)

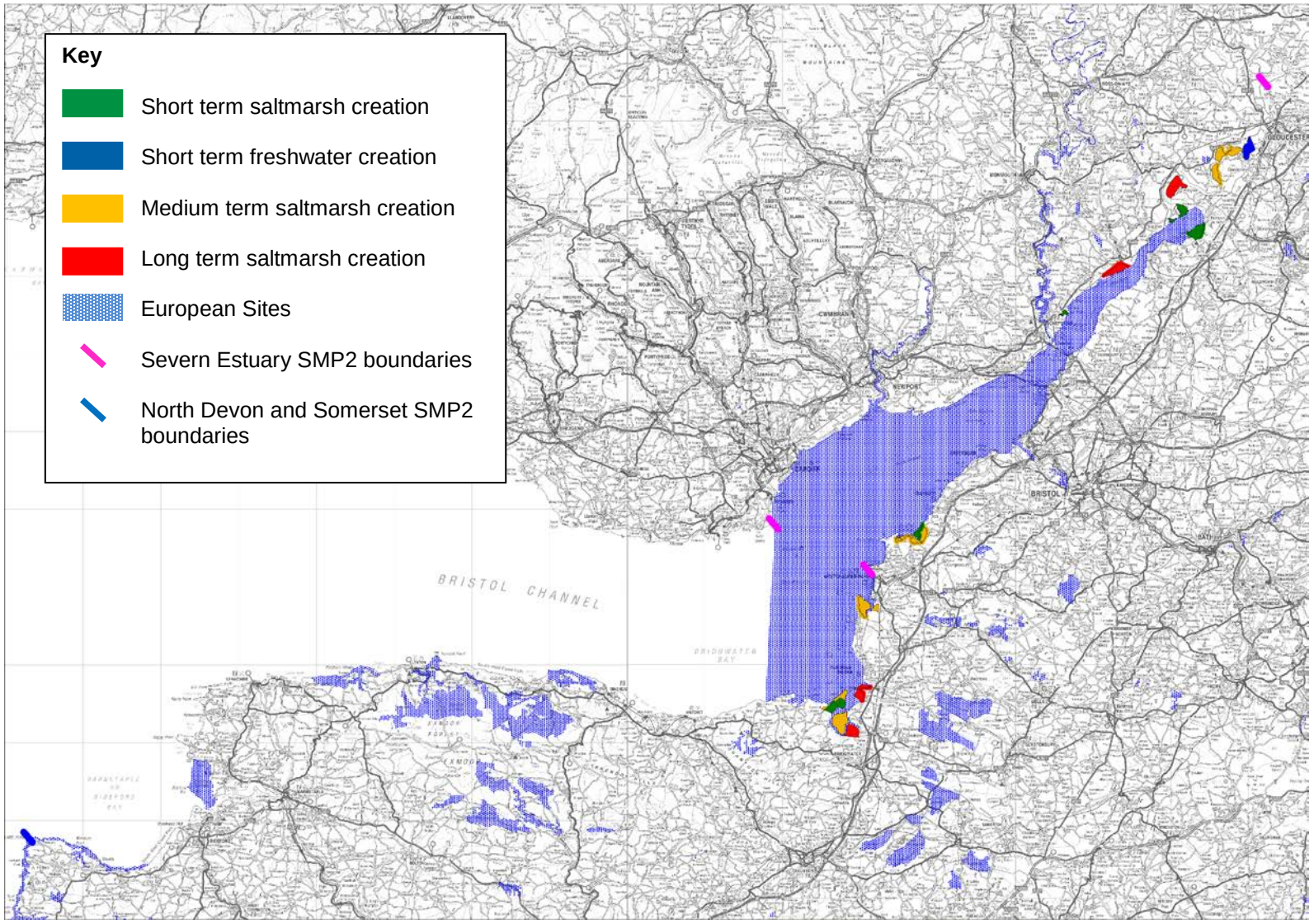

Figure B3 Extent of SMP2 Study Areas, European Sites and Habitat Creation Areas

Appendix C – HRAs for the Severn SMP2 nd North Devon and Somerset SMP2 (appended separately)

Severn Estuary Shoreline Management Plan Review

Appendix I: Part B - Habitat Regulations Assessment

ATKINS

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Contents

Severn Estuary Shoreline Management Plan Review
Habitats Regulations Assessment
March 2010

1. Introduction

The Severn Estuary Shoreline Management Plan Review (SMP2) has the potential to affect a number of European sites (Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and Ramsar sites) located across the estuary. The European Union Birds Directive (79/409/EEC) and Habitats Directive (92/43/EEC) (under which these sites are designated) are implemented in the UK by the Conservation of Habitats and Species Regulations 2010 (SI 290) (also known as the Habitats Regulations), which consolidate and update the Conservation (Natural Habitats, &c.) Regulations 1994 (the 1994 Regulations).

Section 61 of the Habitats Regulations requires that a competent authority, before deciding to undertake, or give any consent, permission or other authorisation for a plan or project which is likely to have a significant effect on a European site in Great Britain (either alone or in combination with other plans or projects) shall make an appropriate assessment of the implications for the site in view of that site's conservation objectives.

This document is a record of the Habitats Regulations Assessment undertaken for the Severn Estuary Shoreline Management Plan Review (SMP2). In undertaking this assessment the Environment Agency EU Habitats and Birds Directive Handbook has been used to provide guidance on the approach to the assessment and the format of the report.

The HRA process can be broken down into four stages:

- Stage 1 : Determine whether the plan is relevant and identify the Competent Authority and scope which sites are going to be assessed, along with a rationale for decisions made;
- Stage 2 : Assess whether the plan is likely to have a significant effect on a European site alone or in combination with other plans or projects;
- Stage 3 : Where required, assess adverse effect on site integrity (Appropriate Assessment);
- Stages 4 & 5: Where the Appropriate Assessment (Stage 3) is unable to conclude that the plan or project does not adversely affect the integrity of the Natura 2000 site, the plan or project may only be adopted if it can be demonstrated that there are no alternative solutions that would have a lesser effect on the Natura 2000 site; and, if there are no alternative solutions, there must be imperative reasons of overriding public interest (IROPI) for adopting the plan or project; compensatory measures also need to be identified.

The HRA has been informed by predicted future changes in flood and erosion risk, derived from modelling and assessment undertaken as part of the development of the SMP2; this work is detailed in Appendix C of the SMP2 Report: Baseline Understanding of Coastal Behaviour and Dynamics.

One of the main impacts arising from the implementation of the SMP2 will be losses of intertidal habitat (Atlantic salt meadows and intertidal mud and sandlflats) potentially arising from options that hold the existing line of defence. In order to try to quantify and address this impact the Environment Agency has commissioned work undertaken as part of the development of the Severn Estuary Flood Risk Management Strategy (FRMS) (in progress). As part of this element of work the 2006 CHaMP model was updated with revised sea level predictions (Defra 2006), improved 1D-regime modelling techniques, and removal of the 18.6 year astronomical nodal cycle (which previously masked habitat impacts). This work has identified indicative figures for losses of intertidal habitat within each of the CHaMP habitat behaviour units (HBUs). Figures are based on the assumption that all existing defences and the current standard of protection are maintained, and as such presents a worst case

scenario for habitat loss arising from coastal squeeze. Further information on the modelling and results arising from it can be found in; Morphological Form of the Severn Estuary, February 2009, Atkins/ABPmer and the Severn Estuary Flood Risk Management Strategy Habitat Delivery Plan, Atkins/ABPmer, April 2009.

2. Stage 1 Assessment

2.1 Consideration of Sites

Due to the fact that SMPs are considered by Defra, WAG, the Environment Agency, Natural England and CCW to fall within the criteria outlined within Regulation 61 (or 102) of the Conservation of Habitats and Species Regulations 2010 (SI 290)), they require a Habitats Regulations Assessment (HRA) to be undertaken.

Within England, the Environment Agency is considered to be the competent authority for this HRA. WAG has confirmed that it will be the competent authority within Wales.

Due to the magnitude of the estuary and the scale of physical processes involved, it was considered possible that the effects of implementing the SMP2 could extend beyond the boundary of the study area. Therefore the area included within this initial Stage extends beyond the SMP2 study area, and is bounded in the east by the tidal extent of the River Severn north of Gloucester, and in the west by St Govan's Head (north) and Hartland Point (south); in addition, sites which might potentially be hydrologically connected with the Severn Estuary or its tidal tributaries, sites with mobile features such as birds or bats which could be affected by the SMP2, or those which have a clear ecological connection with the estuary have also been included. The 30 sites considered within this Stage are listed below:

- Severn Estuary/Mor Hafren SAC
- Severn Estuary/Mor Hafren SPA
- Severn Estuary/Mor Hafren Ramsar
- River Usk/Afon Wysg SAC
- River Wye/Afon Gwy SAC
- Somerset Levels and Moors SPA
- Somerset Levels and Moors Ramsar
- Limestone Coast of South West Wales/ Arfordir Calchfaen de Orllewin Cymru SAC
- River Tywi/Afon Tywi SAC
- Pembrokeshire Marine/Sir Benfro Forol SAC
- Carmarthen Bay and Estuaries/ Bae Caerfyrddin ac Aberoedd SAC
- Carmarthen Bay/ Bae Caerfyrddin SPA
- Carmarthen Bay Dunes/Twyni Bae Caerfyrddin SAC
- Castlemartin Coast SPA
- Burry Inlet SPA Ramsar
- Dunraven Bay SAC
- Crymlyn Bog SAC Ramsar
- Kenfig/Cynffig SAC
- Wye Valley Woodlands/ Coetiroedd Dyffryn Gwy SAC
- Wye Valley and Forest of Dean Bat sites / Safleoedd Ystlumod Dyffryn Gwy a Fforest y Ddena SAC
- Walmore Common SPA, Ramsar
- Avon Gorge Woodlands SAC
- North Somerset and Mendip Bat SAC
- Mendip Limestone Grasslands SAC
- Mendip Woodlands SAC

- Exmoor Heaths SAC
- Exmoor and Quantocks Oak Woods SAC
- Tintagel Marsland Clovelly Coast SAC
- Braunton Burrows SAC
- Lundy SAC

Following an initial review of the sites' interest features (seeAnnex A) and conservation objectives the following sites were scoped out from further assessment; a brief justification as to why no impacts are considered likely is provided.

A. Although the following sites are hydraulically linked to the study area via the estuary they are outside the SMP2 study area and have been assessed as being unaffected by any changes in coastal processes.

- **Limestone Coast of South West Wales/ Arfordir Calchfaen de Orllewin Cymru SAC** - located at least 65 km downstream of study area
- **River Tywi/Afon Tywi SAC** - located more than 100km downstream of study area
- **Pembrokeshire Marine/Sir Benfro Forol SAC -** located approximately 110 km downstream of study area
- **Carmarthen Bay and Estuaries/ Bae Caerfyrddin ac Aberoedd SAC** - located approximately 80 km downstream of the study area.
- **Carmarthen Bay/ Bae Caerfyrddin SPA** - located approximately 80 km downstream of study area
- **Camarthern Bay Dunes/Twymi Bae Caerfyrddin SAC** - located approximately 85 km downstream of study area
- **Castlemartin Coast SPA** - located approximately 120 km downstream of study area
- **Burry Inlet SPA and Ramsar** - located approximately 74 km downstream of study area
- **Dunraven Bay SAC** - located approximately 30 km downstream of study area
- **Kenfig/Cynffig SAC** - located approximately 40 km downstream of study area

***Discussion of potential effects*:** the risk of tidal flooding or erosion of the sites will not increase as a result of the implementation of the SMP2. Any alterations to coastal processes that could potentially result from the implementation of SMP2 policies will typically be local in nature. The headland at Penarth will constrain impacts on coastal processes westwards along the estuary; any impacts from the Severn SMP2 would be small scale and local in nature when compared to the magnitude and complexity of processes operating at an estuary wide scale. Habitats, species and conservation objectives of the sites are therefore considered unlikely to be affected by the SMP2. Significant adverse in combination effects are also considered unlikely.

B. **Crymlyn Bog SAC & Ramsar -** located approximately 80 km downstream of study area; there is also potential for hydraulic connectivity via The Glan y Wern Canal and the Tennant Canal.

***Discussion of potential effects*:** The risk of tidal flooding of the site will not increase as a result of the implementation of the SMP2. Any alterations to coastal processes that could potentially result from the implementation of SMP2 policies will typically be local in nature; the headland at Penarth will constrain impacts on coastal processes westwards along the estuary. In addition, the site is approximately 600m inland and would be protected from any changes to

coastal erosional and depositional processes. Habitats, species and conservation objectives of the site are therefore considered unlikely to be affected by the SMP2. Significant adverse in combination effects are also considered unlikely.

C. Although the following sites are hydraulically linked to the study area via the estuary they are outside the SMP2 study area and have been assessed as being unaffected by any changes in coastal processes

- **Exmoor and Quantocks Oak Woods SAC -** located 40 km downstream of study area and elevated outside the flood risk area.
- **Exmoor Heaths SAC** - located 40 km downstream of study area and elevated outside the flood risk area.
- **Tintagel Marsland Covelly Coast SAC -** located approximately 120km downstream of the study area
- **Braunton Burrows SAC -** located 90 km downstream of study area
- **Lundy SAC -** located approximately 120km downstream of study area

***Discussion of potential effects*:** the implementation of the Severn SMP2 will not affect tidal ranges, coastal processes or flood risk west of the Middle Hope and Brean Down promontories. Any impacts from the Severn SMP2 would be very small scale both alone and in combination with other plans and projects and local in effect when compared to the magnitude and complexity of processes operating at an estuary wide scale. Habitats, species and conservation objectives of the sites are therefore considered unlikely to be affected by the SMP2.

D. **Wye Valley Woodlands/ Coetiroedd Dyffryn Gwy SAC -** A policy of No Active Intervention (NAI) is proposed for each of the reaches within the Wye policy unit. No increase in flood or erosion risk is predicted within any of the above reaches over the lifetime of the SMP2; natural processes will continue to dominate. The SAC comprises several woodland areas spread along the Wye Valley, predominantly within reaches WYE2 and 3. None of the sites are currently affected by tidal processes or flooding and this will remain the case in the future; within this section of the study area flood and erosion risk is not predicted to increase under an NAI policy; neither the woodland sites themselves nor associated bat foraging habitat within the area will be affected by the implementation of the SMP2 policies. Significant adverse in combination effects are also considered unlikely.

E. **Wye Valley and Forest of Dean Bat Sites / Safleoedd Ystlumod Dyffryn Gwy a Fforest y Ddena SAC -** A policy of NAI is proposed for each of the reaches within the Wye policy unit. No increase in flood or erosion risk is predicted within any of the above reaches over the lifetime of the SMP2; natural processes will continue to dominate and therefore no impacts are predicted. The SAC comprises several sites spread along the Wye Valley. None of the sites are currently affected by tidal processes or flooding and this will remain the case in the future; within this section of the study area flood and erosion risk is not predicted to increase under an NAI policy; neither the SACs nor associated bat foraging habitat within the area will be affected by the implementation of the SMP2 policies. Significant adverse in combination effects are also considered unlikely.

F. **Walmore Common SPA and Ramsar**

Options for policy units along this stretch of coast are as follows:

GLO5	GLO6	GL7	GLO8
HTL	NAI	HTL	HTL
The existing defence line will be maintained	Natural processes will continue to operate within this	The existing defence line will be maintained Given that a key	The existing defence line will be maintained Given

	reach. There is currently no flood or erosion risk within this reach and modelling indicates that this will not change in the future	transport route and a number of properties lie between the estuary and the site it has been assumed that the SoP will be retained or improved and the site will receive ongoing protection from tidal flooding	that a key transport route and a number of properties lie between the estuary and the site it has been assumed that the SoP will be retained or improved and the site will receive ongoing protection from tidal flooding

An important habitat on the site is the grassland, which is maintained by grazing and natural freshwater winter flooding which is in turn determined by rainfall, run-off and river levels. The marshy grassland and ditches are maintained and enhanced by maintaining high water levels from spring to autumn through the implementation of a water level management plan The site currently has roughly a 1 in 200 year standard of protection from tidal flooding. With a HTL policy at GL7, it has been assumed that the standard of protection offered to the site will be maintained or increased. The site will not be at risk from tidal flooding and/or erosion. Sea level rise may result in increased tide locking of land behind the defences, however this would be as a result of sea levels rise, not the implementation of the SMP2 The feature of the site (Bewick's Swan) and the habitats that support them will be unaffected by the preferred policy options. However the SMP2 does not identify the standard of flood protection to be provided by flood defences; this will be addressed by the Severn Flood Risk Management Strategy (FRMS). This assessment has concluded no likely significant effects on the SAC and Ramsar site at the SMP2 level, however the potential for impacts will be reviewed as part of the HRA for the FRMS, when further information on the standard of protection from tidal flooding to be provided will be available. Significant adverse in combination effects are considered unlikely.

G. Avon Gorge Woodlands SAC - A Hold the Line policy is proposed for all the reaches within the policy unit. There is currently no flood or erosion risk within this reach and this will not change in the future. The SAC is located adjacent to the River Avon on both the left and right banks within Policy Units BRIS 4 and 5. The site is currently unaffected by tidal processes and this will remain the case under the preferred policy. None of the habitats for which the site is designated nor the sites' conservation objectives will be affected. Significant adverse in combination effects are also considered unlikely.

H. Mendip Woodlands SAC - the SAC is a woodland site, over 41km from the coast. The site is more than 40km outside the tidal floodplain and this situation is predicted to continue over the lifetime of the SMP2. The Annex I feature for which the site is designated (*Tilio-Acerion* forests) will not be affected by the SMP2. Significant adverse in combination effects are also considered unlikely.

2.2 Conclusion of Stage 1 Assessment

Likely significant adverse effects on the following sites could not be ruled out at this stage and they have therefore been carried forward for further assessment at Stage 2 (Section 3):

- Severn Estuary/Mor Hafren SPA
- Severn Estuary/Mor Hafren Ramsar
- Severn Estuary/Mor Hafren SAC
- River Usk/Afon Wysg SAC
- River Wye / Afon Gwy SAC
- Somerset Levels and Moors SPA and Ramsar
- North Somerset and Mendip Bat SAC

- Mendip Limestone Grasslands SAC

3. Stage 2 Assessment

This Section assesses whether the SMP2 is likely to have a significant effect on any of the European sites carried through from Stage 1, either alone or in combination with other plans or projects. The results of the Stage 2 assessment are presented in the table below:

Record of Assessment of Likely Significant Effect On European Sites (Stage 2)	
1. Type of permissions/activities:	Severn Estuary SMP2
2. Brief description of proposals:	Shoreline Management Plans set high level policy approaches for the future management of flood and erosion risk along coastline, typicsally over a 100 year timeframe. SMPs allow the development of strategy plans to be prioritised. The Severn SMP2 is a review of the Severn SMP (2000) and has divided the Severn Estuary study area into policy units, with one of four **policy options** being applied to each unit: • Hold the existing defence line (HTL); • Advance the existing defence line (ATL); • Managed realignment - identifying a new shape for the shoreline and actively managing change (MR); • No Active Intervention - a decision not to invest in providing or maintaining defences (NAI). Preferred SMP2 policy options are listed in Annex B. This HRA concentrates on the impacts of the proposed SMP2 policies on the European and international sites identified rather than project level impacts that may occur as a result of implementing these policies. There will be a need to carry out more detailed, project level HRAs on specific development proposals and these may ultimately influence the implementation of specific policies on a site by site basis.
European site name(s) and status:	
There are a number of sites, namely Severn Estuary SPA/SAC/Ramsar, River Usk SAC, River Wye SAC, North Somerset and Mendip Bat SAC, Mendip Limestone Grasslands SAC and the Somerset Levels and Moors SPA/Ramsar where Stage 1 identified that a further assessment of hazards and potential effects was required and this is detailed in Section 6. Conservation objectives for all these sites can be obtained from CCW and NE.	

Qualifying Features of International Importance:	
Severn Estuary/Mor Hafren SPA	
Total area of site: 24662.98 ha	**Annex 1 species**: Bewick's swan (*Cygnus columbianus bewickii*) **(3.4, 3.6, 3.7, 3.8)** Internationally important populations of regularly occurring migratory bird species: European white-fronted goose (*Anser albifrons albifrons*) **(3.6, 3.7, 3.8, 3.9)** Dunlin (*Calidris alpine alpine*) **(3.4, 3.7, 3.8, 3,9)** Redshank (*Tringa totanus*) **(3.4, 3.7, 3.8, 3.9)** Shelduck (*Tadorna tadorna*) **(3.6, 3.8, 3.9)** Gadwall (*Anas strepera*) **(3.6)** Curlew (*Numenius arquata*) **(3.4, 3.7, 3.8, 3.9)** Pintail (*Anas acuta*) **(3.6, 3.8, 3.9)** Ringed plover (*Charadrius hiaticula*) **(3.6, 3.8, 3.9)** Internationally important assemblage of waterfowl populations ***(3.4, 3.6, 3.7, 3.8, 3.9)***

	Reference numbers as used in EA HRA Handbook: 3.4 = Birds of lowland wet grasslands 3.6 = Birds of lowland freshwaters and their margins 3.7 = Birds of farmlandb 3.8 = Birds of coastal habitats 3.9 = Birds of estuarine habitats

Severn Estuary/Mor Hafren Ramsar	
Total area of site: 24662.98 ha	**Ramsar criterion 1 :** immense tidal range (second – largest in world), this affects both the physical environment and biological communities. **(Estuarine and intertidal habitats : 1.12)** **Ramsar criterion 3** unusual estuarine communities, reduced diversity and high productivity**. (Estuarine and intertidal habitats : 1.12).** **Ramsar criterion 4 :** important for the run of migratory fish between sea and river via estuary. Species include Salmon (*Salmo salar)*, sea trout (*S. trutta)*, sea lamprey (*Petromyzon marinus)*, river lamprey (*Lampetra fluviatilis)*, allis shad (*Alosa alsoa)*, twaite shad (*A. failax)*, and eel (*Anguilla Anguilla)* **(Anadromous fish : 2.5)** **Ramsar criterion 8 :** the fish assemblage of the whole estuarine and river system is one of the most diverse in Britain, with over 110 species recorded (**Non-migratory fish and invertebrates of rivers: 2.6).** **Ramsar criterion 6:** regularly supports 1% of the individuals in a population of one species or subspecies of waterbird. Species with peak counts in winter: Bewick's swan (*Cygnus columbianus bewickii*) **(3.4, 3.6, 3.7, 3.8)** European white-fronted goose (*Anser albifrons albifrons*) **(3.6, 3.7, 3.8, 3.9)** Dunlin (*Calidris alpine alpine*) **(3.4, 3.7, 3.8, 3,9)** Redshank (*Tringa totanus*) **(3.4, 3.7, 3.8, 3.9)** Shelduck (*Tadorna tadorna*) **(3.6, 3.8, 3.9)** Gadwall (*Anas strepera*) **(3.6)** Ringed plover (*Charadrius hiaticula*) **(3.6, 3.8, 3.9)** Teal (*Anas crecca*) (**3.4, 3.6, 3.8, 3.9)** Pintail (*Anas acuta*) **(3.6, 3.8, 3.9)** Lesser black-backed gull (*Larus fuscus*) **(3.6, 3.8, 3.9)** Pochard(*Aythya ferina*) **(3.3, 3.6, 3.8, 3.9)** Tufted Duck (*Aythya fuligula*) **(3.6)** Grey Plover (*Pluvialis squatarola*) **(3.4, 3.7, 3.8, 3.9)** Curlew (*Numenius arquata*) **(3.4, 3.7, 3.8, 3.9)** Whimbrel (*Numenius phaeopus*) **(3.6, 3.9)** Wigeon (*Anas penelope*) **(3.6, 3.7, 3.8, 3.9)** **Ramsar criterion 5 : S**upports an assemblage of international importance – (1998/99-2002/2003 5 year peak mean was 70,919 waterfowl) **(3.4, 3.6, 3.7, 3.8, 3.9).** **Reference numbers as used in EA HRA Handbook:** 3.4 = Birds of lowland wet grasslands 3.6 = Birds of lowland freshwaters and their margins 3.7 = Birds of farmland 3.8 = Birds of coastal habitats 3.9 = Birds of estuarine habitats

Severn Estuary/Mor Hafren SAC	
Total area of site:	**Annex 1 Habitats** 1130 Estuaries (**Estuarine and intertidal habitats : 1.12**)

73715.4 ha	1110 Subtidal sandbanks (**Submerged marine habitats: 1.13**) 1140 Intertidal mudflats and sandflats (**Estuarine and intertidal habitats** : **1.12**) 1330 Atlantic salt meadows (**Estuarine and intertidal habitats : 1.12**) 1170 Reefs (**Submerged marine habitats: 1.13**) **Annex II species** 1099 River lamprey (*Lampetra fluviatilis*) **(Anadromous fish : 2.5)** 1095 Sea lamprey *(Petromyzon marinus)* **(Anadromous fish : 2.5)** 1103 Twaite shad (*Alosa fallax*) **(Anadromous fish : 2.5)**

River Usk/Afon Wysg SAC	
Total area of site: 1007.71 ha	**Annex I Habitats** 3260 Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation (**Riverine habitats and running waters: 1.1)** **Annex II species** 1095 Sea Lamprey (*Petromyzon marinus*) **(Anadromous fish : 2.5)** 1096 Brook Lamprey (*Lampetra planeri*) **(Anadromous fish : 2.5)** 1099 River Lamprey (*Lampetra fluviatilis*) **(Anadromous fish : 2.5)** 1103 Twaite shad (*Alosa fallax*) **(Anadromous fish : 2.5)** 1106 Atlantic salmon (*Salmo salar*) **(Anadromous fish : 2.5)** 1163 Bullhead (*Cottus gobio*) (**Non-migratory fish and invertebrates of rivers: 2.6)** 1355 Otter (*Lutra lutra*) (**Mammals of riverine habitats: 2.9)** 1102 Allis shad (*Alosa alosa*))**(Anadromous fish : 2.5)**

River Wye / Afon Gwy SAC	
Total area of site: 2234.89 ha	**Annex I habitats** 3260 Riverine habitats & running waters (Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation) **(Riverine habitats and running waters: 1.1)** 7140 Transition mires and quaking bogs **(Bogs and wet habitats: 1.2)** **Annex II species** 1092 White-clawed (or Atlantic stream) crayfish (*Austropotamobius pallipes*) **(Non-migratory fish and invertebrates of rivers: 2.6)** 1095 Sea Lamprey (*Petromyzon marinus*) **(Anadromous fish : 2.5*)*** 1096 Brook Lamprey(*Lampetra planeri*) (**Non-migratory fish and invertebrates of rivers: 2.6)** 1099 River Lamprey (*Lampetra fluviatilis*) **(Anadromous fish : 2.5)** 1103 Twaite shad (*Alosa fallax*) **(Anadromous fish : 2.5)** 1106 Atlantic salmon (*Salmo salar*) **(Anadromous fish : 2.5)** 1163 Bullhead (*Cottus gobio*) **(Non-migratory fish and invertebrates of rivers: 2.6)** 1355 Otter (*Lutra lutra*) (**Mammals of riverine habitats: 2.9)**

Somerset Levels and Moors SPA and Ramsar	
Total area of site: SPA: 6388.49 ha Ramsar: 6388.49ha	**Somerset Levels and Moors SPA** Supports the following species of birds overwinter: Bewick's swan (*Cygnus columbianus bewickii*) (2.7% of wintering population in GB) **(3.4, 3.6, 3.7, 3.8)** Golden Plover (*Pluvialis apricaria*) (1.2% of wintering population in GB) **(3.4, 3.7, 3.8, 3.9)** Supports the following species overwinter: Teal (*Anas crecca*) (3.3% of the population) **(3.4, 3.6, 3.8, 3.9)** Lapwing (*Vanellus vanellus*) (0.5% of the population) **(3.4, 3.7, 3.9)** Supports species which are considered internationally important assemblage of

	waterfowl populations. **(3.4, 3.6, 3.7, 3.8, 3.9).** **Somerset Levels and Moors Ramsar** **Ramsar criterion 2 :** Supports 17 species of British Red Data Book invertebrates. **Ramsar criterion 5 :** Assemblages of international importance species with peak counts in winter: 70919 waterfowl (5 year peak mean 1998/99-2002/2003) **(3.4, 3.6, 3.7, 3.8, 3.9).** **Ramsar criterion 6 :** Species occurring at internationally important levels. Species with peak counts in winter: Bewick's swan (*Cygnus columbianus bewickii*) **(3.4, 3.6, 3.7, 3.8)** Teal (*Anas creecca*) **(3.4, 3.6, 3.8, 3.9)** Northern lapwing (*Vanellus vanellus*) **(3.4, 3.7, 3.9)** Species with possible future consideration under criterion 6. Species with peak counts in winter: Mute swan (*Cygnus olor*) **(3.6, 3.9)** Widgeon (*Anas penelope*) **(3.6, 3.7, 3.8, 3.9)** Pintail (*Anus acuta*) **(3.6, 3.8, 3.9)** Northern shoveler (*Anas clypeata*) ***(3.6, 3.9)*** Reference numbers as used in EA HRA Handbook 3.4 = Birds of lowland wet grasslands 3.6 = Birds of lowland freshwaters and their margins 3.7 = Birds of farmland 3.8 = Birds of coastal habitats 3.9 = Birds of estuarine habitats

North Somerset and Mendip Bat SAC	
Total area of site: 151.19ha	**Annex I habitats** 6210 Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*) **(1.7 Dry grassland**) 9180 *Tilio-Acerion* forests of slopes, screes and ravines (Priority feature) (**1.6 Dry woodlands and scrub**) 8310 Caves not open to the public **Annex II species** 1303 Lesser horseshoe bat (*Rhinolophus hipposideros*) (**2.8 Mammals of woodland habitats**) 1304 Greater horseshoe bat (*Rhinolophus ferrumequinum*) **2.8 Mammals of woodland habitats**

Mendip Limestone Grasslands SAC	
Total area of site: 417.47ha	**Annex I habitats** 6210 Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*) **(1.7 Dry grassland)** 9180 *Tilio-Acerion* forests of slopes, screes and ravines (Priority feature) (**1.6 Dry woodlands and scrub**) 8310 Caves not open to the public 4030 European dry heaths (**1.5 Dry heathland habitat**) **Annex II species** 1304 Greater horseshoe bat (*Rhinolophus ferrumequinum*) (**2.8 Mammals of woodland habitats**)

5. Is the proposal directly connected with or necessary to the	No

management of the sites for nature conservation?	

6. What potential hazards are likely to affect the interest features?

Key impacts that could potentially arise as a result of the implementation of the SMP2 and that have been taken into consideration in undertaking this screening exercise are summarised below :

Changes in physical regime, flow or velocity regime: including coastal or estuarine erosion or deposition and altered flooding regimes.

Changes to water chemistry: resulting from alterations in salinity or an increased risk of pollution (e.g. as a result of increased risk of flooding of current or historical landfill sites or other contaminated land)

Habitat severance : resulting for example from retreat of defences or construction of new defences

Disturbance: including to features within and adjacent to the site e.g. during construction or maintenance

Habitat loss/physical damage: potentially resulting from: coastal squeeze, sea level rise, the footprint of new defences or retreat of the defence line. Estimates of potential habitat loss have been based on work undertaken by Atkins and ABPmer as part of the Severn FRMS. Further information can be found in: Severn Estuary Flood Risk Management Strategy - Habitat Delivery Plan (2009) Atkins/ABPmer and Predicted Morphological Form of the Severn Estuary (February 2009) Atkins/ABPmer.

In undertaking the assessment a number of assumptions have been made:

- In assessing likely impacts of sea level rise, Defra 2006 predictions have been used which give an overall predicted increase in sea level for the Severn of 1m by 2105.

- The HRA has been informed by predicted future changes in flood and erosion risk, derived from modelling and assessment undertaken as part of the development of the SMP2; this work is detailed in Appendix C of the SMP2 Report: Baseline Understanding of Coastal Behaviour and Dynamics.

- The Environment Agency has commissioned work as part of the development of the Severn Estuary FRMS (in progress) to investigate predictions of habitat loss and compensation issues in more detail. As part of this of work, the 2006 CHaMP model was updated with revised sea level predictions (Defra 2006), improved 1D-regime modelling techniques, and removal of the 18.6 year astronomical nodal cycle (which previously masked habitat impacts). This work has identified indicative figures for losses of intertidal habitat within each of the CHaMP habitat behaviour units. Figures are based on the assumption that all existing defences and the current standard of protection are maintained, and as such presents a worst case scenario for habitat loss arising from coastal squeeze. Further information on the modelling and results arising from it can be found in; Morphological Form of the Severn Estuary, February 2009, Atkins/ABPmer and the Severn Estuary Flood Risk Management Strategy Habitat Delivery Plan, Atkins/ABPmer, April 2009.

- A Hold the Line policy does not necessarily mean that the current standard of protection will be maintained and it could decrease or increase instead. However the SMP2 does not look at how the Hold the Line option will be implemented (i.e. what standard of protection will be provided). Whether or not a Hold the Line policy will result in a decrease in the standard of protection will not be apparent until the FRMS is completed. The Severn FRMS and the HRA undertaken to document its effects on the European sites will review this HRA and identify and assess impacts in more detail, and address any adverse impacts. However, it is logical to conclude that a Hold the Line policy will result in costal squeeze and loss of intertidal habitats.

- Advance the line is not proposed for any policy units within the study area; the potential impacts of this policy option will therefore not be considered further within this assessment.

- This assessment is being undertaken at the strategic level and will therefore focus on the potential impacts of the SMP2 policies once implemented; impacts that could potentially result during the construction phase of any of the policy options have not been considered in detail within this HRA. Exceptions have been made where CCW and NE have requested the consideration of specific construction issues known to present a significant risk to the sites including: historic contamination on the Usk and disturbance to birds along the Gwent and Somerset Levels. An HRA of the Severn FRMS will be undertaken to assess potential impacts resulting from this next tier of planning; in addition, more detailed project level HRAs will be undertaken on specific development proposals and these may ultimately influence the implementation of specific policies on a site by site basis.

Severn Estuary SPA and Ramsar		
Severn Estuary SPA and Ramsar: The site extends through much of the study area and could be affected by the implementation of all three of the SMP2 policy options		
Sensitive Interest Feature	Potential Hazard	Potential exposure to Hazard and mechanism of effect/impact if known
Birds of lowland wet grasslands (3.4) **Severn Estuary SPA, Ramsar**: Bewick's swan, Dunlin, Redshank, Curlew, waterfowl (>20,000) **Severn Estuary Ramsar only**: Teal, Grey plover	Change in physical regime, flow or velocity regime	**No Active Intervention** and/or **Managed Realignment.** No direct impact on the designated bird species assemblage but potential to alter physical processes and affect habitats on which species are dependent for feeding and roosting. Impacts may affect the long term survival of individuals or alter behaviour and pattern of use or distribution: **Alone: LSE** **In combination**: None of the plans and projects reviewed are considered likely to result in increased inundation of freshwater habitats**: No LSE** **Hold the Line** Assuming the standard of protection is maintained or increased, raised sea levels could potentially increase the amount of time outfalls and drainage ditches are tide locked, temporarily increasing freshwater levels behind the defence. This impact could benefit wet grassland and species it supports. However, increased tide locking would occur as a result of sea level rise rather than implementation of the strategy. Given the extensive tidal range of the estuary any increase in tide locking is not anticipated to be great enough to result in a significant effect on habitats: **Alone and in combination No LSE** If standard of protection decreases, potential impacts would be as for NAI and MR. However the SMP does not specify how the HTL policy will be implemented, neither does it identify the SoP to be provided. Therefore at this stage it is not possible to identify whether impacts could occur or not. The potential for impacts to occur will be reviewed as part of the HRA for the FRMS which will address how HTL will be implemented including option alignments and SoP: **Alone: Uncertain – it is not possible to rule out the likelihood of LSE (Alone) at SMP2 level, further review to be undertaken at FRMS stage.** **In combination** : effects unlikely as potentials impacts associated with increased overtopping of defences: **No LSE**

	Changes in water chemistry	**All Options** No major changes in the water quality of the Severn Estuary will result from the implementation of any of the SMP2 policies, due the limited extent of contamination present around the estuary and the large volume of water flowing through the estuary on each tidal cycle which would serve to dilute any local pollution event: **Alone and in combination No LSE** **No Active Intervention** and/or **Managed Realignment** could result in increased tidal inundation and salinisation of terrestrial habitats with potential knock on effects for the birds using the habitats; these habitats may be outside the European sites but could be supporting habitats for qualifying bird features: **Alone**: **LSE** **In combination**: None of the plans and projects reviewed are considered likely to result in increased inundation of freshwater habitats**: No LSE** **Hold the Line:** assuming the standard of protection is maintained or increased existing grassland habitat would be maintained, no anticipated long-term changes to habitat: **Alone and in combination No LSE** If standard of protection decreases, potential impacts would be as for NAI and HTL. However the SMP does not specify how the HTL policy will be implemented, neither does it identify the SoP to be provided. Therefore at this stage it is not possible to identify whether impacts could occur or not. The potential for impacts to occur will be reviewed as part of the HRA for the FRMS which will address how HTL will be implemented including option alignments and SoP: **Alone: Uncertain – it is not possible to rule out the likelihood of LSE (Alone) at SMP2 level, further review to be undertaken at FRMS stage.** **In combination** : effects unlikely as potentials impacts associated with increased overtopping of defences: **No LSE**
	Habitat Severance	**Hold the Line:** defences maintained in current position so no habitat fragmentation : **Alone and in combination No LSE** **Managed Realignment**: realignment of defences would result in habitat loss or damage (see below) rather than habitat fragmentation: **Alone and in combination No LSE** **No Active Intervention** : **Alone and in combination No LSE**

	Disturbance	Improvement or maintenance works under a **Hold the Line or Managed Realignment** option have the potential to disturb birds through noise or visual disturbance. This can displace the birds from their feeding grounds. Disturbance can prevent the birds from feeding and in response they either a) decrease their energy intake at their present (disturbed) feeding site through displacement activity, or b) move to an alternative less favoured feeding site. Works will only be permitted at the appropriate time of year (only between April – September) to avoid the most sensitive time: **Alone and in combination No LSE** No Active Intervention : **Alone and in combination No LSE**
	Habitat Loss/ Physical Damage	**No Active Intervention/Managed Realignment**: Increased tidal inundation has the potential to change habitats, possibly resulting in areas of lowland grassland being reduced decreasing available habitat for species foraging and roosting: **Alone**: **LSE** **In combination**: None of the plans and projects reviewed are considered likely to result in increased inundation of freshwater habitats: **No LSE** **Hold the Line**: assuming the standard of protection is maintained or increased, the existing grassland habitat behind defence would be maintained: **Alone and in combination No LSE** If standard of protection decreases, potential impacts would be as for NAI and HTL. However the SMP does not specify how the HTL policy will be implemented, neither does it identify the SoP to be provided. Therefore at this stage it is not possible to identify whether impacts could occur or not. The potential for impacts to occur will be reviewed as part of the HRA for the FRMS which will address how HTL will be implemented including option alignments and SoP: **Alone: Uncertain – it is not possible to rule out the likelihood of LSE (Alone) at SMP2 level, further review to be undertaken at FRMS stage.** **In combination** : effects unlikely as potentials impacts associated with increased overtopping of defences: **No LSE**

		Potential for some minor habitat loss as a consequence of the increased footprint of the defence- if SoP maintained or increased. Also potential for more significant cumulative and in combination effects when all defences around the estuary are taken into consideration. The SMP2 does not specify how the HTL policy will be implemented so it is not possible to identify whether any impacts could occur or not. Further assessment to be undertaken as part of the FRMS. **Alone and in combination** : **Uncertain – it is not possible to rule out the likelihood of LSE at SMP2 level, further review to be undertaken at FRMS stage**
Birds of lowland freshwaters and their margins (3.6) **Severn Estuary SPA, Ramsar**: Bewick's,Swan White-fronted goose, Shelduck, Gadwall, Pintail , Ringed plover Waterfowl(>20, 000) **Severn Ramsar only**: Teal. Lesser black backed gull, Wigeon, Pochard, Tufted duck, Wimbrel	Change in physical regime, flow or velocity regime	**No Active Intervention** and/or **Managed Realignment.** No direct impact on the designated bird species assemblage but potential to alter physical processes and affect habitats on which species are dependent for feeding and roosting. Impacts may affect the long term survival of individuals or alter behaviour and pattern of use or distribution: **Alone: LSE** **In combination**: None of the plans and projects reviewed are considered likely to result in increased inundation of freshwater habitats**: No LSE** **Hold the Line** Assuming the standard of protection is maintained or increased, raised sea levels could potentially increase the amount of time outfalls and drainage ditches are tide locked, temporarily increasing freshwater levels behind the defence. However, increased tide locking would occur as a result of sea level rise rather than implementation of the strategy. Given the extensive tidal range of the estuary this increase is not anticipated to be great enough to result in a significant effect on habitats: **Alone and in combination No LSE**
		If standard of protection decreases, potential impacts would be as for NAI and HTL. However the SMP does not specify how the HTL policy will be implemented, neither does it identify the SoP to be provided. Therefore at this stage it is not possible to identify whether impacts could occur or not. The potential for impacts to occur will be reviewed as part of the HRA for the FRMS which will address how HTL will be implemented including option alignments and SoP: **Alone: Uncertain – it is not possible to rule out the likelihood of LSE (Alone) at SMP2 level, further review to be undertaken at FRMS stage.** **In combination** : effects unlikely as potentials impacts associated with increased overtopping of defences: **No LSE**

	Changes in water chemistry	**All Options** No major changes in the water quality of the Severn Estuary will result from the implementation of the SMP2, due to the limited extent of contamination present around the estuary and the large volume of water flowing through the estuary on each tidal cycle which would serve to dilute any local pollution event : **Alone and in combination** **No LSE** **No Active Intervention** and/or **Managed Realignment** could result in increased tidal inundation and salinisation of terrestrial habitats with potential knock on effects for the birds using the habitats; these habitats may be outside the European sites but could be supporting habitats for qualifying bird features: **Alone**: **LSE** **In combination**: None of the plans and projects reviewed are considered likely to result in increased inundation of freshwater habitats: **No LSE** **Hold the Line:** Assuming the standard of protection is maintained or increased, existing grassland habitat maintained, no anticipated long-term changes to habitat: **Alone and in combination** **No LSE** If standard of protection decreases, potential impacts would be as for NAI and HTL. However the SMP does not specify how the HTL policy will be implemented, neither does it identify the SoP to be provided. Therefore at this stage it is not possible to identify whether impacts could occur or not. The potential for impacts to occur will be reviewed as part of the HRA for the FRMS which will address how HTL will be implemented including option alignments and SoP: **Alone: Uncertain – it is not possible to rule out the likelihood of LSE (Alone) at SMP2 level, further review to be undertaken at FRMS stage.** **In combination** : effects unlikely as potentials impacts associated with increased overtopping of defences: **No LSE**
	Habitat Severance	**Hold the Line:** defences maintained in current position so no habitat fragmentation: **Alone and in combination** **No LSE** **Managed Realignment** : realignment of defences would result in habitat loss or damage (see below) rather than habitat fragmentation: **Alone and in combination** **No LSE** **No Active Intervention: Alone and in combination** **No LSE**

	Disturbance	Improvement or maintenance works under a **Hold the Line or Managed Realignment** option have the potential to disturb birds through noise or visual disturbance. This can displace the birds from their feeding grounds. Disturbance can prevent the birds from feeding and in response they either a) decrease their energy intake at their present (disturbed) feeding site through displacement activity, or b) move to an alternative less favoured feeding site. Works will only be permitted at the appropriate time of year (only between April – September) to avoid the most sensitive time: **Alone and in combination No LSE** **No Active Intervention**: **Alone and in combination No LSE**
	Habitat Loss/ Physical Damage	**No Active Intervention/Managed Realignment:** increased tidal inundation resulting in alterations to vegetation, habitats and the birds they support: **Alone**: **LSE** **In combination**: None of the plans and projects reviewed are considered likely to result in increased inundation of freshwater habitats: **No LSE** **Hold the line**: Assuming the standard of protection is maintained or increased, the defences are retained in place and will maintain freshwater and marginal habitats: **Alone and in combination No LSE** If standard of protection decreases, potential impacts would be as for NAI and HTL. However the SMP does not specify how the HTL policy will be implemented, neither does it identify the SoP to be provided. Therefore at this stage it is not possible to identify whether impacts could occur or not. The potential for impacts to occur will be reviewed as part of the HRA for the FRMS which will address how HTL will be implemented including option alignments and SoP: **Alone: Uncertain – it is not possible to rule out the likelihood of LSE (Alone) at SMP2 level, further review to be undertaken at FRMS stage.** **In combination** : effects unlikely as potentials impacts associated with increased overtopping of defences: **No LSE**

		Potential for some minor habitat loss as a consequence of the increased footprint of the defence - if SoP maintained or increased. Also potential for more significant cumulative and in combination effects when all defences around the estuary are taken into consideration. The SMP2 does not specify how the HTL policy will be implemented so it is not possible to identify whether any impacts could occur or not. Further assessment to be undertaken as part of the FRMS. **Alone and in combination** :**Uncertain – it is not possible to rule out the likelihood of LSE at SMP2 level, further review to be undertaken at FRMS stage**
Birds of farmland (3.7) **Severn Estuary SPA, Ramsar**: Bewick's Swan, White-fronted goose, Dunlin, Redshank, Curlew **Severn Estuary Ramsar only**: Teal, Grey plover	Change in physical regime, flow or velocity regime	**No Active Intervention** and/or **Managed Realignment.** No direct impact on the designated bird species assemblage but potential to alter physical processes and affect habitats on which species are dependent for feeding and roosting. Impacts may affect the long term survival of individuals or alter behaviour and pattern of use or distribution: **Alone: LSE** **In combination**: None of the plans and projects reviewed are considered likely to result in increased inundation of freshwater habitats**: No LSE** **Hold the Line** Assuming the standard of protection is maintained or increased, raised sea levels could potentially increase the amount of time outfalls and drainage ditches are tide locked, temporarily increasing freshwater levels behind the defence. However, increased tide locking would occur as a result of sea level rise rather than implementation of the strategy. Given the extensive tidal range of the estuary this increase is not anticipated to be great enough to result in a significant effect on habitats: **Alone and in combination No LSE** If standard of protection decreases, potential impacts would be as for NAI and HTL. However the SMP does not specify how the HTL policy will be implemented, neither does it identify the SoP to be provided. Therefore at this stage it is not possible to identify whether impacts could occur or not. The potential for impacts to occur will be reviewed as part of the HRA for the FRMS which will address how HTL will be implemented including option alignments and SoP: **Alone: Uncertain – it is not possible to rule out the likelihood of LSE (Alone) at SMP2 level, further review to be undertaken at FRMS stage.** **In combination** : effects unlikely as potentials impacts associated with increased overtopping of defences: **No LSE**

	Changes in water chemistry	**All Options** No major changes in the water quality of the Severn Estuary will result from the implementation of any of the SMP2 policies, due the limited extent of contamination present around the estuary and the large volume of water flowing through the estuary on each tidal cycle which would serve to dilute any local pollution event: **Alone and in combination No LSE** **No Active Intervention** and/or **Managed Realignment** could result in increased tidal inundation and salinisation of terrestrial habitats with potential knock on effects for the birds using the habitats; these habitats may be outside the European sites but could be supporting habitats for qualifying bird features: **Alone**: **LSE** **In combination**: None of the plans and projects reviewed are considered likely to result in increased inundation of freshwater habitats**: No LSE**
		Hold the Line: Assuming the standard of protection is maintained or increased, existing farmland habitat maintained, no anticipated long-term changes to habitat**: Alone and in combination No LSE** If standard of protection decreases, potential impacts would be as for NAI and HTL. However the SMP does not specify how the HTL policy will be implemented, neither does it identify the SoP to be provided. Therefore at this stage it is not possible to identify whether impacts could occur or not. The potential for impacts to occur will be reviewed as part of the HRA for the FRMS which will address how HTL will be implemented including option alignments and SoP: **Alone: Uncertain – it is not possible to rule out the likelihood of LSE (Alone) at SMP2 level, further review to be undertaken at FRMS stage.** **In combination** : effects unlikely as potentials impacts associated with increased overtopping of defences: **No LSE**
	Habitat Severance	**Hold the Line:** the defences will be maintained in current position so no habitat fragmentation**: Alone and in combination No LSE** **Managed Realignment:** realignment of defences would result in habitat loss or damage (see below) rather than habitat fragmentation: **Alone and in combination No LSE** No Active Intervention : **Alone and in combination No LSE**

	Disturbance	Improvement or maintenance works under a **Hold the Line or Managed Realignment** option have the potential to disturb birds through noise or visual disturbance. This can displace the birds from their feeding grounds. Disturbance can prevent the birds from feeding and in response they either a) decrease their energy intake at their present (disturbed) feeding site through displacement activity, or b) move to an alternative less favoured feeding site. Works will only be permitted at the appropriate time of year (only between April – September) to avoid the most sensitive time: **Alone and in combination No LSE** **No Active Intervention** : **Alone and in combination No LSE**
	Habitat Loss/ Physical Damage	**No Active Intervention/Managed Realignment:** increased tidal inundation resulting in alteration in vegetation and farmland habitats which could reduce suitability for feeding and roosting: **Alone**: **LSE** **In combination**: None of the plans and projects reviewed are considered likely to result in increased inundation of freshwater habitats: **No LSE** **Hold the Line**: assuming the standard of protection is maintained or increased the habitats beyond will be maintained and not damaged: **Alone and in combination No LSE** If standard of protection decreases, potential impacts would be as for NAI and HTL. However the SMP does not specify how the HTL policy will be implemented, neither does it identify the SoP to be provided. Therefore at this stage it is not possible to identify whether impacts could occur or not. The potential for impacts to occur will be reviewed as part of the HRA for the FRMS which will address how HTL will be implemented including option alignments and SoP: **Alone: Uncertain – it is not possible to rule out the likelihood of LSE (Alone) at SMP2 level, further review to be undertaken at FRMS stage.** **In combination** : effects unlikely as potentials impacts associated with increased overtopping of defences: **No LSE**

		Potential for some minor habitat loss as a consequence of the increased footprint of the defence- if SoP maintained or increased. Also potential for cumulative and in combination effects when all defences around the estuary are taken into consideration. The SMP2 does not specify how the HTL policy will be implemented so it is not possible to identify whether any impacts could occur or not. Further assessment to be undertaken as part of the FRMS. **Alone and in combination Uncertain – it is not possible to rule out the likelihood of LSE at SMP2 level, further review to be undertaken at FRMS stage**
Birds of coastal habitats (3.8) **Severn Estuary SPA, Ramsar:** Bewick's Swan, , White-fronted goose, Dunlin, Redshank, Shelduck, Curlew Pintail, Ringed plover, Waterfowl(>20, 000) **Severn Ramsar only**: Teal, lesser black backed gull, Wigeon, Pochard	Change in physical regime, flow or velocity regime	**No Active Intervention** and/or **Managed Realignment:** physical processes likely to result in an increase in coastal and intertidal habitats: **Alone and in combination No LSE** **Hold the Line** increased sea level and coastal squeeze could alter physical processes on the foreshore potentially drowning out intertidal habitats : **Alone and in combination** (with North Devon and Somerset and Swansea and Carmarthen Bay SMP2s) **LSE**
	Changes in water chemistry	**All Options**: No major changes in the water quality of the Severn Estuary will result from the implementation of the SMP2, due the limited extent of contamination present around the estuary and the large volume of water flowing through the estuary on each tidal cycle which would serve to dilute any local pollution event : **Alone and in combination No LSE**
	Habitat Severance	**Managed Realignment** would increase extent of coastal habitat; severance would not occur: **Alone and in combination No LSE** No Active Intervention : **Alone and in combination No LSE** **Hold the Line:** defences maintained in current position so no habitat fragmentation**: Alone and in combination No LSE**
	Disturbance	Improvement or maintenance works under a **Hold the Line or Managed Realignment** option have the potential to disturb birds through noise or visual disturbance. This can displace the birds from their feeding grounds. Disturbance can prevent the birds from feeding and in response they either a) decrease their energy intake at their present (disturbed) feeding site through displacement activity, or b) move to an alternative less favoured feeding site. Works will only be permitted at the appropriate time of year (only between April – September) to avoid the most sensitive time: **Alone and in combination No LSE** **No Active Intervention** : **Alone and in combination No LSE**

	Habitat Loss/ Physical Damage	**No Active Intervention/Managed Realignment:** Extent of coastal and intertidal habitat would increase : **Alone and in combination No LSE** **Hold the line**: sea level rise and coastal squeeze would result in the loss of intertidal habitats, potentially reducing bird feeding areas: **Alone and in combination (**with North Devon and Somerset and Swansea and Carmarthen Bay SMP2s) **LSE** Potential for some minor habitat loss as a consequence of the increased footprint of the defence - if SoP maintained or increased. Also potential for more significant cumulative and in combination effects when all defences around the estuary are taken into consideration. The SMP2 does not specify how the HTL policy will be implemented so it is not possible to identify whether any impacts could occur or not. Further assessment to be undertaken as part of the FRMS. **Alone and in combination Uncertain – it is not possible to rule out the likelihood of LSE at SMP2 level, further review to be undertaken at FRMS stage**
Birds of estuarine habitats (3.9) **Severn Estuary SPA, Ramsar:** White-fronted goose, Dunlin, Redshank, Shelduck, Curlew, Pintail,Ringed Plover) Waterfowl(>20, 000) **Severn Ramsar only:** Teal, lesser black backed gull, Wimbrel, Pochard	Change in physical regime, flow or velocity regime	**No Active Intervention and Managed Realignment** options are likely to result in an increase in the extent of intertidal habitats: **Alone and in combination No LSE** Under **Hold the Line** climate change and sea level rise (coastal squeeze) will result in a changes to flows and physical regimes which could in turn potentially result in a change in the extent and distribution of intertidal habitats in front of the defence: **Alone and in combination** (with North Devon and Somerset and Swansea and Carmarthen Bay SMP2s) **LSE**
	Changes in water chemistry	No major changes in the water quality of the Severn Estuary will result from the implementation of the SMP2, due the limited extent of contamination present around the estuary and the large volume of water flowing through the estuary on each tidal cycle which would serve to dilute any local pollution event: **Alone and in combination No LSE**
	Habitat Severance	**Managed Realignment** would increase the extent of intertidal habitat; severance would not occur: **Alone and in combination No LSE** **No Active Intervention :** this option would increase the extent of intertidal habitat **Alone and in combination No LSE** **Hold the Line:** defences maintained in current position so no habitat fragmentation**: Alone and in combination No LSE**

	Disturbance	Improvement or maintenance works under a **Hold the Line or Managed Realignment** option have the potential to disturb birds through noise or visual disturbance. This can displace the birds from their feeding grounds. Disturbance can prevent the birds from feeding and in response they either a) decrease their energy intake at their present (disturbed) feeding site through displacement activity, or b) move to an alternative less favoured feeding site. Works will only be permitted at the appropriate time of year (only between April – September) to avoid the most sensitive time: **Alone and in combination No LSE** **No Active Intervention** : no disturbance would result: **Alone and in combination No LSE**
	Habitat Loss/ Physical Damage	**No Active Intervention and Managed Realignment** options are likely to result in an increase in the extent of intertidal habitats: **Alone and in combination No LSE** Under **Hold the Line** climate change and sea level rise (coastal squeeze) could potentially result in loss of or damage to intertidal habitats in front of the defence, reducing feeding areas: **Alone and in combination (**with North Devon and Somerset and Swansea and Carmarthen Bay SMP2s) **LSE** Potential for some minor habitat loss as a consequence of the increased footprint of the defence- if SoP increased. Also potential for more significant cumulative and in combination effects when all defences around the estuary are taken into consideration. The SMP2 does not specify how the HTL policy will be implemented so it is not possible to identify whether any impacts could occur or not. Further assessment to be undertaken as part of the FRMS. **Alone and in combination Uncertain – it is not possible to rule out the likelihood of LSE at SMP2 level, further review to be undertaken at FRMS stage**

Severn Estuary SAC and Ramsar: The site extends through much of the study area and could be affected by the implementation of all three of the SMP2 policy options		
Sensitive Interest Feature	Potential Hazard	Potential exposure to Hazard and mechanism of effect/impact if known
Estuarine & intertidal habitats (1.12) : Atlantic salt meadows, Estuaries, Mudflats and sandflats not covered by seawater at low tide	Change in physical regime, flow or velocity regime	Under **Hold the Line** climate change and sea level rise (coastal squeeze) will result in a changes to flows and physical regimes which will in turn alter sedimentation and erosion processes potentially resulting in a change in the extent and distribution of intertidal habitats in front of the defence: **Alone and in combination** (with North Devon and Somerset and Swansea and Carmarthen Bay SMP2s) **LSE** **No Active Intervention and Managed Realignment** options are likely to result in an increase in the extent of intertidal habitats: **Alone and in combination No LSE**
	Changes in water chemistry	No major changes in the water quality of the Severn Estuary will result from the implementation of the SMP2, due the limited extent of contamination present around the estuary and the large volume of water flowing through the estuary on each tidal cycle which would serve to dilute any local pollution event : **Alone and in combination No LSE**
	Habitat Severance	**Hold the Line:** defences maintained in current position so no habitat fragmentation**: Alone and in combination No LSE** **Managed Realignment** would increase the extent of intertidal and estuarine habitat; severance would not occur : **Alone and in combination No LSE** **No Active Intervention** : **Alone and in combination No LSE**
	Disturbance	N/A
	Habitat Loss/ Physical Damage	**Hold the Line**: Sea level rise could potentially result in habitat loss due to coastal squeeze **Alone and in combination** (with North Devon and Somerset and Swansea and Carmarthen Bay SMP2s) **LSE** Potential for some minor habitat loss as a consequence of the increased footprint of the defence- if SoP increased. Also potential for more significant cumulative and in combination effects when all defences around the estuary are taken into consideration. The SMP2 does not specify how the HTL policy will be implemented so it is not possible to identify whether any impacts could occur or not. Further assessment to be undertaken as part of the FRMS. **Alone and in combination Uncertain – it is not possible to rule out the likelihood of LSE at SMP2 level, further review to be undertaken at FRMS stage**

		Managed Realignment: Realignment of defences would increase the extent of intertidal and estuarine habitats: **Alone and in combination No LSE** **No Active Intervention:** extent if intertidal habitat would roll back as sea level rose: **Alone and in combination No LSE**
Anadromous fish (2.5) : Allis shad, Atlantic salmon, River Lamprey, Sea lamprey, Twaite shad	Change in physical regime, flow or velocity regime	**All Options**: Any changes in estuarine process that might arise from any of the SMP2 policies will not be significant enough at the estuary scale to affect fish species for which the site is designated : **Alone and in combination No LSE**
	Changes in water chemistry	**All Options**: No major changes in the water quality of the Severn Estuary will result from the implementation of the SMP2, due the limited extent of contamination present around the estuary and the large volume of water flowing through the estuary on each tidal cycle which would serve to dilute any local pollution event : **Alone and in combination No LSE**
	Habitat Severance	**All Options**: Implementation of any of the SMP2 will not result in the severance of any of habitats relied on by the listed fish species: **Alone and in combination No LSE**
	Disturbance	**All Options**: None of the SMP2 policy options will result in disturbance to fish species within the estuary primarily due to the size of the estuary (and therefore available fish habitats) and the fact that any works would be located on the line or landward of existing defences: **Alone and in combination No LSE**
	Habitat Loss/ Physical Damage	**All Options**: Implementation of the SMP2 policies will not result in the loss of or damage to any habitats relied on by the listed fish species: **Alone and in combination No LSE**

Severn Estuary Ramsar Only		
The site extends through much of the study area and could be affected by the implementation of all three of the SMP2 policy options		
Sensitive Interest Feature	Potential Hazard	Potential exposure to Hazard and mechanism of effect/impact if known
Severn Estuary Ramsar Non-migratory fish & invertebrates of rivers (2.6)	Change in physical regime, flow or velocity regime	**All Options**: Any changes in estuarine process that might arise from any of the SMP2 policies will not be significant enough at the estuary scale to affect fish species for which the site is designated: **Alone and in combination No LSE**
	Changes in water chemistry	**All Options**: No major changes in the water quality of the Severn Estuary will result from the implementation of the SMP2, due the limited extent of contamination present around the estuary and the large volume of water flowing through the estuary on each tidal cycle which would serve to dilute any local pollution event : **Alone and in combination No LSE**
	Habitat Severance	**All Options**: Implementation of any of the SMP2 will not result in the severance of any of habitats relied on by the listed fish species: **Alone and in combination No LSE**

	Disturbance	**All Options**: None of the SMP2 policy options will result in disturbance to fish species within the estuary primarily due to the size of the estuary (and therefore available fish habitats) and the fact that any works would be located on the line or landward of existing defences: **Alone and in combination No LSE**
	Habitat Loss/ Physical Damage	**All Options:** Implementation of the SMP2 policies will not result in the loss of or damage to any habitats relied on by the listed fish species: **Alone and in combination No LSE**

Severn/Mor Hafren SAC Only		
The site extends through much of the study area and could be affected by the implementation of all three of the SMP2 policy options		
Sensitive Interest Feature	Potential Hazard	Potential exposure to Hazard and mechanism of effect/impact if known
Submerged marine habitats (1.13) : Reefs, subtidal sandbanks that are slightly covered by sea water all the time.	Change in physical regime/flow or velocity regime	**All Options:** SMP2 polices could lead to changes in estuarine process which in turn could affect patterns of erosion and sedimentation; however when considered in the context of the large scale dynamic sub-tidal processes already operating within the estuary any changes due to the SMP2 policy options would not be significant: **Alone and in combination No LSE**
	Changes in water chemistry	**All Options:** No major changes in the water quality of the Severn Estuary will result from the implementation of the SMP2, due the limited extent of contamination present around the estuary and the large volume of water flowing through the estuary on each tidal cycle which would serve to dilute any local pollution event : **Alone and in combination No LSE**
	Habitat Severance	N/A
	Disturbance	N/A
	Habitat Loss /Physical Damage	**All Options:** There would be no direct habitat loss to any submerged habitats: **Alone and in combination No LSE**

Somerset Levels and Moors SPA and Ramsar		
The site lies outside the study area, (located approximately 15km downstream) but is potentially hydraulically linked to the study area via flooding from the estuary. The levels are currently at risk from extreme flood events from the estuary (e.g. 1 in 1000 year events). The preferred SMP2 policies will not increase tidal flood risk to the site		
Sensitive Interest Feature	Potential Hazard	Potential exposure to Hazard and mechanism of effect/impact if known
Birds of lowland wet grasslands (3.4) Bewick's swan, Golden Plover, Teal, Lapwing Waterfowl(>20, 000)	Change in physical regime, flow or velocity regime	**All Options**: The preferred SMP2 policies will not increase tidal flood risk to the site; physical processes operating on the site will remain unaltered: **Alone and in combination No LSE**
	Changes in water chemistry	**All Options**: The preferred SMP2 policies will not affect water quality on the site: **Alone and in combination No LSE**
	Habitat Severance	**All Options**: The preferred SMP2 policies will not sever any habitats within the site: **Alone and in combination No LSE**
	Disturbance	**All Options**: The preferred SMP2 policies will not disturb birds using wet grassland habitats: **Alone and in combination No LSE**

	Habitat Loss/ Physical Damage	**All Options**: No loss of wet grassland habitat within the site will occur: **Alone and in combination** **No LSE**
Birds of lowland freshwaters and their margins (3.6) Bewick's swan, Teal, Widgeon, Pintail, Shovler, Waterfowl(>20, 000),	Change in physical regime, flow or velocity regime	**All Options**: The preferred SMP2 policies will not increase tidal flood risk to the site; physical processes operating on the site will remain unaltered: **Alone and in combination** **No LSE**
	Changes in water chemistry	**All Options**: The preferred SMP2 policies will not affect water quality on the site: **Alone and in combination** **No LSE**
	Habitat Severance	**All Options**: The preferred SMP2 policies will not sever any habitats within the site: **Alone and in combination** **No LSE**
	Disturbance	**All Options**: The preferred SMP2 policies will not disturb birds using lowland freshwater habitats: **No Alone and in combination** **LSE**
	Habitat Loss/ Physical Damage	**All Options**: No loss of lowland freshwater habitat within the site will occur: **Alone and in combination** **No LSE**
Birds of farmland (3.7) Bewick's swan, Lapwing, Widgeon	Change in physical regime, flow or velocity regime	**All Options**: The preferred SMP2 policies will not increase tidal flood risk to the site; physical processes operating on the site will remain unaltered: **Alone and in combination** **No LSE**
	Changes in water chemistry	**All Options**: The preferred SMP2 policies will not affect water quality on the site: **Alone and in combination** **No LSE**
	Habitat Severance	**All Options**: The preferred SMP2 policies will not sever any habitats within the site: **No LSE**
	Disturbance	**All Options**: The preferred SMP2 policies will not disturb birds using farmland habitats: **Alone and in combination** **No LSE**
	Habitat Loss/ Physical Damage	**All Options**: No loss of farmland habitat within the site will occur: **Alone and in combination** **No LSE**
Birds of coastal habitats (3.8) Bewick's Swan, Golden Plover, Teal, Widgeon, Pintail, Waterfowl(>20, 000)	Change in physical regime, flow or velocity regime	**No Active Intervention** and/or **Managed Realignment:** physical processes likely to result in an increase in coastal and intertidal habitats: **Alone and in combination** **No LSE** **Hold the Line** increased sea level and coastal squeeze could alter physical processes along the Severn foreshore potentially affecting intertidal habitats. This could adversely affect feeding and roosting habitats which support bird populations on the site potentially altering bird population size, density and distribution on the Somerset Levels and Moors: **Alone and in combination** (with North Devon and Somerset and Swansea and Carmarthen Bay SMP2s) **LSE**
	Changes in water chemistry	**All Options**: No major changes in the water quality of the Severn Estuary will result from the implementation of the SMP2, due the limited extent of contamination present around the estuary and the large volume of water flowing through the estuary on each tidal cycle which would serve to dilute any local pollution event. Water quality on the or the Levels and Moors will be unaffected : **Alone and in combination** **No LSE**
	Habitat Severance	**All Options:** no severance of coastal habitats or the levels and Moors sites will occur**: Alone and in combination** **No LSE**

	Disturbance	Improvement or maintenance works under a **Hold the Line or Managed Realignment** option have the potential to disturb birds using the foreshore (outside the SPA/Ramsar) during construction. Works will only be permitted at the appropriate time of year (only between April – September) to avoid the most sensitive period : **Alone and in combination No LSE** No Active Intervention : **Alone and in combination No LSE** No disturbance will occur on the sites themselves: **Alone and in combination No LSE**
	Habitat Loss/ Physical Damage	**No Active Intervention/Managed Realignment:** Extent of coastal and intertidal habitat would increase : **Alone and in combination No LSE** **Hold the line**: sea level rise and coastal squeeze would result in the loss of intertidal habitats, potentially reducing bird feeding areas: **Alone and in combination (**with North Devon and Somerset and Swansea and Carmarthen Bay SMP2s) **LSE** Potential for some minor habitat loss as a consequence of the increased footprint of the defence- if SoP increased. Also potential for more significant cumulative and in combination effects when all defences around the estuary are taken into consideration. The SMP2 does not specify how the HTL policy will be implemented so it is not possible to identify whether any impacts could occur or not. Further assessment to be undertaken as part of the FRMS. **Alone and in combination Uncertain – it is not possible to rule out the likelihood of LSE at SMP2 level, further review to be undertaken at FRMS stage.** No habitat loss on the SPA/Ramsar sites themselves will occur: **Alone and in combination No LSE**
Birds of estuarine habitats (3.9) Golden Plover, Teal, Lapwing, Mute Swan, Widgeon, Pintail, Shovler, Waterfowl(>20, 000)	Change in physical regime, flow or velocity regime	**No Active Intervention** and/or **Managed Realignment:** physical processes likely to result in an increase in coastal and intertidal habitats: **Alone and in combination No LSE** **Hold the Line** increased sea level and coastal squeeze could alter physical processes along the Severn foreshore potentially affecting intertidal habitats. This could adversely affect feeding and roosting habitat which support birds populations on the site potentially altering bird population size, density and distribution on the Somerset Levels and Moors: **Alone and in combination (**with North Devon and Somerset and Swansea and Carmarthen Bay SMP2s) **LSE**

	Changes in water chemistry	**All Options**: No major changes in the water quality of the Severn Estuary will result from the implementation of the SMP2, due the limited extent of contamination present around the estuary and the large volume of water flowing through the estuary on each tidal cycle which would serve to dilute any local pollution event. Water quality on the or the Levels and Moors will be unaffected : **Alone and in combination No LSE**
	Habitat Severance	**All Options:** no severance of coastal habitats or the levels and Moors sites will occur**: Alone and in combination No LSE**
	Disturbance	Improvement or maintenance works under a **Hold the Line or Managed Realignment** option have the potential to disturb birds using the foreshore (outside the SPA/Ramsar) during construction. Works will only be permitted at the appropriate time of year (only between April – September) to avoid the most sensitive period : **Alone and in combination No LSE** **No Active Intervention** : **Alone and in combination No LSE** No disturbance will occur on the sites themselves: **Alone and in combination No LSE**
	Habitat Loss/ Physical Damage	**No Active Intervention/Managed Realignment:** Extent of coastal and intertidal habitat would increase : **Alone and in combination No LSE** **Hold the line**: sea level rise and coastal squeeze would result in the loss of intertidal habitats, potentially reducing bird feeding areas: **Alone and in combination** (with North Devon and Somerset and Swansea and Carmarthen Bay SMP2s) **LSE** Potential for some minor habitat loss as a consequence of the increased footprint of the defence - if SoP increased. Also potential for more significant cumulative and in combination effects when all defences around the estuary are taken into consideration. The SMP2 does not specify how the HTL policy will be implemented so it is not possible to identify whether any impacts could occur or not. Further assessment to be undertaken as part of the FRMS: **Alone and in combination** (with North Devon and Somerset and Swansea and Carmarthen Bay SMP2s) **Uncertain – it is not possible to rule out the likelihood of LSE at SMP2 level, further review to be undertaken at FRMS stage.** No habitat loss on the SPA/Ramsar sites themselves will occur: **Alone and in combination No LSE**

Somerset Levels Ramsar Only		
The site lies outside the study area, (located approximately 15km downstream) but is potentially hydraulically linked to the study area via flooding from the estuary. The levels are currently at risk from extreme flood events from the estuary (e.g. 1 in 1000 year events). The preferred SMP2 policies will not increase flood risk to the site		
Sensitive Interest Feature	Potential Hazard	Potential exposure to Hazard and mechanism of effect/impact if known
Red data book invertebrates (freshwater)	Change in physical regime, flow or velocity regime	**All Options**: The preferred SMP2 policies will not significantly increase tidal flood risk to the site; physical processes operating on the site will remain unaltered. Increased tide locking of the site may occur, increasing fluvial water levels on the site, however this would be as a result of sea level rise rather than implementation of the Strategy: **Alone and in combination No LSE**
	Changes in water chemistry	**All Options**: The preferred SMP2 policies will not affect water quality on the site: **Alone and in combination No LSE**
	Habitat Severance	**All Options**: The preferred SMP2 policies will not sever any habitats within the site: **Alone and in combination No LSE**
	Disturbance	**All Options**: The preferred SMP2 policies will not disturb invertebrate species on the site: **Alone and in combination No LSE**
	Habitat Loss/ Physical Damage	**All Options**: No loss of habitat within the site will occur; increased tide locking of the site may occur, increasing fluvial water levels on the site, however this would be as a result of sea level rise rather than implementation of the Strategy: **Alone and in combination No LSE**

North Somerset and Mendip Bat SAC		
The site lies outside the study area, (located approximately 15km inland) however horseshoe bats are known to feed on the levels with hedges used to shelter while feeding		
Sensitive Interest Feature	Potential Hazard	Potential exposure to Hazard and mechanism of effect/impact if known
1.7 Dry Grasslands (6210 Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*))	Change in physical regime, flow or velocity regime	**All Options**: These habitats are not currently at flood risk; this will not change under the preferred SMP2 policies: **Alone and in combination No LSE**
	Changes in water chemistry	**All Options**: These habitats are not currently at flood risk; this will not change under the preferred SMP2 policies; water quality n the vicinity of the will be unaffected : **Alone and in combination No LSE**
	Habitat Severance	**All Options**: These habitats are not currently at flood risk; this will not change under the preferred SMP2 policies; habitats will be unaffected by the SMP2: **Alone and in combination No LSE**
	Disturbance	**N/A**
	Habitat Loss/ Physical Damage	**All Options**: No loss of habitat within the site will occur: **Alone and in combination No LSE**
1.6 Dry Woodlands and Scrub (9180 *Tilio-Acerion* forests of slopes, screes and ravines (Priority feature)	Change in physical regime, flow or velocity regime	**All Options**: These habitats are not currently at flood risk; this will not change under the preferred SMP2 policies: **Alone and in combination : No LSE**
	Changes in water chemistry	**All Options**: These habitats are not currently at flood risk; this will not change under the preferred SMP2 policies; water quality n the vicinity of the will be unaffected : **Alone and in combination No LSE**

	Habitat Severance	**All Options**: These habitats are not currently at flood risk; this will not change under the preferred SMP2 policies; habitats will be unaffected by the SMP2: **Alone and in combination No LSE**
	Disturbance	**N/A**
	Habitat Loss/ Physical Damage	**All Options**: No loss of habitat within the site will occur: **Alone and in combination No LSE**
8310 Caves not open to the public	Change in physical regime, flow or velocity regime	**All Options**: These habitats are not currently at flood risk; this will not change under the preferred SMP2 policies: **Alone and in combination No LSE**
	Changes in water chemistry	**All Options**: These habitats are not currently at flood risk; this will not change under the preferred SMP2 policies; water quality n the vicinity of the will be unaffected : **Alone and in combination No LSE**
	Habitat Severance	**All Options**: These habitats are not currently at flood risk; this will not change under the preferred SMP2 policies; habitats will be unaffected by the SMP2: **Alone and in combination No LSE**
	Disturbance	**N/A**
	Habitat Loss/ Physical Damage	**All Options**: No loss of habitat within the site will occur: **Alone and in combination No LSE**
2.8 Mammals of Wooded habitats 1303 Lesser horseshoe bat (*Rhinolophus hipposideros*) 1304 Greater horseshoe bat (*Rhinolophus ferrumequinum*)	Change in physical regime, flow or velocity regime	Physical processes on the site will remain unaffected**: Alone and in combination No LSE**
	Changes in water chemistry	**N/A**
	Habitat Severance	No habitats will be severed**: Alone and in combination No LSE**
	Disturbance	**N/A**
	Habitat Loss/ Physical Damage	**All Options**: Increased tidal flooding of the bat feeding areas on the Levels could result in loss of invertebrates and also hedges used to shelter while feeding. **Alone and in combination (**with South Devon and Dorset SMP2): **Uncertain – it is not possible to rule out the likelihood of LSE at the SMP2 level, further review to be undertaken at FRMS stage**

Mendip Limestone Grasslands SAC		
The site lies outside the study area, (located approximately 15km inland) however horseshoe bats are known to feed on the levels with hedges used to shelter while feeding		
Sensitive Interest Feature	Potential Hazard	Potential exposure to Hazard and mechanism of effect/impact if known
1.7 Dry Grasslands (6210 Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*))	Change in physical regime, flow or velocity regime	**All Options**: These habitats are not currently at flood risk; this will not change under the preferred SMP2 policies: **Alone and in combination No LSE**
	Changes in water chemistry	**All Options**: These habitats are not currently at flood risk; this will not change under the preferred SMP2 policies; water quality n the vicinity of the will be unaffected : **Alone and in combination No LSE**
	Habitat Severance	**All Options**: These habitats are not currently at flood risk; this will not change under the preferred SMP2 policies; habitats will be unaffected by the SMP2: **Alone and in combination No LSE**
	Disturbance	**N/A**
	Habitat Loss/ Physical Damage	**All Options**: No loss of habitat within the site will occur: **Alone and in combination No LSE**

1.6 Dry Woodlands and Scrub (9180 *Tilio-Acerion* forests of slopes, screes and ravines (Priority feature))	Change in physical regime, flow or velocity regime	**All Options**: These habitats are not currently at flood risk; this will not change under the preferred SMP2 policies: **Alone and in combination No LSE**
	Changes in water chemistry	**All Options**: These habitats are not currently at flood risk; this will not change under the preferred SMP2 policies; water quality n the vicinity of the will be unaffected : **Alone and in combination No LSE**
	Habitat Severance	**All Options**: These habitats are not currently at flood risk; this will not change under the preferred SMP2 policies; habitats will be unaffected by the SMP2: **Alone and in combination No LSE**
	Disturbance	**N/A**
	Habitat Loss/ Physical Damage	**All Options**: No loss of habitat within the site will occur: **Alone and in combination No LSE**
1.8 Dry heathland habitats (4030 European dry heaths)	Change in physical regime, flow or velocity regime	**All Options**: These habitats are not currently at flood risk; this will not change under the preferred SMP2 policies: **Alone and in combination No LSE**
	Changes in water chemistry	**All Options**: These habitats are not currently at flood risk; this will not change under the preferred SMP2 policies; water quality n the vicinity of the will be unaffected : **Alone and in combination No LSE**
	Habitat Severance	**All Options**: These habitats are not currently at flood risk; this will not change under the preferred SMP2 policies; habitats will be unaffected by the SMP2: **Alone and in combination No LSE**
	Disturbance	**N/A**
	Habitat Loss/ Physical Damage	**All Options**: No loss of habitat within the site will occur: **Alone and in combination No LSE**
8310 Caves not open to the public	Change in physical regime, flow or velocity regime	**All Options**: These habitats are not currently at flood risk; this will not change under the preferred SMP2 policies: **Alone and in combination No LSE**
	Changes in water chemistry	**All Options**: These habitats are not currently at flood risk; this will not change under the preferred SMP2 policies; water quality n the vicinity of the will be unaffected : **Alone and in combination No LSE**
	Habitat Severance	**All Options**: These habitats are not currently at flood risk; this will not change under the preferred SMP2 policies; habitats will be unaffected by the SMP2: **Alone and in combination No LSE**
	Disturbance	**N/A**
	Habitat Loss/ Physical Damage	**All Options**: No loss of habitat within the site will occur: **Alone and in combination No LSE**
2.8 Mammals of Wooded habitats (1304 Greater horseshoe bat (*Rhinolophus ferrumequinum*)	Change in physical regime, flow or velocity regime	Physical processes on the site will remain unaffected**: Alone and in combination No LSE**
	Changes in water chemistry	**N/A**
	Habitat Severance	No habitats will be severed**: Alone and in combination No LSE**
	Disturbance	**N/A**

	Habitat Loss/ Physical Damage	Increased tidal tidal flooding of the bat feeding areas on the Levels could result in loss of invertebrates and also hedges used to shelter while feeding. TheSMP2 does not identify new defence alignments or the SoP to be provided under a Hold the Line policy: **Alone and in combination** (with South Devon and Dorset SMP2) **Uncertain – it is not possible to rule out the likelihood of LSE at the SMP2 level, further review to be undertaken at FRMS stage**

Wye SAC		
No Active Intervention is the selected SMP2 policy option in the vicinity of the SAC (WYE 1-4)		
Sensitive Interest Feature	Potential Hazard	Potential exposure to Hazard and mechanism of effect/impact if known
Riverine habitats & running waters (1.1): Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation	Change in physical regime/ flow or velocity regime	Policy will allow natural processes to continue to operate ; no increase in flood or erosion risk is predicted to occur over the lifetime of the SMP2; the physical characteristics of the Wye, namely the hard geology of the gorge mean significant changes to the physical characteristics or processes are unlikely to result: **Alone and in combination No LSE**
	Changes in water chemistry	There are no major areas of contamination known to exist along the river and the hard geology of the gorge means negligible erosion is predicted to occur. No construction works will be undertaken. No major changes in the water quality of the Wye will result from the implementation of the SMP2: **Alone and in combination No LSE**
	Disturbance	No works to be undertaken so no disturbance will result: **Alone and in combination No LSE**
	Habitat Severance	No works are proposed and physical process are unlikely to change significantly; habitats will be unaffected: **Alone and in combination No LSE**
	Habitat Loss /Physical Damage	No works are proposed and physical process are unlikely to change significantly; habitats will be unaffected: **Alone and in combination No LSE**
Bogs & wet habitats (sensitive to acidification) (Transition mires and quaking bogs)	Change in physical regime/ flow or velocity regime	This feature is located at the top of the Wye catchment and is very unlikely to be affected by the SMP2 polices : **Alone and in combination No LSE**
	Changes in water chemistry	This feature is located at the top of the Wye catchment and is very unlikely to be affected by the SMP2 polices : **Alone and in combination No LSE**
	Disturbance	No works to be undertaken so no disturbance will result. In addition, this feature is located at the top of the Wye catchment and is very unlikely to be affected by the SMP2 polices : **Alone and in combination No LSE**
	Habitat Severance	No works to be undertaken so no severance will result. In addition, this feature is located at the top of the Wye catchment and is very unlikely to be affected by the SMP2 polices : **Alone and in combination No LSE**
	Habitat Loss /Physical Damage	No works to be undertaken so no habitat loss will result. In addition, this feature is located at the top of the Wye catchment and is very unlikely to be affected by the SMP2 polices : **Alone and in combination No LSE**

Anadromous fish (2.5) : Allis shad, Atlantic salmon, River Lamprey, Sea lamprey, Twaite shad	Change in physical regime/flow or velocity regime	Adoption of a **No Active Intervention** policy will allow natural processes to continue to operate no increase in flood or erosion risk is predicted to occur over the lifetime of the SMP2; the physical characteristics of the Wye, namely the hard geology of the gorge mean significant changes to the physical characteristics or processes are likely to result: **Alone and in combination No LSE**
	Changes to water chemistry	There are no major areas of contamination known to exist and the hard geology of the gorge mans negligible erosion is predicted to occur and no construction works will be undertaken. No major changes in the water quality of the Wye will result from the implementation of the SMP2: **Alone and in combination No LSE**
	Disturbance	No works to be undertaken so no disturbance will result : **Alone and in combination No LSE**
	Habitat Severance	No works are proposed and physical process are unlikely to change significantly; habitats will be unaffected: **Alone and in combination No LSE**
	Habitat Loss /Physical Damage	No works are proposed and physical process are unlikely to change significantly; habitats will be unaffected: **Alone and in combination No LSE**
Non-migratory fish & invertebrates of rivers (Atlantic stream or White-clawed crayfish, Brook lamprey, Bullhead	Change in physical regime/ flow or velocity regime	Policy will allow natural processes to continue to operate ; no increase in flood or erosion risk is predicted to occur over the lifetime of the SMP2; the physical characteristics of the Wye, namely the hard geology of the gorge mean significant changes to the physical characteristics or processes are likely to result: **Alone and in combination No LSE**
	Changes in water chemistry	There are no major areas of contamination known to exist along the Wye Valley therefore and therefore No major changes in the water quality of the Wye will result from the implementation of the SMP2: **Alone and in combination No LSE**
	Disturbance	No works to be undertaken so no disturbance will result: **Alone and in combination No LSE**
	Habitat Severance	No works are proposed and physical process are unlikely to change significantly; habitats will be unaffected: **No LSE**
	Habitat Loss /Physical Damage	No works are proposed and physical process are unlikely to change significantly; habitats will be unaffected: **Alone and in combination No LSE**
Mammals of riverine habitats (Otter)	Change in physical regime/ flow or velocity regime	Adoption of a **No Active Intervention** policy will allow natural processes to continue to operate; no increase in flood or erosion risk is predicted to occur over the lifetime of the SMP2; the physical characteristics of the Wye, namely the hard geology of the gorge mean significant changes to the physical characteristics or processes are likely to result: **Alone and in combination No LSE**
	Changes in water chemistry	There are no major areas of contamination known to exist along the Wye Valley therefore and therefore No major changes in the water quality of the Wye will result from the implementation of the SMP2: **Alone and in combination No LSE**
	Disturbance	No works to be undertaken so no disturbance will result: **Alone and in combination No LSE**

	Habitat Severance	No works are proposed and physical process are unlikely to change significantly; habitats will be unaffected: **Alone and in combination No LSE**
	Habitat Loss /Physical Damage	No works are proposed and physical process are unlikely to change significantly; habitats will be unaffected : **Alone and in combination No LSE**

River Usk SAC				
SMP2 policy options are as follows:				
NEW1	NEW2	NEW3	NEW4	NEW5
HTL	HTL	NAI/MR	HTL	HTL

Sensitive Interest Feature	Potential Hazard	Potential exposure to Hazard and mechanism of effect/impact if known
Riverine habitats & running waters (Floating vegetation of Ranunculus of plain and submountainous rivers)	Change in physical regime/ flow or velocity regime	**Hold the Line:** Increase in sea level could result in tidal incursion further up the Usk estuary potentially resulting in estuarine sediments being pushed further up the Usk. Given the existing estuarine system is already highly dynamic the resultant impacts on the physical regime are considered to be negligible**: Alone No LSE** **In combination** : potential for in combination effects with the Wye and Usk CFMP however further details at FRMS needed **Uncertain – it is not possible to rule out the likelihood of LSE at the SMP2 level, further review to be undertaken at FRMS stage** **No Active Intervention/Managed Realignment (NEW3 only) :** In this largely rural reach a policy of NAI/MR will allow natural processes to dominate with an increase in tidal flooding and reintegration of the river with its floodplain**: Alone and in combination No LSE**
	Changes in water chemistry	**No Active Intervention (NEW 3 only)**: If no works are undertaken, there is minimal risk of existing areas of contamination being disturbed: **Alone and in combination No LSE** **Hold the Line or Managed Realignment**: The Usk Valley around Newport has a complex industrial history and much of the land is contaminated. Improvement or maintenance works under a **Hold the Line** policy and **Managed Realignment** have the potential to remobilise contaminated sediments; this potential impact will be avoided or mitigated through appropriate investigations and remediation/mitigation at the project level as appropriate. In addition more detailed HRA will be undertaken at the FRMS and project level with appropriate avoidance or mitigation measures identified: **Alone and in combination No LSE**
	Disturbance	N/A

	Habitat Severance	**No Active Intervention (NEW3 only)**: No works are proposed and physical process are unlikely to change significantly; habitats will be unaffected **Alone and in combination No LSE** **Hold the Line/Managed Realignment:** habitat feature of would not be severed as a result the implementation of any of these polices **Alone and in combination No LSE**
	Habitat Loss /Physical Damage	**No Active Intervention (NEW3 only)**: No works are proposed and natural processes will continue to operate habitats are unlikely to change significantly **Alone and in combination No LSE** **Hold the Line/Managed Realignment:** Maintenance or retreat of the defence line will not affect in-river processes or habitats. The main area likely to be affected by the requirement to increase the size of defences would be around Newport; *Ranunculus* habitat is absent from this Management unit of the SAC: **Alone and in combination No LSE**
Anadromous fish (Allis shad, Atlantic salmon, River Lamprey, Sea lamprey, Twaite shad)	Change in physical regime/ flow or velocity regime	**Hold the Line:** Increase in sea level could result in tidal incursion further up the Usk estuary potentially resulting in estuarine sediments being pushed further up the Usk. Given the existing estuarine system is already highly dynamic the resultant impacts on the physical regime are considered to be negligible**: Alone : No LSE** There is the potential for the increased incursion of tidal waters to affect freshwater migratory cues, however fluvial flows are also predicted to increase under climate change so effect are not considered significant: **Alone :No LSE** Flows and morphology are considered unlikely to change enough to affect fish migration**: Alone :No LSE** **In combination** : potential for in combination effects with the Wye and Usk CFMP however further details at FRMS needed **Uncertain – it is not possible to rule out the likelihood of LSE at the SMP2 level, further review to be undertaken at FRMS stage** **No Active Intervention/Managed Realignment(NEW3 only):** In this largely rural reach a policy of NAI/MR will allow natural processes to dominate with an increase in tidal flooding and reintegration of the river with its floodplain**: Alone and in combination No LSE**

	Changes in water chemistry	The Usk Valley around Newport has a complex industrial history and much of the land is contaminated. Improvement or maintenance works under a **Hold the Line or Managed Realignment** policy have the potential to remobilise contaminated sediments; this potential impact will be avoided or mitigated through further assessment, appropriate investigations and remediation/mitigation as required at the FRMS and project level. In addition, HRAs will be undertaken of the more detailed FRMS and any projects cascading from the SMP2 and/or FRMS: **Alone and in combination No LSE** **No Active Intervention (NEW3 only)** : If no works are undertaken, there is minimal risk of existing areas of contamination being disturbed: **Alone and in combination No LSE**
	Disturbance	**No Active Intervention (NEW3 only)**: no works will be undertaken, and therefore no disturbance to fish will result: **Alone and in combination No LSE** Improvement or maintenance works under a **Hold the Line or Managed Realignment** option have the potential to disrupt fish migration and/or spawning through increased noise and vibration; this impact will be avoided or mitigated through timing the works to avoid sensitive fish migration and/or spawning period and by undertaking HRA at the FRMS and project level. **Alone and in combination No LSE**
	Habitat Severance	**All Options**: none of the SMP2 policy options have the potential to result in the severance of any of habitats relied on by the listed fish species: **Alone and in combination No LSE**
	Habitat Loss /Physical Damage	**No Active Intervention**: No works are proposed and natural processes will continue to operate habitats unlikely to change significantly **Alone and in combination No LSE** **Hold the Line/Managed Realignment:** Maintenance or retreat of the defence line will not affect in-river processes or habitats: **Alone and in combination No LSE**
Non-migratory fish & invertebrates of rivers (Brook lamprey, Bullhead)	Change in physical regime/ flow or velocity regime	**Hold the Line:** Increase in sea level could result in tidal incursion further up the Usk estuary potentially resulting in estuarine sediments being pushed further up the Usk. Given the existing estuarine system is already highly dynamic the resultant impacts on the physical regime are considered to be negligible**: Alone and in combination No LSE** **No Active Intervention/Managed Realignment(NEW3 only) :** In this largely rural reach a policy of NAI/MR will allow natural processes to dominate with an increase in tidal flooding and reintegration of the river with its floodplain**: Alone and in combination No LSE**

	Changes in water chemistry	The Usk Valley around Newport has a complex industrial history and much of the land is contaminated. Improvement or maintenance works under a **Hold the Line or Managed Realignment** policy have the potential to remobilise contaminated sediments. This potential impact will be avoided or mitigated through further assessment, appropriate investigations and remediation/mitigation as required at the FRMS and project level. In addition, HRAs will be undertaken of the more detailed FRMS and any projects cascading from the SMP2 and/or FRMS: **Alone and in combination No LSE** **No Active Intervention (NEW3 only)** : If no works are undertaken, there is minimal risk of existing areas of contamination being disturbed: **Alone and in combination No LSE**
	Disturbance	**No Active Intervention**: no works will be undertaken, and therefore no disturbance to fish will result: **Alone and in combination No LSE** Improvement or maintenance works under a **Hold the Line or Managed Realignment** option have the potential to disrupt fish spawning through increased noise and vibration; this impact will be avoided or mitigated through timing the works to avoid sensitive spawning period and by undertaking HRA at the FRMS and project level. **Alone and in combination No LSE**
	Habitat Severance	**All Options**: none of the SMP2 policy options have the potential to result in the severance of any of habitats relied on by the listed fish species: **Alone and in combination No LSE**
	Habitat Loss /Physical Damage	**No Active Intervention**: No works are proposed and natural processes will continue to operate habitats unlikely to change significantly **Alone and in combination No LSE** **Hold the Line/Managed Realignment:** Maintenance or retreat of the defence line will not affect in-river processes or habitats: **Alone and in combination No LSE**
Mammals of riverine habitats (Otter)	Change in physical regime/ flow or velocity regime	**Hold the Line:** Increase in sea level could result in tidal incursion further up the Usk estuary potentially resulting in estuarine sediments being pushed further up the Usk. Given the existing estuarine system is already highly dynamic the resultant impacts on the physical regime are considered to be negligible**: Alone and in combination No LSE** **No Active Intervention/Managed Realignment(NEW3 only) :** In this largely rural reach a policy of NAI/MR will allow natural processes to dominate with an increase in tidal flooding and reintegration of the river with its floodplain**: Alone and in combination No LSE**

	Changes in water chemistry	The Usk Valley around Newport has a complex industrial history and much of the land is contaminated. Improvement or maintenance works under a **Hold the Line or Managed realignment** policy have the potential to remobilise contaminated sediments; this potential impact will be avoided or mitigated through further assessment, appropriate investigations and remediation/mitigation as required at the FRMS and project level. In addition, HRAs will be undertaken of the more detailed FRMS and any projects cascading from the SMP2 and/or FRMS: **Alone and in combination No LSE** **No Active Intervention** : If no works are undertaken, there is minimal risk of existing areas of contamination being disturbed: **Alone and in combination No LSE**
	Disturbance	**No Active Intervention** : No works are proposed so no disturbance to otters will occur: **No LSE** **Hold the Line or Managed Realignment:** Works could potentially disturb otters whilst using the watercourse or whilst in holts. No night time working or light will be permitted and otter access along at least one bank of the river maintained at all time. Otter surveys will ensure that there are no impacts on otter holts or couches as a result of the works and if necessary, appropriate licences will be obtained; HRA will be undertaken at the FRSM and project level to ensure no impacts on otter passage: **Alone and in combination No LSE**
	Habitat Severance	**No Active Intervention (NEW3 only)** : policy will allow natural processes to continue; no works will be undertaken and no severance of habitats will occur: **Alone and in combination No LSE** **Managed Realignment (NEW3 only):** would alter habitats but would be unlikely to result in habitat severance**: Alone and in combination No LSE** **Hold the Line:** implementation of the policy could restrict otter passage along the river corridor and as such could result in severance of habitat: **Alone and in combination LSE**
	Habitat Loss /Physical Damage	**No Active Intervention (NEW3 only)**: policy will allow natural processes to continue **Alone and in combination No LSE** **Managed Realignment (NEW3 only):** has the potential to increase the extent of riparian habitat available to otters**: Alone and in combination No LSE** **Hold the Line:** in the medium to long term coastal squeeze may reduce available riparian habitat, potentially reducing breeding territories, access to prey and/or otter ranges; increasing the footprint of defences may also result in habitat loss**: Alone and in combination LSE**

7. In Combination Effects

A wide range of plans have been reviewed to identify any potential in combination effects with the SMP2, along with a brief discussion of conclusions reached. These are all listed in Annex C. This section focuses on those plans and projects identified as potentially giving rise to in-combination effects.

Given the strategic nature of this assessment and the uncertainties surrounding the timing and effects of other national level plans and projects, it is not practicable to identify all the possible plans and projects that may act 'in-combination'. However, it is possible to outline at a strategic level the broad types of effects that may arise from the implementation of other plans and projects which should inform the HRA for the SMP2. Potential strategic in-combination effects include:

- Habitats loss : direct land take from coastal development (for housing, transport, regeneration etc) resulting in habitats loss.
- Impacts on water quality for example from increased discharge of sewage, increased urban or agricultural runoff, changes in dredging practices etc
- Changes to physical regimes, for example form aggregate dredging and/or coastal development potentially affecting coastal and subtidal habitats and fish movement.

The following plans and projects have been identified as potentially giving rise to in-combination effects:

Land Use Plans

Cardiff Local Development Plan 2006- 2021 (Draft). Significant reservations were raised by the Inspectors at the Exploratory Meeting on 25th February 2010, and the Council formally requested that the Inspectors recommend to the Welsh Assembly Government that the LDP be withdrawn from the examination process. The Council will be preparing a new Local Development Plan. The **City of Cardiff Local Plan (1996)** is the main local planning document indentified within the local development framework. However the deposit draft of the **Cardiff Unitary Development Plan (2003)** although in accordance with Draft Welsh Assembly guidance on it remains a consideration in development control decisions until an LDP has been placed on deposit. Note: in May 2005, the council formally resolved to cease work on the Cardiff UDP and begin work on the LDP. At present there is insufficient information available to judge whether the LDP will result in the potential for in-combination effects, however it is likely that policies to protect both the Gwent Levels SSSIs and the Severn Estuary European sites will remain part of the Local Development Framework. There is therefore a high degree of uncertainty regarding whether or not there is the potential for in-combination effects on the Severn SPA/SAC/Ramsar site. Relevant issues identified in the Cardiff Minerals Local Plan 1997 include interest in clay extraction from the Wentlooge Levels and ongoing dredging in the Bristol Channel; this document is however over 10 years old; consequently these issues may no longer be pertinent and/or other issues may have arisen. Potential developments identified with the draft UDP which have the potential to give rise to in combination effects include: the Eastern Bylink (proposed road improvement), the St Mellons Wentlooge Link (proposed road improvement) and the development of an integrated waste management system at the Rumney Moors/Lamby Way site, which is currently used primarily for landfill.

Vale of Glamorgan Council Local Development Draft Preferred Strategy Dec 2007: The Habitats Regulations Assessment Screening for the Vale of Glamorgan LDP Draft Preferred Strategy identified the potential for a negative impact on the Severn Estuary European sites. While much of the development arising from the draft preferred strategy is likely to be located well away from the Severn Estuary, the south-eastern zone has been identified as a growth area and abuts the boundary of the designated site. A more detailed assessment of the LDP is to be undertaken following consultation on the Draft Preferred Strategy to ascertain and mitigate against any likely significant effects to the SPA, cSAC, Ramsar. The mechanisms by which these activities could impact upon the designated site(s) are numerous and include land-take, disturbance through noise and vibration, pollution through ground and surface water run-off, and interruption of flight-lines by wind turbines. The potential for in combination effects exists

Monmouthshire County Council Adopted Unitary Development Plan 1996-2011 (adopted 2006): The HRA of the Monmouthshire County Council UDP concluded that it was unlikely that the Plan will have a significant effect on European sites/species, or adversely affect a site's integrity. No in-combination effects can be identified at this strategic level. **The Monmouthshire LDP** is currently in preparation and will contain land use allocations and policies for future development in Monmouthshire for the period 2011-2021. A HRA Screening of the Pre-Deposit Proposals was undertaken in May 2009 and identified the potential for likely significant effects, but identified that these impacts could be entirely avoided or mitigated against through further revisions of the LDP strategy and policies; the HRA will be reviewed at a more advanced version of the plan in order for a complete assessment to take place. Potential impacts were identified on the Usk SAC (arising from: development in Abergavenny/Llanfoist and Usk, a Strategic Employment Site within 2.5km of the site at Llanfoist, sites identified for waste facilities which may lead to waste related development near the SAC and mineral safeguarding policies which may lead to eventual additional mining and quarrying) the Severn SPA/SAC/Ramsar (arising from development in Chepstow, Sudbrook and Magor/Undy, Strategic Housing Sites at Magor/Undy and Portskewett within 5km and 2.5km of the site respectively, a Strategic Mixed Use Site within 2.5km of the site at Chepstow, an Employment site at Sudbrook within 2.5km of the site, and 3 Employment sites at Magor/Undy within 5 km of the site, sites will be identified for waste facilities which may lead to waste related development near the site, mineral safeguarding which may lead to eventual additional mining and quarrying and key strategic transport projects could increase diffuse pollution) and the Wye SAC (arising from: development in Monmouth and Chepstow, a Strategic Mixed Use Site within 2.5km of the site at Monmouth and adjacent a Strategic Mixed Use Site in Chepstow, an Employment site at Sudbrook within 5km of the site, waste facilities which may lead to waste related development near this SAC and mineral safeguarding which may lead to eventual additional mining and quarrying. It is clear at this stage that it will be necessary for the LDP to recognise these sites in preparing the strategy and developing plan policies, and to work in partnership with adjacent local authorities who are producing plans which will in-combination increase the impact on these sites.

Newport City Council Unitary Development Plan 1996-2011 (Adopted May 2006): No HRA of the Plan appears to have been undertaken. The development of brownfield sites in close proximity to the River Usk SAC could have the potential to affect water quality as a result of construction activities. This also has implications for the River Severn SPA/ Ramsar/ cSAC as the River Usk flows into the Severn Estuary. **Newport Local Development Plan 2011 – 2026**: the LDP is currently in preparation; the HRA screening of the LDP is still in draft. A number of recommendations have been made to ensure that the final draft of the LDP avoids and/or minimises impacts on the European sites identified during this study. It is anticipated, however that further appropriate assessment work will be required to assess the in-combination effects of water usage on the River Usk SAC and River Wye SAC, including changes to the LDP policy wording, further investigations to aid future assessments and ways of managing and mitigating specific impacts. At this high level stage it is not possible to identify any in combination effects, however redevelopment in the centre of Newport is likely to rise to opportunity for in-combination effects on the Usk SAC

North Somerset Replacement Local Plan (2007) The proposals map for the plan has been reviewed. The plan contains proposals for the regeneration of the waterfront in Weston-super-Mare, however this work will be undertaken behind the existing defence line and as such is considered unlikely to affect the Severn European site Works undertaken are consistent with the Hold the Line policy identified within the North Devon and Somerset SMP2 and predictions for habitat loss resulting from this policy have taken this into account. There are no polices within the local plan that are likely to give rise to in-combination effects North Somerset Replacement Local Plan will remain the principal planning document until 2011. **The North Somerset Core Strategy** (being produced as part of the Local Development Framework) is currently in preparation. A consultation draft of the Core Strategy was produced in 2009. Preparation of the Habitats Regulations and Sustainability Appraisal in underway and will be made available to support the next stage of the Core Strategy to be adopted in 2011. It is therefore currently not possible to determine whether there is the potential for in-combination effects with the Core Strategy.

Other Plans

Catchment Flood Management Plans for the Taff and Ely, Eastern Valleys, Wye and Usk, Bristol Avon, Severn Tidal Tributaries and Somerset. The preferred policy for the Usk is to continue with current or alternative actions to mange flood risk and there is considered to be the potential for in-combination effects on the Usk SAC both on river habitats and anadromous fish species. Further assessment will be undertaken at the FRMS and project level to ensure impacts are avoided or mitigated.

Other SMP2s around the Estuary

Draft North Devon and Somerset SMP2, 2009. This SMP is adjacent to the Severn SMP2 study are and extends west from Hartland Point in Devon to Anchor Head in Somerset. An HRA for this SMP2 is also being prepared however there is the potential for in-combination effects on the Severn Estuary European Sites, particularly cumulative and in-combination effects that could arise from coastal squeeze and habitat loss arising from footprint of defences.

Swansea and Carmarthen Bay SMP. The SMP study area extends from St. Anne's Head in Pembrokeshire to Lavernock Point in Vale of Glamorgan. The SMP is still under development. No conclusive assessment on the potential for in-combination effects can be undertaken until preferred policies for the South Wales SMP have been identified.

PROJECTS

Private Defences: Along parts of the SMP2 shoreline, there are private defences that have been built by individual landowners. The preferred policy within the SMP2 indicate where defences could, or could not, be maintained for technical and / or environmental reasons, i.e. influence on coastal erosion or flooding. It is acknowledged that at some point individuals may wish to build new defences where presently there are none or increase / improve existing defences. In these situations, these actions may be permitted, but it is the responsibility of the landowner to demonstrate there would be no adverse impacts on coastal processes (either upstream or downstream or in the area offshore) or designated and protected features, as part of the normal planning application process. It is not possible to prescribe specific policies for this situation as it is unknown if, when or where individual landowners may wish to build or amend private defences.

Bristol Container Port: On 25th March 2010, the Department for Transport gave consent for the construction of Bristol's Deep Sea Container Terminal. The facility will be located with the estuary and will have four berths capable of receiving vessels of 16 metre draft, at all states of the tide. The HRA undertaken for the project concluded it was likely to have a significant effect on the Severn Estuary SPA, Ramsar site and the SAC. The main impacts were identified as: the permanent loss of a small area of intertidal habitat from within the SPA and SAC; the alteration of conditions that support sea bed dwelling animal communities within an area of approximately 80 hectares of intertidal mudflat due to increased accretion; and a resultant reduction, that could be temporary, in available feeding resources for waterfowl and waders, within the above intertidal area, of approximately 60 hectares of intertidal area due to potential changes in seabed life. The Secretary of State considered that there were imperative reasons of overriding public interest, of an economic and social nature, as to why the proposals should be permitted, in spite of a negative assessment of their impact on European and international sites of conservation significance. Natural England and the Countryside Council for Wales advised that their objections could be overcome through implementation of a Compensation Mitigation and Monitoring Agreement. This included, among other measures, the provision of compensation habitat on the Steart Peninsula on the Severn Estuary or an appropriate alternative site. The loss of intertidal habitat means there is the potential for in-combination effects.

Avonmouth Renewable Energy Generation : there are a number of consented and proposed renewable energy proposals in the Avonmouth area including the Royal Portbury Dock renewable Energy Plant and Avomouth Resource Park. These will largely be located within develop areas and will be required to comply with Habitats Regulations including the production of a project level HRA. These developments are unlikely to involve land take from the site so the main impacts are likely to relate to disturbance. As the SMP2 does not identify the nature and timing of any works that may be required, it is not possible to identify in combination effects this stge. Further assessment will be undertaken as part of the HRS for the FRMS.

Severn Tidal Power: The extremely high tidal range of the Severn Estuary means that the Estuary could generate renewable energy from wave and tidal power technologies. The Department for Energy and Climate Change (DECC) and WAG are currently part way through funding a study of possible renewable energy generation technologies in the Severn Estuary. A two year project to evaluate the potential for electricity generation from the Severn Estuary has reached its midpoint. Updates on the progress of the project are available at the DECC website:

http://www.decc.gov.uk/en/content/cms/what_we_do/uk_supply/energy_mix/renewable/severn_tidal_power/severn_tidal_power.aspx

The study aims to gather and assess evidence to help Government to decide if it should use public money to help support a renewable energy generation scheme in the Severn. Phase 1 of the study reduced a long list of 10 possible schemes down to a shorter list of 5 possible scheme types. These are being considered in more detail in Phase 2. A public consultation on Phase 2 will probably take place sometime during 2010. If a Severn tidal power project does go ahead, it would have to go through the normal planning and permitting process that other developments go through. This could take 3 - 5 years and would include more public consultation. The HRA cannot take into account the impacts of any of the possible schemes, as no decision has been made on which one (if any) would be supported by Government. This means there are too many uncertainties surrounding the option and potential impacts to allow any meaningful assessment to be made.

River Usk Strategy and Subsequent Projects: The Council seeking to regenerate the centre of Newport around the Usk. An HRA of the Strategy has been undertaken. The potential for in-combination effects exists primarily arising from the loss of intertidal habitat and the possible impacts on otter habitat.

8. Discussion of Likely Significant Effects on each of the European Sites
Is the potential scale or magnitude of any effect likely to be significant?
a) Alone? **(explain conclusion, e.g. in relation to de minimise criteria)**

Yes - The SMP2 could result in a range of actions that could affect the following sites and their features, which have therefore been taken forward to Stage 3 Appropriate Assessment:

- Severn Estuary/Mor Hafren SPA
- Severn Estuar/Mor Hafren Ramsar and
- Severn Estuary/ Mor Hafren SAC.
- River Usk / Afon Wysg SAC
- Somerset Levels and Moors SPA
- Somerset Levels and Moors Ramsar

Impacts will primarily be due to:

- habitat loss within or adjacent to the designated sites as adopting a HTL policy will result in coastal squeeze and progressive loss of intertidal habitat over time, and/or
- changes to habitats and physical processes resulting from increased inundation by sea water; and/or
- changes to the form and function of the estuary feature as a result of the above.

In addition a number of sites have been identified as requiring further assessment of potential effects (both alone and in-combination) at the FRMS stage once further information is available on defence alignments, type of defence and the SoP to be provided. These include:

- Severn Estuary SAP/SAC and Ramsar: impacts on physical regime, water quality and habitats may result from a HTL policy, depending on SoP provided. Potential for cumulative and in-combination losses of habitat due to footprint of defence.

- Somerset Levels and Moors Spa and Ramsar: potential for cumulative and/or in combination loss of habitat used by the features of the site to the footprint of the defences. Potential for impacts will depending on the type of defences and SoP to be provided

- North Somerset and Mendip Bat SAC and Mendip Limestone grassland SAC: potential for impacts on bat feeding habitat on the Levels, depending on alignment of new defences and SoP provided.

b) In combination with other permissions and/or other plans or projects?

Yes - The SMP2 has the potential to have an impact on the Severn Estuary SPA, Ramsar and SAC, Somerset Levels and Moors SPA, Somerset Levels and Moors Ramsar and the Usk SAC in combination with other plans, including adjacent SMPs, land use plans and several projects.

10. Conclusion: Is the proposal likely to have a significant effect 'alone and/or in combination' on a European site?	Yes, The SMP2 could result in a range of unspecified actions that could affect the following sites and their features, which have therefore been taken forward to Stage 3 Appropriate Assessment: • Severn Estuary SPA, • Severn Estuary Ramsar and • Severn Estuary SAC • River Usk / Afon Wysg SAC • Somerset Levels and Moors SPA • Somerset Levels and Moors Ramsar

4. Stage 3 Assessment – Assessment of Adverse Effect on Site Integrity

4.1 Summary of Conclusions of Stage 2 Assessment

This Section considered the effects of the SMP2 on the interest features of the European sites where a "likely significant effect" has been identified in Stage 2. A summary of the conclusions of the Stage 2 assessment is presented below.

Features			Plan has associated hazards to which features are sensitive?	Details of Hazard
Severn Estuary/Mor Hafren SPA				
3.4	Birds of lowland wet grasslands – both inside and outside the designated site	NAI	✓	Changes in physical regime Changes in water chemistry Habitat loss/physical damage
		MR	✓	Changes in physical regime Changes in water chemistry Habitat loss/physical damage
		HTL	?	Uncertain effects at SMP2 level, further assessment to be undertaken as part of the Severn FRMS & HRA when further detail on alignments and SoP will be determined
3.6	Birds of lowland freshwaters and their margins – both inside and outside the designated site	NAI	✓	Changes in physical regime Changes in water chemistry Habitat loss/physical damage
		MR	✓	Changes in physical regime Changes in water chemistry Habitat loss/physical damage
		HTL	?	Uncertain effects at SMP2 level, further assessment to be undertaken as part of the Severn FRMS & HRA when further detail on alignments and SoP will be determined
3.7	Birds of farmland – both inside and outside the designated site	NAI	✓	Changes in physical regime Changes in water chemistry Habitat loss/physical damage
		MR	✓	Changes in physical regime Changes in water chemistry Habitat loss/physical damage
		HTL	?	Uncertain effects at SMP2 level, further assessment to be undertaken as part of the Severn FRMS & HRA when further detail on alignments and SoP will be determined
3.8	Birds of coastal habitats	NAI	X	N/A
		MR	X	N/A
		HTL	✓	Changes in physical regime Habitat loss/physical damage
3.9	Birds of estuarine habitats	NAI	X	N/A
		MR	X	N/A
		HTL	✓	Changes in physical regime Habitat loss/physical damage

Severn Estuary Ramsar				
1.12	Estuarine & intertidal habitats	NAI	X	N/A
		MR	X	N/A
		HTL	✓	Changes in physical regime Habitat loss/physical damage
2.5	Anadromous fish	NAI	X	N/A
		MR	X	N/A
		HTL	X	N/A
2.6	Non-migratory fish & invertebrates of rivers	NAI	X	N/A
		MR	X	N/A
		HTL	X	N/A
3.4	Birds of lowland wet grasslands	NAI	✓	Changes in physical regime Changes in water chemistry Habitat loss/physical damage
		MR	✓	Changes in physical regime Changes in water chemistry Habitat loss/physical damage
		HTL	?	Uncertain effects at SMP2 level, further assessment to be undertaken as part of the Severn FRMS & HRA when further detail on alignments and SoP will be determined
3.6	Birds of lowland freshwaters and their margins	NAI	✓	Changes in physical regime Changes in water chemistry Habitat loss/physical damage
		MR	✓	Changes in physical regime Changes in water chemistry Habitat severance Habitat loss/physical damage
		HTL	?	Uncertain effects at SMP2 level, further assessment to be undertaken as part of the Severn FRMS & HRA when further detail on alignments and SoP will be determined
3.7	Birds of farmland	NAI	✓	Changes in physical regime Changes in water chemistry Habitat loss/physical damage
		MR	✓	Changes in physical regime Changes in water chemistry Habitat severance Habitat loss/physical damage
		HTL	?	Uncertain effects at SMP2 level, further assessment to be undertaken as part of the Severn FRMS & HRA when further detail on alignments and SoP will be determined
3.8	Birds of coastal habitats	NAI	X	N/A
		MR	X	N/A
		HTL	✓	Changes in physical regime Habitat loss/physical damage
3.9	Birds of estuarine habitats	NAI	X	N/A
		MR	X	N/A
		HTL	✓	Changes in physical regime Habitat loss/physical damage
Severn /Mor Hafren SAC				
1.12	Estuarine & intertidal habitats	NAI	X	N/A
		MR	X	N/A
		HTL	✓	Changes in physical regime, form and function Habitat loss/physical damage

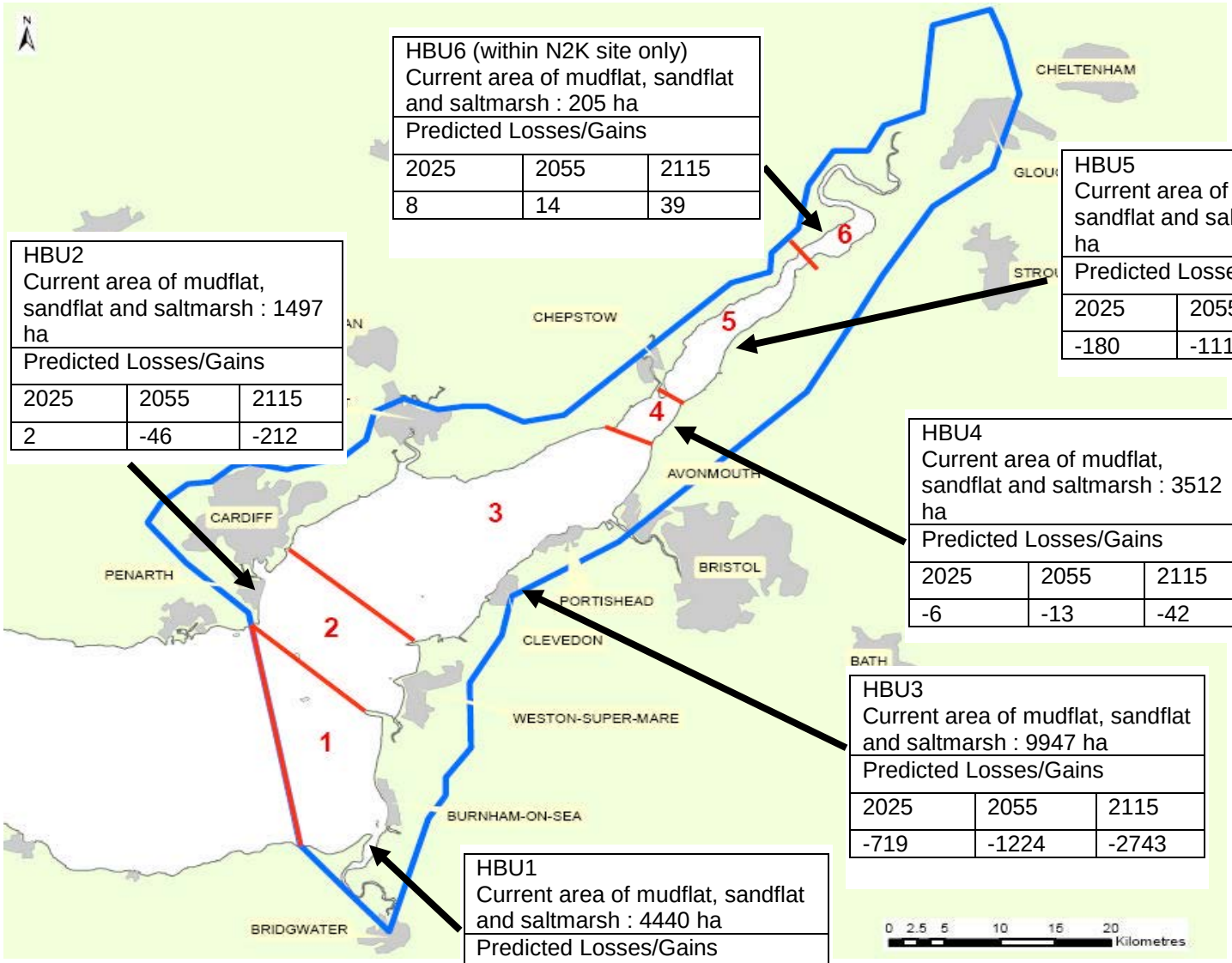
1.13	Submerged marine habitats	NAI	X	N/A
		MR	X	N/A
		HTL	X	N/A
2.5	Anadromous fish	NAI	X	N/A
		MR	X	N/A
		HTL	X	N/A
Somerset Levels SPA				
3.4	Birds of lowland wet grasslands – both inside and outside the designated site	NAI	X	N/A
		MR	X	N/A
		HTL	X	N/A
3.6	Birds of lowland freshwaters and their margins – both inside and outside the designated site	NAI	X	N/A
		MR	X	N/A
		HTL	X	N/A
3.7	Birds of farmland – both inside and outside the designated site	NAI	X	N/A
		MR	X	N/A
		HTL	X	N/A
3.8	Birds of coastal habitats	NAI	X	N/A
		MR	X	N/A
		HTL	✓	Changes in physical regime Habitat loss/physical damage
3.9	Birds of estuarine habitats	NAI	X	N/A
		MR	X	N/A
		HTL	✓	Changes in physical regime Habitat loss/physical damage
Somerset Levels Ramsar				
No Ref	Red data book invertebrates (freshwater)	NAI	X	N/A
		MR	X	N/A
		HTL	X	N/A
3.4	Birds of lowland wet grasslands – both inside and outside the designated site	NAI	X	N/A
		MR	X	N/A
		HTL	X	N/A
3.6	Birds of lowland freshwaters and their margins – both inside and outside the designated site	NAI	X	N/A
		MR	X	N/A
		HTL	X	N/A
3.7	Birds of farmland – both inside and outside the designated site	NAI	X	N/A
		MR	X	N/A
		HTL	X	N/A
3.8	Birds of coastal habitats	NAI	X	N/A
		MR	X	N/A
		HTL	✓	Changes in physical regime Habitat loss/physical damage
3.9	Birds of estuarine habitats	NAI	X	N/A
		MR	X	N/A
		HTL	✓	Changes in physical regime Habitat loss/physical damage
North Somerset and Mendip Bat SAC				
1.7	Dry Grasslands	NAI	X	N/A
		MR	X	N/A
		HTL	X	N/A
1.6	Dry Woodlands and Scrub	NAI	X	N/A
		MR	X	N/A
		HTL	X	N/A
	Caves not open to the public	NAI	X	N/A
		MR	X	N/A
		HTL	X	N/A
2.8	Mammals of Wooded	NAI	?	Uncertain effects at SMP2 level, further

	habitats	MR HTL		assessment to be undertaken as part of the Severn FRMS & HRA when further detail on alignments and SoP will be determined
Mendip Limestone Grasslands SAC				
1.7	Dry Grasslands	NAI	X	N/A
		MR	X	N/A
		HTL	X	N/A
1.6	Dry Woodlands and Scrub	NAI	X	N/A
		MR	X	N/A
		HTL	X	N/A
1.8	Dry heathland	NAI	X	N/A
		MR	X	N/A
		HTL	X	N/A
	Caves not open to the public	NAI	X	N/A
		MR	X	N/A
		HTL	X	N/A
2.8	Mammals of Wooded habitats	NAI MR HTL	?	Uncertain effects at SMP2 level, further assessment to be undertaken as part of the Severn FRMS & HRA when further detail on alignments and SoP will be determined
River Wye SAC (NAI is the selected SMP2 policy for whole of affected area)				
	All features	NAI	X	N/A
River Usk SAC				
1.1	Riverine habitats & running waters	NAI	X	N/A
		MR	X	N/A
		HTL	X	N/A
2.5	Anadromous fish	NAI	X	N/A
		MR	X	N/A
		HTL	X	N/A
2.6	Non-migratory fish and invertebrates of rivers	NAI	X	N/A
		MR	X	N/A
		HTL	X	N/A
2.9	Mammals of riverine habitats	NAI	X	N/A
		MR	X	N/A
		HTL	✓	Habitat loss/physical damage Habitat Severance

Further assessment of these polices both alone and in combination with other plans and projects was undertake and is documented below. The preferred SMP2 policy options along with a plan showing the location of policy units and designated sites are provided in Annex B.

One of the main impacts arising from the implementation of the SMP2 will be losses of intertidal habitat (Atlantic salt meadows and intertidal mud and sandlflats) potentially arising from options that hold the existing line of defence. In order to try to quantify this impact and give an indication of distribution of loss, the CHaMP model has been rerun and used to determine indicative figures for losses of this habitat type within each of the CHaMP Habitat Behaviour Units (ref gmHDP). Indicative figures are shown below; these have been based on the assumption that all existing defences and the current standard of protection are maintained and as such presents a worst case scenario for habitat loss arising from coastal squeeze. Further information on the modelling and results arising from it can be found in Predicted Morphological Form of the Severn Estuary, February 2009, Atkins/ABPmer and the Severn Estuary Flood Risk Management Strategy Habitat Delivery Plan, Atkins, April 2009. Figure 1 shows predicted loss of mudflat, sandflat and saltmarsh over time for each of the Habitat Behaviour Units, whilst Figures 2 and 3 show decline in area of mudflat and saltmarsh over time.

Figure 1 – Predicted loss of Mudflat, Sandflat and Saltmarsh within each Habitat Behaviour Unit over time



HBU6 (within N2K site only)
Current area of mudflat, sandflat and saltmarsh : 205 ha

Predicted Losses/Gains

2025	2055	2115
8	14	39

HBU5
Current area of mudflat, sandflat and saltmarsh : 3512 ha

Predicted Losses/Gains

2025	2055	2115
-180	-111	-330

HBU2
Current area of mudflat, sandflat and saltmarsh : 1497 ha

Predicted Losses/Gains

2025	2055	2115
2	-46	-212

HBU4
Current area of mudflat, sandflat and saltmarsh : 3512 ha

Predicted Losses/Gains

2025	2055	2115
-6	-13	-42

HBU3
Current area of mudflat, sandflat and saltmarsh : 9947 ha

Predicted Losses/Gains

2025	2055	2115
-719	-1224	-2743

HBU1
Current area of mudflat, sandflat and saltmarsh : 4440 ha

Predicted Losses/Gains

2025	2055	2115
141	137	742

Figure 2 - Decline in Area of Mudflat within the N2K site over Time

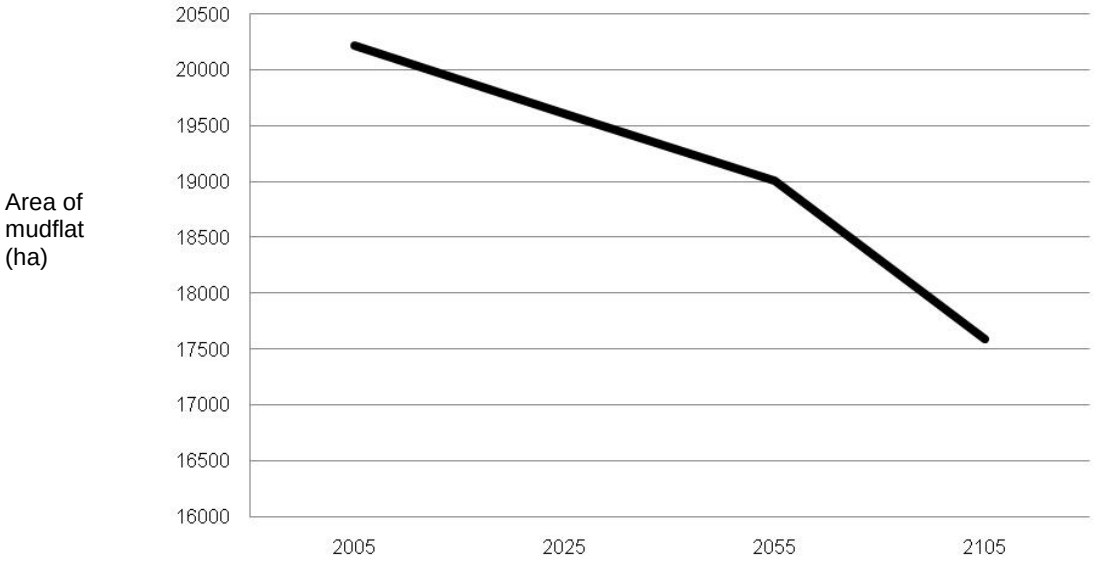
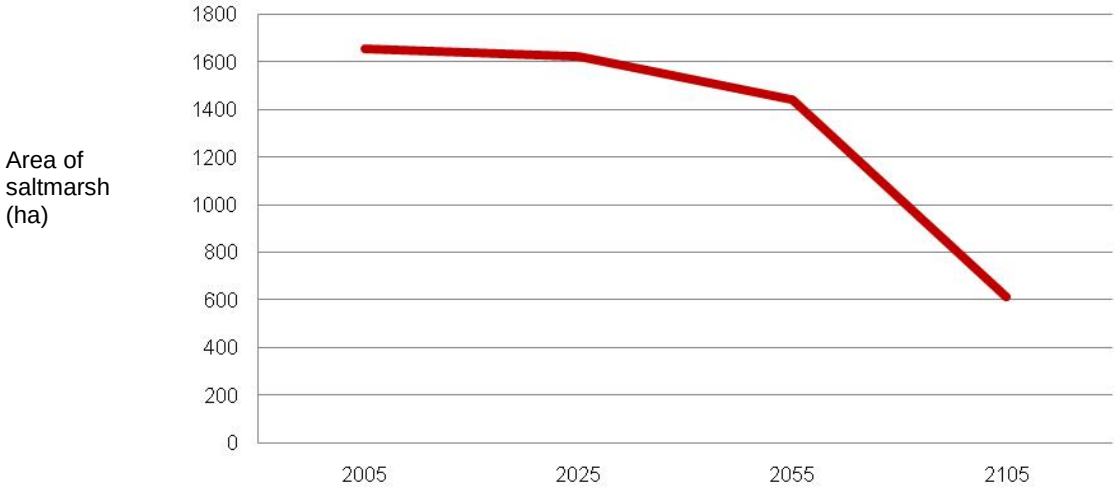


Figure 3 - Decline in Area of Saltmarsh within the N2K site over Time



4.2 Appropriate Assessment Record

Hazard	Interest feature	Conservation Objectives	Contribution of attribute[1] /supporting habitats to ecological structure and function of site	Contribution of management[2] or other unauthorised sources to attribute and / or feature condition vulnerability/threats	Adverse Effect of proposal alone and in-combination on attribute[1] and / or feature	Can Adverse effects be avoided?	Adverse affect on integrity; long / short term Yes/ No/ uncertain ?
Severn Estuary SPA:							
Changes in physical regime (NAI,MR) Changes in water chemistry (NAI,MR) Habitat loss/physical damage (NAI,MR)	3.4 Birds of Lowland wet grasslands (Bewick's swan, internationally important populations of migratory dunlin, redshank, curlew & internationally important assemblages of waterfowl populations)	Bewick's Swan: (i) the 5 year peak mean population size for the Bewick's swan population is no less than 289 individuals (ie the 5 year peak mean between 1988/9 - 1992/3); (ii) the extent of saltmarsh at the Dumbles is maintained; (iii) the extent of intertidal mudflats and sandflats at Frampton Sands, Waveridge Sands and the Noose is maintained; (iv) the extent of vegetation with an effective field size of >6 ha and with unrestricted bird sightlines > 500m at feeding, roosting and refuge sites are maintained; (v) greater than 25% cover of suitable soft leaved herbs and grasses in winter season throughout the transitional saltmarsh at the Dumbles is maintained; (vi) aggregations of Bewick's swan at feeding, roosting and refuge sites are not subject to significant disturbance. **Dunlin**: (i)the 5 year peak mean population size for the wintering dunlin population is no less than 41,683 individuals (i.e. the 5 year peak mean between 1988/9 - 1992/3); (ii) the extent of saltmarsh and associated strandlines is maintained; (iii) the extent of intertidal mudflats and sandflats is maintained; (iv) the extent of hard substrate habitats is maintained; (v) the extent of vegetation with a sward height of <10cm is maintained throughout the saltmarsh ; (vi) the abundance and macro-distribution of suitable invertebrates in intertidal mudflats and sandflats is maintained; (vii) the abundance and macro-distribution of suitable invertebrates in hard substrate habitats) is maintained; (viii) unrestricted bird sightlines of >200m at feeding and roosting sites are maintained; (ix) aggregations of dunlin at feeding or roosting sites are not subject to significant disturbance. **Redshank**: (i) the 5 year peak mean population size for the wintering redshank population is no less than 2,013 individuals (ie the 5 year peak mean between 1988/9 - 1992/3); (ii) the extent of saltmarsh and associated strandlines is maintained; (iii) the extent of intertidal mudflats and sandflats) is maintained; (iv) the extent of hard substrate habitats) is maintained; (v) the extent of vegetation with a sward height of <10cm throughout the saltmarsh (Appendix 8) is maintained; (vi) the abundance and macro-distribution of suitable invertebrates in intertidal mudflats and sandflats is maintained; (vii) the abundance and macro-distribution of suitable invertebrates in hard substrate habitats is maintained; (viii) unrestricted bird sightlines of >200m at feeding and roosting sites are maintained; ix) aggregations of redshank at feeding or roosting sites are not subject to significant disturbance. Internationally important assemblage of waterfowl: (i) the 5 year peak mean population size for the waterfowl assemblage is no less than 68,026 individuals (ie the 5 year peak mean between 1988/9 - 1992/3); (ii) the extent of saltmarsh and their associated strandlines is maintained; (iii) the extent of intertidal mudflats and sandflats is maintained; (iv) the extent of hard substrate habitats is maintained; (v) extent of vegetation of <10cm throughout the saltmarsh is maintained; (vi) the abundance and macroscale distribution of suitable invertebrates in intertidal mudflats and sandflats is maintained; (vii) the abundance and macroscale distribution of suitable invertebrates in hard substrate habitats is maintained;	Lowland wet grasslands are valuable areas for waterfowl using the estuary. At various times of day they are used for feeding and roosting. **Bewick Swan** are mainly found in upper Severn around Slimbridge. They are dependent on the saltmarsh habitats and often graze on a range of 'soft' meadow grasses found in the wet meadows. Key supporting habitats: Intertidal mudflats and sandflats , saltmarsh Redshank and dunlin are distributed widely and feed throughout the estuary on marine polychaete worms, crustaceans and molluscs. They frequently feed along undisturbed strandlines throughout the estuary. Dunlin are found mostly on the mid shore whereas redshank are more thinly distributed and are often found in smaller groups in the creeks and sub-estuaries. The Severn has the third largest wintering population of Dunlin in Britain. Feeding flocks are widely distributed around the estuary particularly downstream of the first Severn Bridge, with particular concentrations at Rhymney/Peterstone, Uskmouth, Welsh Grounds, Undy, Clevedon and Bridgwater Bay. There are notable concentrations of redshank at the mouths of the Rhymney, Wye, Avon and Parrett rivers **Dunlin & Redshank**: Key supporting habitats: Intertidal mudflats and sandflats, saltmarsh and hard substrate habitats (rocky shores)	Significant disturbance attributable to human activity can reduce food intake and or increase energy expenditure. Any habitat loss or damage can result in a loss or damage to areas used by birds for foraging, sheltering or roosting. The lowland wet grassland habitat around the estuary may be dependent on freshwater flows through rhine and ditch systems which can be affected by changes in the physical regime leading to loss/alteration of habitats. Alteration to grazing regime can result in loss of suitable roosting habitat since vegetation <10cm is required throughout areas used by roosting waders The Annex 1 species (Bewick's Swan) is highly vulnerable to: Substratum loss and smothering (moderate to high) Changes in water flow rate Changes in wave exposure Changes in grazing management Noise and visual presence Changes in nutrient loading Changes in salinity The Annex 1 species (Bewick's Swan) is moderately to Changes in suspended sediment Desiccation and changes in emergence regime Toxic contamination Changes in oxygenation Introduction of microbial pathogens Internationally important waterfowl assemblage including populations of regularly occurring migratory species is highly vulnerable to: Substratum loss and smothering (moderate to high) Changes in water flow rate Changes in wave exposure Abrasion and physical disturbance Changes in grazing management Noise or visual disturbance Toxic contamination Changes in salinity (moderate to high) Internationally important waterfowl assemblage including populations of regularly occurring migratory species is moderately vulnerable to: Changes in suspended sediment Desiccation and changes in emergence regime Changes in nutrient loading Changes in thermal regime Changes in oxygenation Introduction of microbial pathogens Introduction of non-native species Selective extraction of species	**Alone**: In areas where No Active Intervention and/or MR are proposed, increased inundation, changes in physical processes and increased salinity may affect habitats which the birds use for feeding and roosting potentially affecting population distribution and densities across the estuary. **Adverse Effect** **In-combination**: None of the plans and projects reviewed are considered likely to result in increased inundation of grassland habitats. **No Effect**	No N/A	Yes (short, medium and long term) N/A

Hazard	Interest feature	Conservation Objectives	Contribution of attribute[1] /supporting habitats to ecological structure and function of site	Contribution of management[2] or other unauthorised sources to attribute and / or feature condition vulnerability/threats	Adverse Effect of proposal alone and in-combination on attribute[1] and / or feature	Can Adverse effects be avoided?	Adverse affect on integrity; long / short term Yes/ No/ uncertain ?
		(viii) greater than 25% cover of suitable soft leaved herbs and grasses during the winter on saltmarsh areas is maintained; (ix) unrestricted bird sightlines of >500m at feeding and roosting sites are maintained; (x) waterfowl aggregations at feeding or roosting sites are not subject to significant disturbance Conservation objectives specifically for Curlew are not available.					
Changes in physical regime (NAI,MR) Changes in water chemistry (NAI,MR) Habitat loss/physical damage (NAI,MR)	3.6 Birds of lowland freshwaters and their margins (Bewick's swan and internationally important populations of regularly occurring migratory european white-fronted goose, shelduck, gadwall, pintail & ringed plover. Internationally important assemblages of waterfowl populations	**Bewick's swan:** Conservation objectives as for Interest Feature 3.4 **European white-fronted goose:** (i) the 5 year peak mean population size for the wintering European white fronted goose population is no less than 3,002 individuals (ie the 5 year peak mean between 1988/9-1992/3); (ii) the extent of saltmarsh at the Dumbles is maintained; (iii) the extent of intertidal mudflats and sandflats at Frampton Sands, Waveridge Sands and the Noose : is maintained; (iv) greater than 25% cover of suitable soft-leaved herbs and grasses is maintained during the winter on saltmarsh areas; (v) unrestricted bird sightlines of >200m at feeding and roosting sites are maintained; (vi) aggregations of European white-fronted goose at feeding or roosting sites are not subject to significant disturbance. Shelduck: (i) the extent of saltmarsh is maintained; (ii) the extent of intertidal mudflats and sandflats is maintained; (iii) the extent of hard substrate habitats is maintained; (iv) the abundance and macro-distribution of suitable invertebrates in intertidal mudflats and sandflats is maintained; (v) the abundance and macro-distribution of suitable invertebrates in intertidal mudflats and sandflats is maintained; (vi) unrestricted bird sightlines of >200m at feeding and roosting sites are maintained; (vii) aggregations of shelduck at feeding or roosting sites are not subject to significant disturbance. **Gadwall:** (i) the 5 year peak mean population size for the wintering gadwall population is no less than 330 (ie the 5 year peak mean between 1988/9 - 1992/3); (ii) the extent of intertidal mudflats and sandflats is maintained; (iii) unrestricted bird sightlines of >200m at feeding and roosting sites are maintained; (iv) aggregations of gadwall at feeding or roosting sites are not subject to significant disturbance. Conservation objectives specifically for pintail or ringed plover are not available. Internationally important assemblage of waterfowl populations: Conservation objectives as for Interest Feature 3.4	Lowland freshwater habitats and their margins are valuable areas for waterfowl using the estuary. At various times of day they are used for feeding and roosting. The birds maintain a stable population of their prey items – seeds, crustaceans, small fish, molluscs, worms, ragworms, lugworms and other invertebrates. **European white fronted goose**: key supporting habitats: Intertidal mudflats and sandflats and saltmarsh **Gadwall** are predominantly a freshwater species preferring the wetland habitats that occur within the SPA behind the flood defences most notably the freshwater wetlands at Slimbridge and Bridgwater bay. However, they do make use of the estuary but this is largely restricted to areas where freshwater flows come into the estuary, particularly larger pills and rivers- most notably at Avonmouth, between the two Severn Bridges and at Woodspring and Weston Bays. **Pintail** are widely distributed around the estuary with a notable concentration at the New Grounds. Pintail are also found at Peterstone/Rhymney **Shelduck**: Key supporting habitats: Intertidal mudflats and sandflats, saltmarsh, hard substrate habitats (rocky shores) **Gadwall:** Key supporting habitats Intertidal mudflats and sandflats	Significant disturbance attributable to human activity can reduce food intake and or increase energy expenditure. Any habitat loss or damage can result in a loss or damage to areas use for foraging, sheltering or roosting. Alteration to freshwater The lowland wet grassland habitat around the estuary may be dependent on freshwater flows through rhine and ditch systems which can be affected by changes in the physical regime leading to loss/alteration of habitats. In particular gadwall are threatened by changes to freshwater habitats. Bewick's swan vulnerability: see above under Interest Feature 3.4. Internationally important waterfowl assemblage including populations of regularly occurring migratory species vulnerability: see above under Interest Feature 3.4.	**Alone**: In areas where No Active Intervention and/or MR are proposed, increased inundation, changes in physical processes and increased salinity may affect habitats which the birds use for feeding and roosting potentially affecting population distribution and densities across the estuary. **Adverse Effect** **In-combination**: None of the plans and projects reviewed are considered likely to result in increased inundation of freshwater habitats. **No Effect**	No N/A	Yes (short, medium and long term) N/A
Changes in physical regime (NAI,MR) Changes in water chemistry (NAI,MR) Habitat loss/physical damage (NAI,MR)	3.7 Birds of farmland (Bewick's swan & internationally important populations of regularly occurring migratory European white-fronted goose, dunlin, redshank, curlew & internationally important assemblage of	**Bewick's swan**: Conservation objectives as listed for Interest Feature 3.4 **European white-fronted goose**: Conservation objective as listed for Interest Feature for 3.6 **Dunlin**: Conservation Objectives as listed for Interest Feature 3.4 **Redshank:** Conservation Objectives as listed for Interest Feature 3.4 **Curlew:** no specific Conservation Objectives Internationally important assemblage of waterfowl populations: Conservation objectives as listed for Interest Feature 3.4	Lowland freshwater habitats and their margins are valuable areas for waterfowl using the estuary. At various times of day they are used for feeding and roosting. The birds maintain a stable population of their prey items – seeds, crustaceans, small fish, molluscs, worms, ragworms, lugworms and other invertebrates. **Bewick Swan** are mainly found in upper Severn around Slimbridge. They often graze on a range of 'soft' meadow grasses found in the wet meadow and more recently, have taken to foraging on agricultural land, in particular waste root crops, grain stubbles and winter cereals. **European white fronted goose**: key supporting habitats: Intertidal mudflats and sandflats and saltmarsh **Dunlin, Redshank**: key supporting habitats: Intertidal	Significant disturbance attributable to human activity can reduce food intake and or increase energy expenditure. Any habitat loss or damage can result in a loss or damage to areas use for foraging, sheltering or roosting. Alteration of management of farmland decreasing suitability for foraging or roosting. Vegetation <10cm is required for roosting waders. Bewick's swan vulnerability : listed under Section 3.4 Internationally important waterfowl assemblage including populations of regularly occurring migratory species vulnerability: see above under Interest Feature 3.4.	**Alone**: In areas where No Active Intervention and/or MR are proposed, increased inundation, changes in physical processes and increased salinity may affect habitats which the birds use for feeding and roosting potentially affecting population distribution and densities across the estuary. **Adverse Effect** **In-combination**: None of the plans and projects reviewed are considered likely to result in increased inundation of farmland habitats. **No Effect**	No N/A	Yes (short, medium and long term) N/A

Hazard	Interest feature	Conservation Objectives	Contribution of attribute[1] /supporting habitats to ecological structure and function of site	Contribution of management[2] or other unauthorised sources to attribute and / or feature condition vulnerability/threats	Adverse Effect of proposal alone and in-combination on attribute[1] and / or feature	Can Adverse effects be avoided?	Adverse affect on integrity; long / short term Yes/ No/ uncertain ?
	waterfowl populations.		mudflats and sandflats, saltmarsh Hard substrate habitats (rocky shores)				
Changes in physical regime (HTL) Habitat loss/physical damage (HTL)	3,8 Birds of coastal habitats (Bewick's swan & internationally important populations of European white-fronted goose, dunlin, redshank, shelduck, curlew, pintail & ringed plover & internationally important assemblages of waterfowl populations.	**Bewick's swan**: Conservation objectives as for Interest Feature for 3.4 **European white-fronted goose**: Conservation objectives as for Feature 3.6 **Dunlin**: Conservation objectives listed under Interest Feature for 3.4 **Redshank**: Conservation objectives as for Interest Feature 3.4 **Shelduck:** Conservation objectives as for Interest Feature 3.6 No specific Conservation objectives for curlew, pintail & ringed plover Internationally important assemblage of waterfowl populations: Conservation objectives as for Interest Feature 3.4	Intertidal habitat utilised by birds includes mudflats, sandflats, saltmarsh, mudflats, rocky shores. These habitats provide important roosting and feeding areas for the birds. Lowland freshwater habitats and their margins are valuable areas for waterfowl using the estuary. At various times of day they are used for feeding and roosting. The birds maintain a stable population of their prey items – seeds, crustaceans, small fish, molluscs, worms, ragworms, lugworms and other invertebrates. **Bewick Swan** are mainly found in upper Severn around Slimbridge. They often graze on a range of 'soft' meadow grasses found in the wet meadows. **Dunlin, Redshank, Shelduck**: key supporting habitats: Intertidal mudflats and sandflats, saltmarsh Hard substrate habitats (rocky shores)	Significant disturbance attributable to human activity can reduce food intake and or increase energy expenditure. Any habitat loss or damage can result in a loss or damage to areas use for foraging, sheltering or roosting. Biological disturbance (introduction of non-native species and translocation and selective extraction of species) through encroachment of non native cord grass Spartina anglica over mudflats used by feeding birds has contributed to the loss of intertidal sediments and to an increase in the extent of saltmarsh. Local declines in Dunlin numbers have been attributed to the loss of habitat on estuaries due to cord grass. Shelduck are also considered to be particularly vulnerable. Changes in grazing management (presence, duration & intensity) can alter the habitat structure of vegetation decreasing its suitability as a feeding or roosting site for birds. Toxic contamination of saltmarsh through bioaccumulation can affect the wildfowl which feed on them Bewick's swan vulnerability : listed under Section 3.4 Internationally important waterfowl assemblage including populations of regularly occurring migratory species vulnerability: see above under Interest Feature 3.4.	**Alone**: A Hold the Line Policy is likely to result in coastal squeeze in the short, medium and long term, reducing the extent of intertidal habitat; this could reduce the suitability of areas for bird feeding and roosting potentially affecting population distribution and densities across the estuary**. Adverse Effect** In-combination: projects and plans that could give rise to in-combination effects include: Cardiff Local Development Plan, Vale of Glamorgan Council Local Development Strategy, Monmouthshire Local Development Plan, North Somerset Core Strategy, North Devon and Somerset SMP2, Swansea and Carmarthen Bay SMP, Private Defences, Bristol Container Port and Severn Tidal Power Project. **Uncertain**	No The Land Use Plans &, SMPs are currently incomplete and there is therefore a high degree of uncertainty surrounding development proposal and safeguarding policies within them. The Severn Tidal power project is still at the feasibility stage with no confirmation that a project will actually progress or what the preferred option will be. As high level plans the impacts of the chosen SMP2 policies at a site-specific level are uncertain. There is currently insufficient information available to determine whether in-combination effects will arise. No in combination effects are obvious at this stage; the SECG will work closely with Local Authorities and other Coastal Groups to ensure no in combination effects will arise as these documents are further developed. All these documents will be reviewed as part of the HRA for the FRMS. Compensation has been secured for the Bristol Ports development including habitat creation at Steart which will provide habitats to offset losses at Avonmouth; no in-combination effects are considered likely to occur	Yes (short, medium and long term) Uncertain at SMP2 level. Further assessment to be undertaken at FRMS level
Changes in physical regime (HTL) Habitat loss/physical damage (HTL)	3.9 Birds of estuarine habitats (Bewick's swan & internationally important populations of European white-fronted goose, dunlin, redshank, shelduck, curlew, pintail & ringed plover & internationally important assemblages of waterfowl populations.	**Bewick's swan**: Conservation objectives as for Interest Feature 3.4 **European white-fronted goose**: Conservation objectives as for Interest Feature 3.6 **Dunlin**: Conservation objectives as for Interest Feature 3.4 **Redshank**: Conservation objectives as for Interest Feature f3.4 **Shelduck**: Conservation objectives as for Interest Feature 3.6 No Conservation objectives given for curlew, pintail & ringed plover Internationally important assemblage of waterfowl populations: Conservation objectives as for Interest Feature 3.4	Mudflats and sandflats of the estuary provide undisturbed refuge and a rich resource of intertidal invertebrates as food for many species of migratory birds Saltmarsh communities provide important feeding and roosting areas. They provide an important safe haven from tides. Intertidal habitat utilised by birds includes mudflats, sandflats, saltmarsh, mudflats, rocky shores. These habitats provide important roosting and feeding areas for the birds. The birds maintain a stable population of their prey items – seeds, crustaceans, small fish, molluscs, worms, ragworms, lugworms and other invertebrates. The shingle and rocks in the estuary provide feeding areas for many wildfowl and waders and important roost sites at high tide The saltmarsh provides a safe haven for the feeding waders and wildfowl from the tides that flood the mudflats twice a day. Upper saltmarsh in particular makes ideal high water roost sites and there are main high tide roosts in some areas with little human disturbance where waders congregate from their feeding areas. Waders in particular, require very short vegetation to afford unrestricted views for	Significant disturbance attributable to human activity can reduce food intake and or increase energy expenditure. Any habitat loss or damage can result in a loss or damage to areas use for foraging, sheltering or roosting. Prey availability can vary due to sediment distribution which can in turn affect waterbird distribution and numbers across the intertidal habitats. Water quality affects intertidal plant and animal communities on which the waders will forage. Changes in suspended sediments can lead to alterations in light penetration which in turn changes the intertidal mud and sandflat communities on which the waders feed. Fresh water quantity, tidal flows, salinity gradients and grazing necessary to maintain saltmarsh conditions suitable for bird feeding and roosting Biological disturbance (introduction of non-native species and translocation and selective extraction of species) through encroachment of non native cord grass Spartina anglica over mudflats used by feeding birds has	**Alone**: A Hold the Line Policy is likely to result in coastal squeeze in the short, medium and long term, reducing the extent of intertidal habitat; this could reduce the suitability of areas for bird feeding and roosting potentially affecting population distribution and densities across the estuary**. Adverse Effect** In-combination: projects and plans that could give rise to in-combination effects include: Cardiff Local Development Plan, Vale of Glamorgan Council Local Development Strategy, Monmouthshire Local Development Plan, North Somerset Core Strategy, North Devon and Somerset SMP2, Swansea and Carmarthen Bay SMP, Private Defences, Bristol Container Port and Severn Tidal Power Project. **Uncertain**	No The Land Use Plans &, SMPs are currently incomplete and there is therefore a high degree of uncertainty surrounding development proposal and safeguarding policies within them. The Severn Tidal power project is still at the feasibility stage with no confirmation that a project will actually progress or what the preferred option will be. As high level plans the impacts of the chosen SMP2 policies at a site-specific level are uncertain. There is currently insufficient information	Yes (short, medium and long term) Uncertain at SMP2 level. Further assessment to be undertaken at FRMS level

Hazard	Interest feature	Conservation Objectives	Contribution of attribute[1] /supporting habitats to ecological structure and function of site	Contribution of management[2] or other unauthorised sources to attribute and / or feature condition vulnerability/threats	Adverse Effect of proposal alone and in-combination on attribute[1] and / or feature	Can Adverse effects be avoided?	Adverse affect on integrity; long / short term Yes/ No/ uncertain ?
			the early detection of predators **Bewick Swan** are mainly found in upper Severn around Slimbridge. They often graze on a range of 'soft' meadow grasses found in the wet meadows. **Dunlin, Redshank, Shelduck**: key supporting habitats: Intertidal mudflats and sandflats, saltmarsh Hard substrate habitats (rocky shores) **European white fronted goose**: key supporting habitats: Intertidal mudflats and sandflats and saltmarsh . The European white-fronted geese roost at night on estuarine sandbanks and usually fly less than 10km to the daytime feeding grounds. The sandbanks adjacent to the New Grounds at Slimbridge are a long established, traditional wintering area. The European white-fronted geese graze on a range of saltmarsh grasses and herbs	contributed to the loss of intertidal sediments and to an increase in the extent of saltmarsh Most of the waders and waterfowl within the assemblage including the internationally important regularly occurring migratory birds feed on invertebrates within and on the sediments Changes to physical regime can affect sediment loading and invertebrate abundance/distribution. Bewick's swan vulnerability : listed under Section 3.4 Internationally important waterfowl assemblage including populations of regularly occurring migratory species vulnerability: see above under Interest Feature 3.4.		available to determine whether in-combination effects will arise. No in combination effects are obvious at this stage; the SECG will work closely with Local Authorities and other Coastal Groups to ensure no in combination effects will arise as these documents are further developed. All these documents will be reviewed as part of the HRA for the FRMS. Compensation has been secured for the Bristol Ports development including habitat creation at Steart which will provide habitats to offset losses at Avonmouth; no in-combination effects are considered likely to occur	

Severn Estuary Ramsar							
Hazard	**Interest Feature**	**Conservation Objectives**	**Contribution of attribute[1] /supporting habitats to ecological structure and function of site**	**Contribution of management[2] or other unauthorised sources to attribute and / or feature condition vulnerability/threats**	**Adverse Effect of proposal alone and in-combination on attribute[1] and / or feature**	**Can Adverse Effects be avoided?**	**Adverse affect on integrity; long / short term Yes / No / uncertain?**
Habitat Loss & physical damage (HTL) Changes to the physical regime (HTL)	1.12 Estuarine and Intertidal habitats	Maintain the feature in favourable condition as defined by the conservation objectives outlined for the SAC (where applicable)	**Estuaries:** The Estuary is an over-arching feature which incorporates all aspects of the physical, chemical and biological attributes of the estuary as an ecosystem. The physical nature of the tidal regime determines not only the structure of the estuary and individual habitats but also the conditions affecting it and the biological communities it therefore supports. It is one of the largest and most important in Britain and its range of habitats provide an ecosystem of great importance for a wide range of fish and bird species – for feeding, breeding, resting and migration. **Intertidal Mudflats and Sandflats:** The intertidal part of the Severn Estuary supports extensive mudflats and sandflats, covering approximately 20,300 ha - the fourth largest area in a UK estuary and representing approximately 7 % of the total UK resource of this habitat type (approximately 10% of the UK Natura 2000 resource for Intertidal mudflats and sandflats, by area. The habitat feature is distributed throughout the Severn Estuary with extensive mudflats fronting the Welsh shore and Bridgwater Bay, and large banks of clean sands in the more central parts of the estuary at Middle and Welsh Grounds. It is influenced by strong tidal streams and extreme silt loading. Gravel and clean sand communities occur predominantly in the mid and upper parts of the estuary forming large banks in the centre the estuary (Frampton Sands, Lydney Sands, Oldbury Sands, Bedwyn Sands and the Welsh Grounds) through which the main tidal channel flows keeping sediments mobile. Sandy mud communities occur in restricted locations forming the transition between the	**Estuary** has been identified as being highly vulnerable to: Substratum loss Smothering Changes in water flow rate Changes in wave exposure Abrasion and physical disturbance Toxic contamination Changes in salinity Introduction of non-native species xi. Changes in oxygenation xii. Introduction of microbial pathogens xiv. Selective extraction of species **Estuary** has been identified as being moderately vulnerable to: Changes in suspended sediment Changes in thermal regime **Intertidal Mudflats and Sandflats** have been identified as being highly vulnerable to: Substratum loss	**Alone**: A Hold the Line Policy is likely to result in coastal squeeze in the short, medium and long term, reducing the extent of intertidal habitat; this could reduce the suitability of areas for bird feeding and roosting potentially affecting population distribution and densities across the estuary**. Adverse Effect** In-combination: projects and plans that could give rise to in-combination effects include: Cardiff Local Development Plan, Vale of Glamorgan Council Local Development Strategy, Monmouthshire Local Development Plan, North Somerset Core Strategy, North Devon and Somerset SMP2, Swansea and Carmarthen Bay SMP, Private Defences, Bristol Container Port and Severn Tidal Power Project. **Uncertain**	No The Land Use Plans &, SMPs are currently incomplete and there is therefore a high degree of uncertainty surrounding development proposal and safeguarding policies within them. The Severn Tidal power project is still at the feasibility stage with no confirmation that a project will actually progress or what the preferred option will be. As high level plans the impacts of the chosen SMP2 policies at a site-specific level are uncertain. There is currently insufficient information available to determine whether in-	Yes (short, medium and long term) Uncertain at SMP2 level. Further assessment to be undertaken at FRMS level

Notes:
1 ATTRIBUTE = Quantifiable aspects of interest features (subject to natural variation in some cases) that can be used to help define favourable condition for that feature. See Site Conservation Objectives
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			clean sand and mud communities particularly in the mid estuary and at the lowest extremes of the tide and at the flanks of the main channel. Mud communities form in the sheltered edges of the estuary particularly where the coastline forms natural embayments and are predominantly found in the mid to outer estuary at Bridgewater Bay and on the Cardiff and Newport frontages although a narrow fringe of these communities is present throughout the estuary. These communities take the form of firm mud banks adjacent to the saltmarshes often with a liquid mud surface kept fluid by the high tidal currents. Intertidal mudflats and sandflats support a variety of different wildlife communities. These are predominantly infaunal communities of a variety of different animal species such as worms, molluscs and crustaceans living within the sediment habitat. The type of sediment, its stability and the salinity of the water have a large influence on the wildlife species present. The high biomass of invertebrates in the mudflats of the Severn provide an important food source for a diverse range and large number of fish and benthic predators. These intertidal areas are therefore important in supporting the fish assemblage subfeature of the Ramsar Site Mudflats also provide a valuable feeding, roosting and resting area for a wide range of species of wading birds and waterfowl and are therefore important supporting habitats for the wintering and passage bird features of the Ramsar Site Atlantic Salt Meadow The Severn Estuary holds the largest aggregation of saltmarsh in the south and south-west of the UK. It covers approximately 1,400 ha, representing about 4% of the total area of saltmarsh in the UK (Dargie, 2000). Saltmarshes and mudflats have an important role to play both through the recycling of nutrients and as soft sea defences, dissipating wave energy. They are highly productive biologically, providing organic material that support other features within the marine ecosystem and they also have an important physical role, acting as a sediment store to the estuary as a whole. Saltmarshes also provide a valuable feeding and roosting and resting areas (particularly at high tide) for a wide range of species of waterfowl and are therefore very important supporting habitats for the wintering and passage bird features of the SPA and Ramsar Site. The habitats within the “pills” provide important shelter and feeding habitats for both fish and bird species. The Severn Estuary saltmarshes are generally grazed by sheep and/or cattle. Grazing is a significant factor in determining the plant communities found within them and their value for dependant species such as birds and rare plants.	Changes in water flow rate Changes in wave exposure Abrasion and physical disturbance Toxic contamination Changes in nutrient loading Introduction of microbial pathogens **Intertidal Mudflats and Sandflats** have been identified as being moderately vulnerable to: Smothering Changes in suspended sediment Changes in thermal regime Changes in salinity Changes in oxygenation Introduction of non-native species **Atlantic Salt Meadow** has been identified as being highly vulnerable to: Substratum loss Smothering Changes in water flow rate Changes in wave exposure Abrasion and physical disturbance Changes in grazing management Toxic contamination Changes in nutrient loading Changes in salinity **Atlantic Salt Meadow** has been identified as being moderately vulnerable to: Changes in suspended sediment Desiccation and changes in emergence regime Changes in oxygenation Introduction of microbial pathogens		combination effects will arise. No in combination effects are obvious at this stage; the SECG will work closely with Local Authorities and other Coastal Groups to ensure no in combination effects will arise as these documents are further developed. All these documents will be reviewed as part of the HRA for the FRMS. Compensation has been secured for the Bristol Ports development including habitat creation at Steart which will provide habitats to offset losses at Avonmouth; no in-combination effects are considered likely to occur	
Changes to the physical regime (NAI, MR) Changes in water chemistry (NAI, MR) Habitat Loss/physical damage (NAI, MR)	3.4 Birds of lowland wet grasslands	Maintain the feature in favourable condition as defined by the conservation objectives outlined for the SPA feature	See SPA assessment for Interest Feature 3.4	See SPA assessment for Interest Feature 3.4	**Alone**: In areas where No Active Intervention and/or MR are proposed, increased inundation, changes in physical processes and increased salinity may affect habitats which the birds use for feeding and roosting potentially affecting population distribution and densities across the estuary. **Adverse Effect** **In-combination**: None of the plans and projects reviewed are considered likely to result in increased inundation of grassland habitats. **No Effect**	No N/A	Yes (short, medium and long term) N/A
Changes in physical regime (NAI, MR) Changes in water chemistry (NAI, MR) Habitat loss/physical damage(NAI, MR)	3.6 Birds of lowland freshwaters and their margins	Maintain the feature in favourable condition as defined by the conservation objectives outlined for the SPA feature	See SPA assessment for Interest Feature 3.6	See SPA assessment for Interest Feature 3.6	**Alone**: In areas where No Active Intervention and/or MR are proposed, increased inundation, changes in physical processes and increased salinity may affect habitats which the birds use for feeding and roosting potentially affecting population distribution and densities across the estuary. **Adverse Effect** **In-combination**: None of the plans and projects reviewed are considered likely to result in increased inundation of freshwater habitats. **No Effect**	No N/A	Yes (short, medium and long term) N/A
Changes in physical regime (NAI, MR) Changes in water chemistry(NAI, MR) Habitat loss/physical damage (NAI, MR)	3.7 Birds of farmland	Maintain the feature in favourable condition as defined by the conservation objectives outlined for the SPA feature	See SPA assessment for Interest Feature 3.7	See SPA assessment for Interest Feature 3.7	**Alone**: In areas where No Active Intervention and/or MR are proposed, increased inundation, changes in physical processes and increased salinity may affect habitats which the birds use for feeding and roosting potentially affecting population distribution and densities across the estuary. **Adverse Effect** **In-combination**: None of the plans and projects reviewed are considered likely to	No N/A	Yes (short, medium and long term) N/A

					result in increased inundation of farmland habitats. **No Effect**		
Changes in physical regime (HTL) Habitat loss/physical damage (HTL)	3.8 Birds of coastal habitats	Maintain the feature in favourable condition as defined by the conservation objectives outlined for the SPA feature	See SPA assessment for Interest Feature 3.8	See SPA assessment for Interest Feature 3.8	**Alone**: A Hold the Line Policy is likely to result in coastal squeeze in the short, medium and long term, reducing the extent of intertidal habitat; this could reduce the suitability of areas for bird feeding and roosting potentially affecting population distribution and densities across the estuary**. Adverse Effect** In-combination: projects and plans that could give rise to in-combination effects include: Cardiff Local Development Plan, Vale of Glamorgan Council Local Development Strategy, Monmouthshire Local Development Plan, North Somerset Core Strategy, North Devon and Somerset SMP2, Swansea and Carmarthen Bay SMP, Private Defences, Bristol Container Port and Severn Tidal Power Project. **Uncertain**	No The Land Use Plans &, SMPs are currently incomplete and there is therefore a high degree of uncertainty surrounding development proposal and safeguarding policies within them. The Severn Tidal power project is still at the feasibility stage with no confirmation that a project will actually progress or what the preferred option will be. As high level plans the impacts of the chosen SMP2 policies at a site-specific level are uncertain. There is currently insufficient information available to determine whether in-combination effects will arise. No in combination effects are obvious at this stage; the SECG will work closely with Local Authorities and other Coastal Groups to ensure no in combination effects will arise as these documents are further developed. All these documents will be reviewed as part of the HRA for the FRMS. Compensation has been secured for the Bristol Ports development including habitat creation at Steart which will provide habitats to offset losses at Avonmouth; no in-combination effects are considered likely to occur	Yes (short, medium and long term) Uncertain at SMP2 level. Further assessment to be undertaken at FRMS level
Changes in physical regime (HTL) Habitat loss/physical damage (HTL)	3.9 Birds of estuarine habitats	Maintain the feature in favourable condition as defined by the conservation objectives outlined for the SPA feature	See SPA assessment for Interest Feature 3.9	See SPA assessment for Interest Feature 3.9	**Alone**: A Hold the Line Policy is likely to result in coastal squeeze in the short, medium and long term, reducing the extent of intertidal habitat; this could reduce the suitability of areas for bird feeding and roosting potentially affecting population distribution and densities across the estuary**. Adverse Effect** In-combination: projects and plans that could give rise to in-combination effects include: Cardiff Local Development Plan, Vale of Glamorgan Council Local Development Strategy, Monmouthshire Local Development Plan, North Somerset Core Strategy, North Devon and Somerset SMP2, Swansea and Carmarthen Bay SMP, Private Defences, Bristol Container Port and Severn Tidal Power Project. **Uncertain**	No The Land Use Plans &, SMPs are currently incomplete and there is therefore a high degree of uncertainty surrounding development proposal and safeguarding policies within them. The Severn Tidal power project is still at the feasibility stage with no confirmation that a project will actually progress or what the preferred option will be. As high level plans the impacts of the chosen SMP2 policies at a site-specific level are uncertain. There is currently insufficient information available to determine whether in-combination effects will arise. No in combination effects are obvious at this stage; the SECG will work closely with Local Authorities and other Coastal Groups to ensure no in combination effects will arise as these documents are further developed. All these documents will be reviewed as part of the HRA for the FRMS.	Yes (short, medium and long term) Uncertain at SMP2 level. Further assessment to be undertaken at FRMS level

						Compensation has been secured for the Bristol Ports development including habitat creation at Steart which will provide habitats to offset losses at Avonmouth; no in-combination effects are considered likely to occur	

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Hazard	Interest feature	Conservation Objectives	Contribution of attribute[1] to ecological structure and function of site	Contribution of management[2] or other unauthorised sources to attribute and / or feature condition	Adverse Effect of proposal alone and in-combination on attribute[1] and / or feature	Can Adverse effects be avoided?	Adverse affect on integrity; long / short term Yes / No / uncertain ?
Severn Estuary SAC							
Changes to the physical regime (HTL, MR) Habitat Loss/physical damage (HTL)	1.12 Estuarine & Intertidal habitats (includes: Estuaries; Intertidal Mudflats and Sandflats and Atlantic Salt Meadows	**Estuaries:** Maintain feature in favourable condition by meeting the following conditions: i. the total extent of the estuary is maintained; ii. the characteristic physical form (tidal prism/cross sectional area) and flow (tidal regime) of the estuary is maintained; iii. the characteristic range and relative proportions of sediment sizes and sediment budget within the site is maintained; iv. the extent, variety and spatial distribution of estuarine habitat communities within the site is maintained; v. the extent, variety, spatial distribution and community composition of hard substrate habitats and their notable communities is maintained; vi. the abundance of the notable estuarine species assemblages is maintained or increased; vii. the physico-chemical characteristics of the water column support the ecological objectives described above; viii. Toxic contaminants in water column and sediment are below levels which would pose a risk to the ecological objectives described above. ix. Airborne nutrient and contaminant loads are below levels which would pose a risk to the ecological objectives described above **Mudflats and Sandflats**: The feature will be considered to be in favourable condition when, subject to natural processes, each of the following conditions are met: i. The total extent of the mudflats and sandflats feature is maintained; ii. the variety and extent of individual mudflats and sandflats communities within the site is maintained; iii. the distribution of individual mudflats and sandflats communities within the site is maintained; iv. the community composition of the mudflats and sandflats feature within the site is maintained; v. the topography of the intertidal flats and the morphology (dynamic processes of sediment movement and channel migration across the flats) are maintained. **Atlantic Salt Meadow**: The feature will be considered to be in favourable condition when, subject to natural processes, each of the following conditions are met: i. the total extent of Atlantic salt meadow and associated transitional vegetation communities within the site is maintained; ii. the extent and distribution of the individual Atlantic salt meadow and associated transitional vegetation communities within the site is maintained; iii. the zonation of Atlantic salt meadow vegetation communities and their associated transitions to other estuary habitats is maintained; iv. the relative abundance of the typical species of the Atlantic salt meadow and associated transitional vegetation communities is maintained; v. the abundance of the notable species of the Atlantic salt meadow	**Estuaries:** The Estuary is an over-arching feature which incorporates all aspects of the physical, chemical and biological attributes of the estuary as an ecosystem. The physical nature of the tidal regime determines not only the structure of the estuary and individual habitats but also the conditions affecting it and the biological communities it therefore supports. It is one of the largest and most important in Britain and its range of habitats provide an ecosystem of great importance for a wide range of fish and bird species – for feeding, breeding, resting and migration. **Intertidal Mudflats and Sandflats:** The intertidal part of the Severn Estuary supports extensive mudflats and sandflats, covering approximately 20,300 ha - the fourth largest area in a UK estuary and representing approximately 7 % of the total UK resource of this habitat type (approximately 10% of the UK Natura 2000 resource for Intertidal mudflats and sandflats, by area. The habitat feature is distributed throughout the Severn Estuary with extensive mudflats fronting the Welsh shore and Bridgwater Bay, and large banks of clean sands in the more central parts of the estuary at Middle and Welsh Grounds. It is is influenced by strong tidal streams and extreme silt loading. Gravel and clean sand communities occur predominantly in the mid and upper parts of the estuary forming large banks in the centre the estuary (Frampton Sands, Lydney Sands, Oldbury Sands, Bedwyn Sands and the Welsh Grounds) through which the main tidal channel flows keeping sediments mobile. Sandy mud communities occur in restricted locations forming the transition between the clean sand and mud communities particularly in the mid estuary and at the lowest extremes of the tide and at the flanks of the main channel. Mud communities form in the sheltered edges of the estuary particularly where the coastline forms natural embayments and are predominantly found in the mid to outer estuary at Bridgewater Bay and on the Cardiff and Newport frontages although a narrow fringe of these communities is present throughout the estuary. These communities take the form of firm mud banks adjacent to the saltmarshes often with a liquid mud surface kept fluid by the high tidal currents. Intertidal mudflats and sandflats support a variety of different wildlife communities. These are predominantly infaunal communities of a variety of different animal species such as worms, molluscs and crustaceans living within the sediment habitat. The type of sediment, its stability and the salinity of the water have a large influence on the wildlife species present. The high biomass of invertebrates in the mudflats of the Severn provide an important food source for a diverse range and large number of fish and benthic predators. These intertidal areas are therefore important in supporting the fish assemblage subfeature of the Ramsar Site Mudflats also provide a valuable feeding, roosting and resting area for a wide range of species of wading birds and waterfowl and are therefore important supporting habitats for the wintering and passage bird features of the Ramsar Site	**Estuary** has been identified as being highly vulnerable to : Substratum loss Smothering Changes in water flow rate Changes in wave exposure Abrasion and physical disturbance Toxic contamination Changes in salinity Introduction of non-native species Changes in oxygenation Introduction of microbial pathogens xiv. Selective extraction of species **Estuary** has been identified as being moderately vulnerable to: Changes in suspended sediment Changes in thermal regime **Intertidal Mudflats and Sandflats** have been identified as being highly vulnerable to: Substratum loss Changes in water flow rate Changes in wave exposure Abrasion and physical disturbance Toxic contamination Changes in nutrient loading Introduction of microbial pathogens **Intertidal Mudflats and Sandflats** have been identified as being moderately vulnerable to: Smothering Changes in suspended sediment Changes in thermal regime Changes in salinity Changes in oxygenation Introduction of non-native species **Atlantic Salt Meadow** has been identified as being highly vulnerable to: Substratum loss Smothering Changes in water flow rate Changes in wave exposure	**Alone**: In areas where Hold the Line and/or Managed Realignment are proposed, coastal sqeeze and changes to adjacent terrestrial/freshwater habitats could result in a change to the overall form and function of the estuary in the short, medium and long term. Coastal squeeze in the short, medium and long term may also reduce the extent of intertidal habitat; this could reduce the suitability of areas for bird feeding and roosting potentially affecting population distribution and densities across the estuary**. Adverse Effect** In-combination: projects and plans that could give rise to in-combination effects include: Cardiff Local Development Plan, Vale of Glamorgan Council Local Development Strategy, Monmouthshire Local Development Plan, North Somerset Core Strategy, North Devon and Somerset SMP2, Swansea and Carmarthen Bay SMP, Private Defences, Bristol Container Port and Severn Tidal Power Project. **Uncertain**	No The Land Use Plans &, SMPs are currently incomplete and there is therefore a high degree of uncertainty surrounding development proposal and safeguarding policies within them. The Severn Tidal power project is still at the feasibility stage with no confirmation that a project will actually progress or what the preferred option will be. As high level plans the impacts of the chosen SMP2 policies at a site-specific level are uncertain. There is currently insufficient information available to determine whether in-combination effects will arise. No in combination effects are obvious at this stage; the SECG will work closely with Local Authorities and other Coastal Groups to ensure no in combination effects will arise as these documents are further developed. All these documents will be reviewed as part of the HRA for the FRMS. Compensation has been secured	Yes (short, medium and long term) Uncertain at SMP2 level. Further assessment to be undertaken at FRMS level

		and associated transitional vegetation communities is maintained. vi. the structural variation of the salt marsh sward (resulting from grazing) is maintained within limits sufficient to satisfy the requirements of conditions iv and v above and the requirements of the Ramsar and SPA features vii. the characteristic stepped morphology of the salt marshes and associated creeks, pills, drainage ditches and pans, and the estuarine processes that enable their development, is maintained. viii Any areas of *Spartina anglica* salt marsh (SM6) are capable of developing naturally into other saltmarsh communities.	Atlantic Salt Meadow The Severn Estuary holds the largest aggregation of saltmarsh in the south and south-west of the UK. It covers approximately 1,400 ha, representing about 4% of the total area of saltmarsh in the UK (Dargie, 2000). Saltmarshes and mudflats have an important role to play both through the recycling of nutrients and as soft sea defences, dissipating wave energy. They are highly productive biologically, providing organic material that support other features within the marine ecosystem and they also have an important physical role, acting as a sediment store to the estuary as a whole. Saltmarshes also provide a valuable feeding and roosting and resting areas (particularly at high tide) for a wide range of species of waterfowl and are therefore very important supporting habitats for the wintering and passage bird features of the SPA and Ramsar Site. The habitats within the "pills" provide important shelter and feeding habitats for both fish and bird species. The Severn Estuary saltmarshes are generally grazed by sheep and/or cattle. Grazing is a significant factor in determining the plant communities found within them and their value for dependant species such as birds and rare plants.	Abrasion and physical disturbance Changes in grazing management Toxic contamination Changes in nutrient loading Changes in salinity **Atlantic Salt Meadow** has been identified as being moderately vulnerable to: Changes in suspended sediment Desiccation and changes in emergence regime Changes in oxygenation Introduction of microbial pathogens		for the Bristol Ports development including habitat creation at Steart which will provide habitats to offset losses at Avonmouth; no in-combination effects are considered likely to occur	

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Hazard	Interest feature	Conservation Objectives	Contribution of attribute[1] to ecological structure and function of site	Contribution of management[2] or other unauthorised sources to attribute and / or feature condition	Adverse Effect of proposal alone and in-combination on attribute[1] and / or feature	Can Adverse effects be avoided?	Adverse affect on integrity; long / short term Yes / No / uncertain?
River Usk SAC							
Habitat loss/physical damage Habitat Severance	2.9 Mammals of riverine habitats	Conservation objective: The feature will be in favourable condition when the following are satisfied: The population of otters in the SAC is stable or increasing over the long term and reflects the natural carrying capacity of the habitat within the SAC, as determined by natural levels of prey abundance and associated territorial behaviour The natural range of otters in the SAC is neither being reduced nor is likely to be reduced for the foreseeable future. The natural range is taken to mean those reaches that are potentially suitable to form part of a breeding territory and/or provide routes between breeding territories. The whole area of the Usk SAC is considered to form potentially suitable breeding habitat for otters. The size of breeding territories may vary depending on prey abundance. The population size should not be limited by the availability of suitable undisturbed breeding sites. Where these are insufficient they should be created through habitat enhancement and where necessary the provision of artificial holts. No otter breeding site should be subject to a level of disturbance that could have an adverse effect on breeding success. Where necessary, potentially harmful levels of disturbance must be managed The safe movement and dispersal of individuals around the SAC is facilitated by the provision, where necessary, of suitable riparian habitat, and underpasses, ledges, fencing etc at road bridges and other artificial barriers Performance Indicator: a) Distribution Otter signs present at 90% of Otter Survey of Wales sites b) Breeding activity 2 reports of cub/family sightings at least 1 year in 6 c) Actual and potential breeding sites No decline in number and quality of mapped breeding sites in subcatchments	Otters are widely distributed throughout the Usk catchment. The Usk SAC provides a key movement corridor for otters passing between the relatively high densities in mid Wales and the south-east Wales coastal strip (Seven Estuary and Gwent Levels).	The decline in eel populations may be having an adverse effect on the population of otters in the Usk. Restrictions on the movement of otters around the SAC, and between adjoining sites are currently a particular concern in the reach through Newport as a result of a continued decrease in undisturbed suitable riparian habitat Pollution of rivers with toxic chemicals, such as PCBs, was one of the major factors identified in the widespread decline of otters during the last century. There should be no increase in pollutants potentially toxic to otters.	**Alone:** Hold the Line: may in the medium to long term result in loss of intertidal habitat due to increased sea level rise and costal squeeze. The existing tidal range in the lower reaches of the Usk, around Newport is of the order of 11.9m (mean spring tidal range) (Admiralty Tide Tables 2006). Using Defra 2006 figures an increase in sea level of approximately 1m in 100 years time is predicted. This figure would decrease moving upstream. This increase is considered unlikely to affect otter passage or feeding. **No Adverse Effect** **Alone**: If the SoP is to be maintained or increased the construction of new defences under a Hold the Line Option may require the footprint of defences to be increased, potentially resulting in incursion into the SAC resulting in habitat loss or severance. However the SMP2 does not specify how the HTL policy will be implemented so it is not possible to identify whether impacts could occur or not. Further assessment to be undertaken as part of the FRMS. **Uncertain** **In- combination**: projects and plans that could give rises to in-combination effects include: River Usk Strategy, Wye and Usk CFMP and resulting projects and Newport Local Development plan. Projects arising could result in encroachment into the SAC and loss of intertidal habitat. **Uncertain**	N/A **Uncertain**, further review and assessment to be undertaken at FRMS stage. Potential for in combination effect with Wye and Usk CFMP. The Land Use Plan is currently incomplete and there is therefore a level of uncertainty surrounding development proposals and safeguarding policies. As a high level plan the impacts of the chosen SMP2 policies at a site-specific level are uncertain. There is currently insufficient information available to determine whether in-combination effects will arise; the SECG will work closely with Local Authorities to ensure no in combination effects arise as plans for Newport are further developed. All these plans will be reviewed as part of the HRA for the FRMS. **Uncertain**	N/A Impacts uncertain at SMP2 level, further review and assessment to be undertaken at FRMS stage. Mitigation measures that might be adopted at FRMS and/or project stage to avoid significant effects are likely to include further detailed assessment and mitigation as required at the EIA/project level, avoidance of night time working, ensuring passage for otters is maintained at all times Impacts uncertain at SMP2 level, further review and assessment to be undertaken at FRMS stage Mitigation measures that might be adopted at FRMS and/or project stage to avoid significant effects are likely to include further detailed assessment and mitigation as required at the EIA/project level, avoidance of night time working, ensuring passage for otters is maintained at all times.

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Hazard	Interest feature	Conservation Objectives	Contribution of attribute[1] to ecological structure and function of site	Contribution of management[2] or other unauthorised sources to attribute and / or feature condition	Adverse Effect of proposal alone and in-combination on attribute[1] and / or feature	Can Adverse effects be avoided?	Adverse affect on integrity; long / short term Yes / No / uncertain?
Somerset Levels and Moors SPA							
Changes in physical regime (HTL) Habitat loss/physical damage (HTL)	3.8 Birds of coastal habitats	Not available	Not available	The site lies within the flood plains of a number of large rivers and drains with many areas below high tide levels. Peat extraction occurs over part of the site. This is not currently thought to pose a risk, and future extraction will be subject to controls under the Habitats Regulations. The majority of land is farmed and under private ownership. Most farms have dairy or beef herds. Trends in agriculture and support schemes have a critical influence as improvement with conversion of grassland to arable, land drainage, increased applications of inorganic fertilisers and cutting of silage are major threats to vulnerable peat soils and the nature conservation value of the site. Less intensive practices are encouraged through the ESA scheme, WES and Section 15 agreements. Water Level Management is critical and is being addressed through the Water Level Management Plans process and the development of Raised Water Level Areas and Environmentally Sensitive Area (ESA).	**Alone**: A Hold the Line Policy is likely to result in coastal squeeze in the medium to long term, reducing the extent of intertidal habitat; This could adversely affect feeding and roosting habitats which support bird populations on the site potentially altering bird population size, density and distribution on the Somerset Levels and Moors. KIN 3 is the only frontage along this policy unit with a HTL policy. There is the potential for intertidal habitat loss along the frontage of KIN3. **Adverse Effect** In-combination: projects and plans that could give rise to in-combination effects include: North Somerset Core Strategy, North Devon and Somerset SMP2, Private Defences, and Severn Tidal Power Project. There is the potential for intertidal habitat loss which could affect bird population size distribution and density on the levels and Moors**. Uncertain**	No The Land Use Plans &, SMPs are currently incomplete and there is therefore a degree of uncertainty surrounding impacts, development proposal and safeguarding policies within them. The Severn Tidal power project is still at the feasibility stage with no confirmation that a project will actually progress or what the preferred option will be. As high level plans the impacts of the chosen SMP2 policies at a site-specific level are uncertain. There is currently insufficient information available to determine whether in-combination effects will arise. No in combination effects are obvious at this stage; the SECG will work closely with Local Authorities and other Coastal Groups to ensure no in combination effects will arise as these documents are further developed. All these documents will be reviewed as part of the HRA for the FRMS.	Yes (short, medium and long term) Uncertain at SMP2 level. Further assessment to be undertaken at FRMS level
Changes in physical regime (HTL) Habitat loss/physical damage (HTL)	3.9 Birds of estuarine habitats	Not available	Not available	The site lies within the flood plains of a number of large rivers and drains with many areas below high tide levels. Peat extraction occurs over part of the site. This is not currently thought to pose a risk, and future extraction will be subject to controls under the Habitats Regulations. The majority of land is farmed and under private ownership. Most farms have dairy or beef herds. Trends in agriculture and support schemes have a critical influence as improvement with conversion of grassland to arable, land drainage, increased applications of inorganic fertilisers and cutting of silage are major threats to vulnerable peat soils and the nature conservation value of the site. Less intensive practices are encouraged through the ESA scheme, WES and Section 15 agreements. Water Level Management is critical and is being addressed through the Water Level Management Plans process and the development of Raised Water Level Areas and Environmentally Sensitive Area (ESA).	**Alone**: A Hold the Line Policy is likely to result in coastal squeeze in the medium to long term, reducing the extent of intertidal habitat; This could adversely affect feeding and roosting habitats which support bird populations on the site potentially altering bird population size, density and distribution on the Somerset Levels and Moors. KIN 3 is the only frontage along this policy unit with a HTL policy. There is the potential for intertidal habitat loss along the frontage of KIN3. **Adverse Effect** In-combination: projects and plans that could give rise to in-combination effects include: North Somerset Core Strategy, North Devon and Somerset SMP2, Private Defences, and Severn Tidal Power Project. There is the potential for intertidal habitat loss which could affect bird population size distribution and density on the levels and Moors**. Uncertain**	No The Land Use Plans &, SMPs are currently incomplete and there is therefore a degree of uncertainty surrounding impacts, development proposal and safeguarding policies within them. The Severn Tidal power project is still at the feasibility stage with no confirmation that a project will actually progress or what the preferred option will be. As high level plans the impacts of the chosen SMP2 policies at a site-specific level are uncertain. There is currently insufficient information available to determine whether in-combination effects will arise. No in combination effects are obvious at this stage; the SECG will work closely with Local Authorities and other Coastal Groups to ensure no in combination effects will arise as these documents are further developed. All these documents will be reviewed as part of the HRA for the FRMS.	Yes (short, medium and long term) Uncertain at SMP2 level. Further assessment to be undertaken at FRMS level

Notes:
1 ATTRIBUTE = Quantifiable aspects of interest features (subject to natural variation in some cases) that can be used to help define favourable condition for that feature. See Site Conservation Objectives
2 MANAGEMENT = in this context management refers to management of the European site
3 If uncertain consider time-limited consent, or other legally enforceable modifications

Hazard	Interest feature	Conservation Objectives	Contribution of attribute[1] to ecological structure and function of site	Contribution of management[2] or other unauthorised sources to attribute and / or feature condition	Adverse Effect of proposal alone and in-combination on attribute[1] and / or feature	Can Adverse effects be avoided?	Adverse affect on integrity; long / short term Yes / No / uncertain?
Somerset Levels and Moors Ramsar							
	3.8 Birds of coastal habitats	Not available		No factors (past, present or potential) adversely affecting the site's ecological character are identified	**Alone**: A Hold the Line Policy is likely to result in coastal squeeze in the medium to long term, reducing the extent of intertidal habitat; This could adversely affect feeding and roosting habitats which support bird populations on the site potentially altering bird population size, density and distribution on the Somerset Levels and Moors. KIN 3 is the only frontage along this policy unit with a HTL policy. There is the potential for intertidal habitat loss along the frontage of KIN3. **Adverse Effect** In-combination: projects and plans that could give rise to in-combination effects include: North Somerset Core Strategy, North Devon and Somerset SMP2, Private Defences, and Severn Tidal Power Project. There is the potential for intertidal habitat loss which could affect bird population size distribution and density on the levels and Moors**. Uncertain**	No The Land Use Plans &, SMPs are currently incomplete and there is therefore a degree of uncertainty surrounding impacts, development proposal and safeguarding policies within them. The Severn Tidal power project is still at the feasibility stage with no confirmation that a project will actually progress or what the preferred option will be. As high level plans the impacts of the chosen SMP2 policies at a site-specific level are uncertain. There is currently insufficient information available to determine whether in-combination effects will arise. No in combination effects are obvious at this stage; the SECG will work closely with Local Authorities and other Coastal Groups to ensure no in combination effects will arise as these documents are further developed. All these documents will be reviewed as part of the HRA for the FRMS.	Yes (short, medium and long term) Uncertain at SMP2 level. Further assessment to be undertaken at FRMS level
Changes in physical regime (HTL) Habitat loss/physical damage (HTL)	3.9 Birds of estuarine habitats	Not available		No factors (past, present or potential) adversely affecting the site's ecological character are identified	**Alone**: A Hold the Line Policy is likely to result in coastal squeeze in the medium to long term, reducing the extent of intertidal habitat; This could adversely affect feeding and roosting habitats which support bird populations on the site potentially altering bird population size, density and distribution on the Somerset Levels and Moors. KIN 3 is the only frontage along this policy unit with a HTL policy. There is the potential for intertidal habitat loss along the frontage of KIN3. **Adverse Effect** In-combination: projects and plans that could give rise to in-combination effects include: North Somerset Core Strategy, North Devon and Somerset SMP2, Private Defences, and Severn Tidal Power Project. There is the potential for intertidal habitat loss which could affect bird population size distribution and density on the levels and Moors**. Uncertain**	No The Land Use Plans &, SMPs are currently incomplete and there is therefore a degree of uncertainty surrounding impacts, development proposal and safeguarding policies within them. The Severn Tidal power project is still at the feasibility stage with no confirmation that a project will actually progress or what the preferred option will be. As high level plans the impacts of the chosen SMP2 policies at a site-specific level are uncertain. There is currently insufficient information available to determine whether in-combination effects will arise. No in combination effects are obvious at this stage; the SECG will work closely with Local Authorities and other Coastal Groups to ensure no in combination effects will arise as these documents are further developed. All these documents will be reviewed as part of the HRA for the FRMS.	Yes (short, medium and long term) Uncertain at SMP2 level. Further assessment to be undertaken at FRMS level

Notes:
1 ATTRIBUTE = Quantifiable aspects of interest features (subject to natural variation in some cases) that can be used to help define favourable condition for that feature. See Site Conservation Objectives
2 MANAGEMENT = in this context management refers to management of the European site
3 If uncertain consider time-limited consent, or other legally enforceable modifications

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4.3 Conclusion of Stage 3 Assessment

Can it be ascertained that the plan will not adversely affect the integrity of the European site(s)? No

This assessment had been carried out considering the likely effects of the implementation of high level policies identified in the Severn Estuary SMP2 alone and in-combination, on site integrity of a number of European sites. These policies are by their nature high level and lack detail with regards to changes are going to be caused by the delivery of the SMP2 and the specific areas that will be affected. Therefore, only a high level assessment of the adverse impacts on sites can be undertaken.

In the majority of cases adverse impacts are likely to occur as a result of coastal squeeze, or increased tidal inundation of freshwater habitats

Due to the high level strategic nature of the SMP2 there is a degree of uncertainty relating to exactly how SMP2 polices will be implemented (e.g. defence alignment, deference type, standard of protection to be provided) in many cases it has not been possible to determine whether or not a significant adverse effect is likely and a number of potential impacts will be assessed in further details as part of the Severn Estuary FRMS. These include:

Feature	Potential impacts alone	Potential impacts in combination
Severn Estuary/Mor Hafren SPA		
3.4 Birds of lowland wet grasslands, 3.6 Birds of lowland freshwaters and their margins, 3.7: Birds of farmland	Impacts of HTL on habitats behind the defence will be determined by SoP to be provided.	None – potential impacts are largely associated with increased overtopping of defences affecting freshwater habitats behind the defence so no potential for in combination effects considered likely
Severn Estuary Ramsar		
3.4 Birds of lowland wet grasslands, 3.6 Birds of lowland freshwaters and their margins, 3.7: Birds of farmland – both inside and outside the designated sit	Impacts of HTL on habitats behind the defence will be determined by SoP to be provided.	None – potential impacts are largely associated with increased overtopping of defences affecting freshwater habitats behind the defence so no potential for in combination effects considered likely
North Somerset and Mendip Bat SAC		
2.8 mammals of wooded habitats	Increased flooding could affect bat foraging/feeding habitat. Impacts resulting from NAI, HTL and MR will depend of the SoP to be provided.	Impacts are largely associated with increased flooding affecting habitats behind the defence so no potential for in combination effects considered likely
Mendip Limestone Grasslands SAC		
2.8 mammals of wooded habitats	Increased flooding could affect bat foraging/feeding habitat. Impacts resulting from NAI, HTL and MR will depend of the SoP to be provided.	Impacts are largely associated with increased flooding affecting habitats behind the defence so no potential for in combination effects considered likely
River Usk SAC		
Mammals of riverine habitats	Potential for habitat loss or severance. Impacts will depend on type of defence , further assessment to be undertake at FRMS stage	Potential for in combination effect with Wye and Usk CFMP and the Land Use Plan. plans will be reviewed as part of the HRA for the FRMS

Significant effects are identified are summarised below:

Feature	Potential impacts alone	Potential impacts in combination	
Severn Estuary SPA and Ramsar			
3.4 Birds of lowland wet grasslands, 3.6 Birds of lowland freshwaters and their margins,	No Active Intervention and/or MR: increased inundation, changes in physical processes and increased salinity may affect habitats which the birds use for feeding and roosting	x	N/A

3.7: Birds of farmland	potentially affecting population distribution and densities across the estuary in the short, medium and long term.		
3,8 Birds of coastal habitats 3.9 Birds of estuarine habitats	HTL is likely to result in coastal squeeze in the short, medium and long term, reducing the extent of intertidal habitat; this could reduce the suitability of areas for bird feeding and roosting potentially affecting population distribution and densities across the estuary	✓	Cardiff Local Plan/UDP/Local Development Plan, Vale of Glamorgan Council Local Development Strategy, Monmouthshire Local Development Plan, North Somerset Core Strategy, North Devon and Somerset SMP2, Swansea and Carmarthen Bay SMP, Private Defences, Bristol Container Port and Severn Tidal Power Project High degree of uncertainty; further assessment to be undertaken at FRMS stage
Severn Estuary Ramsar and SAC			
1.12 Estuarine and Intertidal habitats	HTL is likely to result in coastal squeeze in the short, medium and long term, reducing the extent of intertidal habitat; this could reduce the suitability of areas for bird feeding and roosting potentially affecting population distribution and densities across the estuary HTL and MR could result in changes to the form and function of the overarching estuary feature	✓	Cardiff Local Plan/UDP/Local Development Plan, Vale of Glamorgan Council Local Development Strategy, Monmouthshire Local Development Plan, North Somerset Core Strategy, North Devon and Somerset SMP2, Swansea and Carmarthen Bay SMP, Private Defences, Bristol Container Port and Severn Tidal Power Project High degree of uncertainty; further assessment to be undertaken at FRMS stage.
Somerset Levels and Moors Spa and Ramsar			
3.8 Birds of coastal habitats, 3.9 Birds of estuarine habitats	KIM3: HTL is likely to result in coastal squeeze in the short, medium and long term, reducing the extent of intertidal habitat; this could reduce the suitability of areas for bird feeding and roosting potentially affecting population distribution	✓	North Somerset Core Strategy, North Devon and Somerset SMP2, Private Defences, and Severn Tidal Power Project. High degree of uncertainty; further assessment to be undertaken at FRMS stage

This assessment at the plan level does not remove the need for an assessment at the FRMS and/or project level. The HRA undertaken for the FRMS will identify impacts with a greater degree of accuracy and certainty; this assessment, when complete will further inform habitat compensation proposals. Any project arising out of the plan will ensure any adverse effects on the integrity of European sites are avoided.

The SMP2 sets the strategic direction for managing the coastline within the study area on the basis that it cannot be put into effect until more detailed appraisal and assessment has taken place on plans or projects arising out of this SMP2 to show it and they have met the requirements of the Habitats Regulations. If a project is not consistent with the SMP2 then a new Habitats Regulations Assessment may be required. Furthermore, a project may be entirely consistent with the SMP2, but it may still require further Appropriate Assessment at the FRMS or project stage as detail emerging may identify additional impacts that have not been assessed here.

In accordance with the requirements of Regulations 103 and 105 of the Conservation Regulations 2010, as the plan cannot be shown to have no adverse effect on the integrity of the sites, the Coastal Management Group are required to demonstrate that there are no alternative solutions, and then seek a decision from the Secretary of State and WAG that the plan should be approved on the grounds of overriding public interest subject to provision of appropriate level compensation to offset losses of intertidal habitat and impacts on bird populations.

Name of EA officer undertaking appropriate assessment:
Signed: **Date:**

Endorsed by xxx – Area Environment Manager:
Signed: **Date:**

CCW/NE COMMENTS ON APPROPRIATE ASSESSMENT:
IS THERE AGREEMENT WITH THE CONCLUSION? YES/NO
(Please provide summary and explanation for answer given)

Signed: (CCW/NE local team manager) **Date:**

5.0 Part B: Final Appropriate Assessment Record: Severn Estuary SMP2 (May 2010)

This is a record of the appropriate assessment required by Section 61 of the Habitats Regulations 2010, undertaken on behalf of the Severn Estuary Coastal Group in respect of the above plan, in accordance with the Habitats Directive (Council Directive 92/43/EEC). Having considered that the plan would be likely to have a significant effect on the Severn Estuary SPA, SAC and Ramsar sites, Somerset Levels and Moors SPA and Ramsar site and River Usk SAC, and that the plan was not directly connected with or necessary to the management of the sites for nature conservation, an appropriate assessment has been undertaken of the implications of the proposal in view of the sites' conservation objectives.

CCW and NE were consulted under Regulation 48(3) on [date] and their representations, to which the Agency has had regard, are attached in Annex D [not yet inserted]. The conclusions of this appropriate assessment **are / are not** in accordance with the advice and recommendations of CCW/NE".

The site's nature conservation objectives have been taken into account, including consideration of the citation for the site and information supplied by CCW/NE. The likely effects of the SMP2 on the international nature conservation interests for which the sites were classified or designated may be summarised as [list of effects]:

- Loss of intertidal habitat (Severn SAC/Ramsar)
- Potential impacts on bird population size, distribution and density (Severn SPA/Ramsar; Somerset Levels and Moors SPA/Ramsar).
- Loss of intertidal habitat potentially affecting otter passage or feeding

The assessment has concluded that the plan as proposed **cannot** be shown to have no adverse effect on the integrity of the site. The imposition of conditions or restrictions on the way the proposal is to be carried out has been considered and it is ascertained that:

i conditions or restrictions cannot/may not overcome the adverse effects on the integrity of the Severn SPA/SAC/Ramsar and Somerset Levles and Moors

ii the following conditions and/or restrictions would avoid adverse effects on the integrity of the River Usk SAC':

- Further assessments of impacts at the FRSM and project level will be undertaken and will allow potential impacts to be quantified and avoidance or mitigation measures indentified.

In accordance with the requirements of Regulations 103 and 105 of the Conservation Regulations 2010, as the plan cannot be shown to have no adverse effect on the integrity of the sites, the Coastal Management Group are required to demonstrate that there are no alternative solutions, and then seek a decision from the Secretary of State and WAG that the plan should be approved on the grounds of overriding public interest subject to provision of appropriate level compensation to offset losses of intertidal habitat and impacts on bird populations.

Signed (relevant Area Management Team member) and date.

Annex A
Summary of Site Interest Features

Limestone Coast of South West Wales/ Arfordir Calchfaen de Orllewin Cymru SAC	
Total area of site: 1594.53 ha	**Annex I habitats** 1230 Vegetated sea cliffs of the Atlantic and Baltic coasts 2130 Fixed dunes with herbaceous vegetation (`grey dunes`) * Priority feature 4030 European dry heaths 6210 Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*) 8310 Caves not open to the public 8330 Submerged or partially submerged sea caves **Annex II species** 1304 Greater horseshoe bat (*Rhinolophus ferrumequinum)* 1654 Early gentian (*Gentianella anglica)* 1395 Petalwort (*Petalophyllum ralfsii*)

River Tywi/Afon Tywi SAC	
Total area of site: 363.45 ha	**Annex II species that are a primary reason for selection of this site** 1103 Twaite Shad (*Alosa fallax)* 1355 Otter (*Lutra lutra)* 1095 Sea lamprey (*Petromyzon marinus)* 1096 Brook lamprey (*Lampetra planeri)* 1099 River lamprey (*Lampetra fluviatilis)* 1102 Allis shad (*Alosa alosa)* 1163 Bullhead (*Cottus gobio)*

Pembrokeshire Marine/Sir Benfro Forol SAC	
Total area of site: 138069.45 ha	**Annex I habitats that are a primary reason for selection of this site** 1130 Estuaries 1160 Large shallow inlets and bays 1170 Reefs 1110 Sandbanks which are slightly covered by sea water all the time 1140 Mudflats and sandflats not covered by seawater at low tide 1150 Coastal lagoons * Priority feature 1330 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) 8330 Submerged or partially submerged sea caves **Annex II species that are a primary reason for selection of this site** 1364 Grey seal (*Halichoerus grypus)* 1441 Shore dock (*Rumex rupestris)* 1095 Sea lamprey (*Petromyzon marinus)* 1099 River lamprey (*Lampetra fluviatilis)* 1102 Allis shad (*Alosa alosa)* 1103 Twaite shad (*Alosa fallax)* 1355 Otter (*Lutra lutra)*

Carmarthen Bay and Estuaries/ Bae Caerfyrddin ac Aberoedd SAC	
Total area of site: 66101.16 Ha	**Annex I habitats that are a primary reason for selection of this site** 1110 Sandbanks which are slightly covered by sea water all the time 1130 Estuaries 1140 Mudflats and sandflats not covered by seawater at low tide 1160 Large shallow inlets and bays 1310 *Salicornia* and other annuals colonising mud and sand 1330 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)

	Annex II species that are a primary reason for selection of this site 1103 Twaite shad (*Alosa fallax)* 1095 Sea lamprey (*Petromyzon marinus)* 1099 River lamprey (*Lampetra fluviatilis)* 1102 Allis shad (*Alosa alosa)* 1355 Otter (*Lutra lutra)*

Carmarthen Bay/ Bae Caerfyrddin SPA	
Total area of site: 33410.03 ha	Supports the following species overwinter: Common Scoter (*Melanitta nigra*)

Camarthern Bay Dunes/Twymi Bae Caerfyrddin SAC	
Total area of site: 1206.32 ha	**Annex I habitats that are a primary reason for selection of this site** 2110 Embryonic shifting dunes 2120 Shifting dunes along the shoreline with *Ammophila arenaria* (`white dunes`) 2130 Fixed dunes with herbaceous vegetation (`grey dunes`) * Priority feature 2170 Dunes with *Salix repens* ssp. *argentea* (*Salicion arenariae*) 2190 Humid dune slacks **Annex II species that are a primary reason for selection of this site** 1014 Narrow-mouthed whorl snail (*Vertigo angustior)* 1395 Petalwort (*Petalophyllum ralfsii)* 1903 Fen orchid (*Liparis loeselii)*

Castlemartin Coast SPA	
Total area of site: 1122.32 ha	During the breeding season the area regularly supports: Chough (*Pyrrhocorax pyrrhocorax)*

Burry Inlet SPA and Ramsar	
Total area of site: **SPA:** 6627.99 ha **Ramsar:** 6627.99 ha	**Burry Inlet SPA** Overwinter the area regularly supports: Northern pintail (*Anas acuta)* Shoveler (*Anas clypeata)* Teal (*Anas crecca)* Widgeon (*Anas penelope*) Dunlin (*Calidris alpina alpina*) Red knot (*Calidris canutus*) Eurasian oystercatcher (*Haematopus ostralegus)* Curlew (*Numenius arquata*) Grey Plover (*Pluvialis squatarola*) Shelduck (Tadorna tadorna) Red shank (*Tringa totanus*) Regularly supports an Internationally important assemblage of birds overwinter: 34962 waterfowl including: Shelduck (*Tadorna tadorna*) Widgeon (*Anas penelope)* Northern pintail (*Anas crecca)* Northern pintail (*Anas acuta)* Northern shoveler (*Anas clypeata)* Eurasian oystercatcher (*Haematopus ostralegus*) Grey Plover (*Pluvialis squatarola)* Red knot (*Calidris canutus*) Dunlin (*Calidris alpina alpina*) Curlew (*Numenius arquata*) Common redshank (*Tringa totanus.)*

	Burry Inlet Ramsar **Ramsar criterion 5:** Species of international importance: 41655 waterfowl (5 year peak mean 1998/99-2002/2003) **Ramsar criterion 6:** Species/populations occur at levels of international importance. Species with peak counts in spring/autumn: Common redshank (*Tringa totanus tetanus)* Species with peak counts in winter: Northern pintail (*Anas acuta)* Eurasian oystercatcher (*Haematopus ostralegus ostralegus*) Red knot (*Calidris canutus islandica*) Species/populations identified subsequent to designation for possible future consideration under criterion 6. Species with peak counts in winter: Northern shoveler (*Anas clypeata*)

Dunraven Bay SAC	
Total area of site: 6.47 ha	**Annex II species** 1441 Shore dock *Rumex rupestris*

Crymlyn Bog SAC Ramsar	
Total area of site: **SAC** 299.45 ha **Ramsar** 264.18 ha	**Crymlyn Bog SAC Interest Features:** **Annex I habitats** 7140 Transition mires and quaking bogs 7210 Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* * Priority feature 91E0 Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*) * Priority feature **Crymlyn Bog Ramsar:** **Ramsar Criterion 1:** Largest example of valley floodplain topogenous mire in South Wales, and one of the largest surviving fens in the west of Britain. Very few other sites are known to support a comparable complexity and diversity of vegetation. **Ramsar criterion 2:** Supports a substantial population of the nationally-rare slender cotton-grass *Eriophorum gracile*, and a rich invertebrate fauna including many rare and highly localised species. **Ramsar criterion 3:** Supports 199 vascular plant species including 17 regionally-uncommon and one nationally rare.

Kenfig/Cynffig SAC	
Total area of site: 1191.67 ha	**Annex I habitats** 2130 Fixed dunes with herbaceous vegetation (`grey dunes`) * Priority feature 2170 Dunes with *Salix repens* ssp. *argentea* (*Salicion arenariae*) 2190 Humid dune slacks 3140 Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp. 1330 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) **Annex II species that are a primary reason for selection of this site** 1395 Petalwort *Petalophyllum ralfsii* 1903 Fen orchid *Liparis loeselii*.

Exmoor and Quantocks Oak Woods SAC	
	Annex I habitats

Total area of site: 1895.17 ha	91A0 Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles 91E0 Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*) (Priority feature) 1308 Barbastelle (*Barbastella barbastellus*) **Annex II species** 1323 Bechstein`s bat (*Myotis bechsteinii*) 1355 Otter (*Lutra lutra*)

Exmoor Heaths SAC	
Total area of site: 10705.87 ha	**Annex I habitats** 4010 Northern Atlantic wet heaths with *Erica tetralix* 4030 European dry heaths 1230 Vegetated sea cliffs of the Atlantic and Baltic coasts 7130 Blanket bogs * Priority feature 7230 Alkaline fens 91A0 Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles

Tintagel Marsland Covelly Coast SAC	
Total area of site: 2429.84 ha	**Annex I habitats** 1230 Vegetated sea cliffs of the Atlantic and Baltic coasts 91A0 Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles 4030 European dry heaths

Braunton Burrows SAC	
Total area of site: 1346.64 ha	**Annex I habitats** 2120 Shifting dunes along the shoreline with *Ammophila arenaria* (`white dunes`) 2130 Fixed dunes with herbaceous vegetation (`grey dunes`) * Priority feature 2170 Dunes with *Salix repens* ssp. *argentea* (*Salicion arenariae*) 2190 Humid dune slacks 1140 Mudflats and sandflats not covered by seawater at low tide **Annex II species** 1395 Petalwort (*Petalophyllum ralfsii)*

Lundy SAC	
Total area of site: 3064.53 ha	**Annex I habitats** 1170 Reefs 1110 Sandbanks which are slightly covered by sea water all the time 8330 Submerged or partially submerged sea caves **Annex II species** 1364 Grey seal (*Halichoerus grypus)*

Wye Valley Woodlands/ Coetiroedd Dyffryn Gwy SAC	
Total area of site: 916.24 ha	**Annex I habitats** 9130 *Asperulo-Fagetum* beech forests 9180 *Tilio-Acerion* forests of slopes, screes and ravines (Priority feature) 91J0 *Taxus baccata* woods of the British Isles (Priority feature) **Annex II species** 1303 Lesser Horseshoe bat (*Rhinolophus hipposideros*)

Wye Valley and Forest of Dean Bat Sites / Safleoedd Ystlumod Dyffryn Gwy a Fforest y Ddena SAC	
Total area of site: 142.7 ha	**Annex II species** 1303 Lesser horseshoe bat (*Rhinolophus hipposideros*) 1304 Greater horseshoe bat (*Rhinolophus ferrumequinum*)

Walmore Common SPA and Ramsar
Relevant Preferred Policies

Total area of site: **SPA** 52.85 ha **Ramsar** : 52.85 ha	**Walmore Common SPA** Supports the following species overwinter: Bewick's swan (*Cygnus columbianus bewickii*) **Walmore Common Ramsar** **Ramsar criterion 6:** Supports species of international important levels: Species with peak counts in winter: Bewick's swan (*Cygnus columbianus bewickii*)

Avon Gorge Woodlands SAC	
Total area of site: 152.35 ha	**Annex I habitats** 9180 *Tilio-Acerion* forests of slopes, screes and ravines (Priority feature) 6210 Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*)

North Somerset and Mendip Bat SAC	
Total area of site: 151.19ha	**Annex I habitats** 6210 Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*). 9180 *Tilio-Acerion* forests of slopes, screes and ravines (Priority feature) 8310 Caves not open to the public **Annex II species** 1303 Lesser horseshoe bat (*Rhinolophus hipposideros*) 1304 Greater horseshoe bat (*Rhinolophus ferrumequinum*)

Mendip Limestone Grasslands SAC	
Total area of site: 417.47ha	**Annex I habitats** 6210 Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*). 9180 *Tilio-Acerion* forests of slopes, screes and ravines (Priority feature) 8310 Caves not open to the public 4030 European dry heaths **Annex II species** 1304 Greater horseshoe bat (*Rhinolophus ferrumequinum*)

Mendip Woodlands SAC	
Total area of site: 253.92ha	**Annex I habitats** 9180 *Tilio-Acerion* forests of slopes, screes and ravines (Priority feature)

Annex B
SMP2 Policies

Policy Unit/Theme Area	0 to 20 years	20-50 years	50-100 years
PEN 1	NAI	NAI	NAI
PEN 2	HTL	HTL	HTL
CAR 1	HTL	HTL	HTL
CAR 2	HTL	HTL	HTL
CAR 3	HTL	HTL	HTL
WEN 1	HTL	HTL	HTL
WEN 2	HTL	HTL	HTL
NEW 1	HTL	HTL	HTL
NEW 2	HTL	HTL	HTL
NEW 3	NAI	NAI	MR
NEW 4	HTL	HTL	HTL
NEW 5	HTL	HTL	HTL
CALD 1	HTL	HTL	HTL
CALD 2	NAI	NAI	NAI
CALD 3	HTL	HTL	HTL
WYE 1	NAI	NAI	NAI
WYE 2	NAI	NAI	NAI
WYE 3	NAI	NAI	NAI
WYE 4	NAI	NAI	NAI
TID 1	NAI	NAI	NAI
TID 2	HTL	HTL	MR
LYD 1	HTL	HTL	HTL
GLO 1	NAI	NAI	NAI
GLO 2	MR	HTL	HTL
GLO 3	NAI	NAI	NAI
GLO 4	HTL	HTL	HTL
GLO 5	HTL	HTL	HTL
GLO 6	NAI	NAI	NAI
GLO 7	HTL	HTL	HTL
GLO 8	HTL	HTL	HTL
MAI 1	MR	HTL	HTL
MAI 2	HTL	HTL	HTL
MAI 3	NAI	NAI	NAI
MAI 4	HTL	HTL	HTL
MAI 5	HTL	HTL	HTL
MAI 6	HTL	HTL	HTL
SHA 1	HTL	MR	MR
SHA 2	HTL	MR	HTL
SHA 3	HTL	HTL	HTL
SHA 4	HTL	MR	MR
SHA 5	NAI	NAI	NAI
SHA 6	HTL	HTL	HTL
SHA 7	MR	HTL	HTL
SHA 8	NAI	NAI	NAI
SEV 1	HTL	HTL	HTL
SEV 2	HTL	HTL	HTL
SEV 3	HTL	HTL	HTL
SEV 4	HTL	HTL	HTL
SEV 5	HTL	HTL	HTL
SEV 6	NAI	NAI	NAI
BRIS 1	HTL	HTL	HTL
BRIS 2	HTL	HTL	HTL
BRIS 3	HTL	HTL	HTL
BRIS 4	HTL	HTL	HTL
BRIS 5	HTL	HTL	HTL

BRIS 6	HTL	HTL	HTL
PORT 1	NAI	NAI	NAI
PORT 2	NAI	NAI	NAI
PORT 3	NAI	NAI	NAI
PORT 4	HTL	HTL	HTL
KIN 1	MR	MR	MR
KIN 2	NAI	NAI	NAI
KIN 3	HTL	HTL	HTL
KIN 4	NAI	NAI	NAI
HOL 1	NAI	NAI	NAI
HOL 2	NAI	NAI	NAI

Figure D1 - Boundaries of European Designated Sites in the Severn Estuary

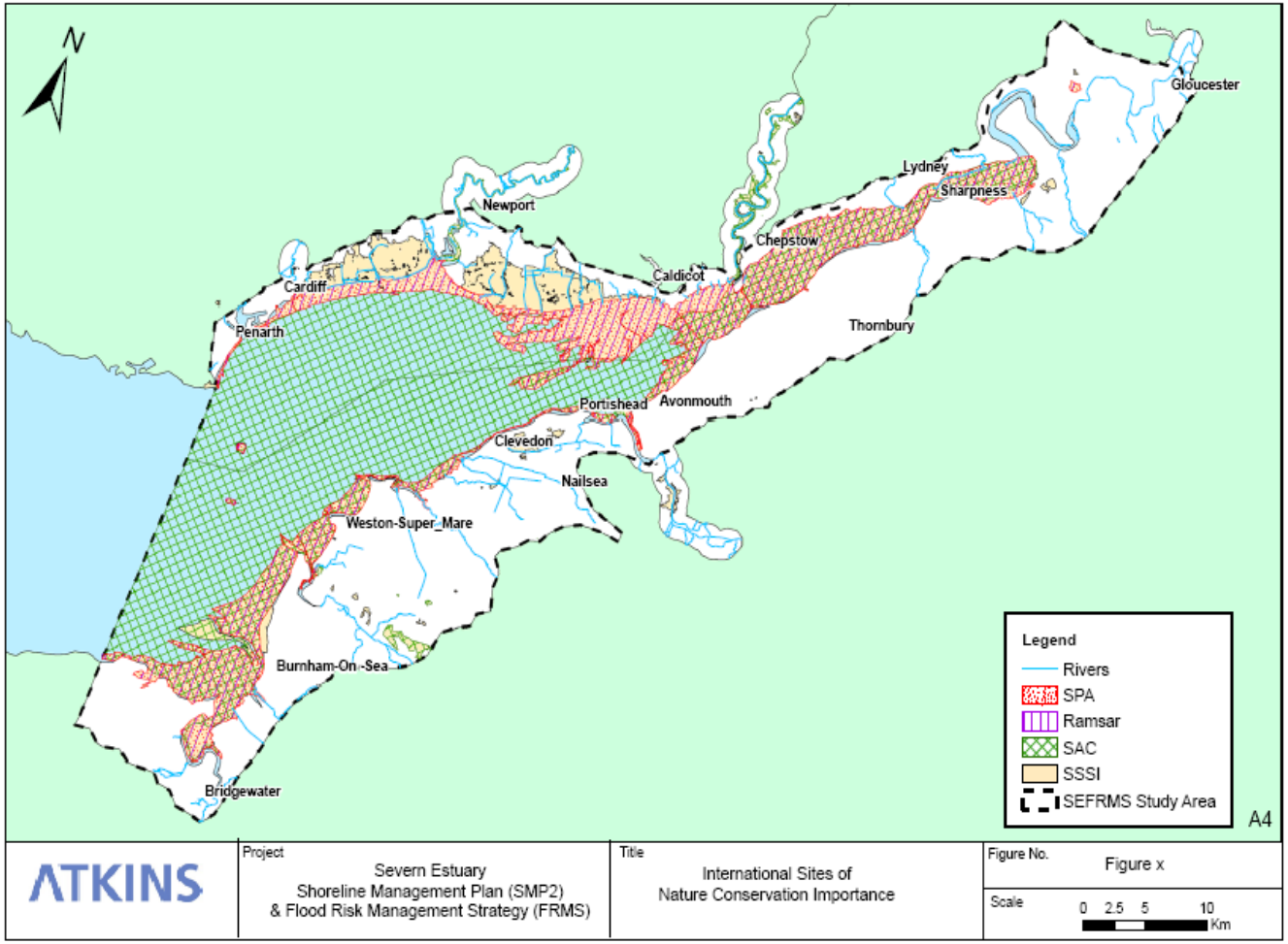
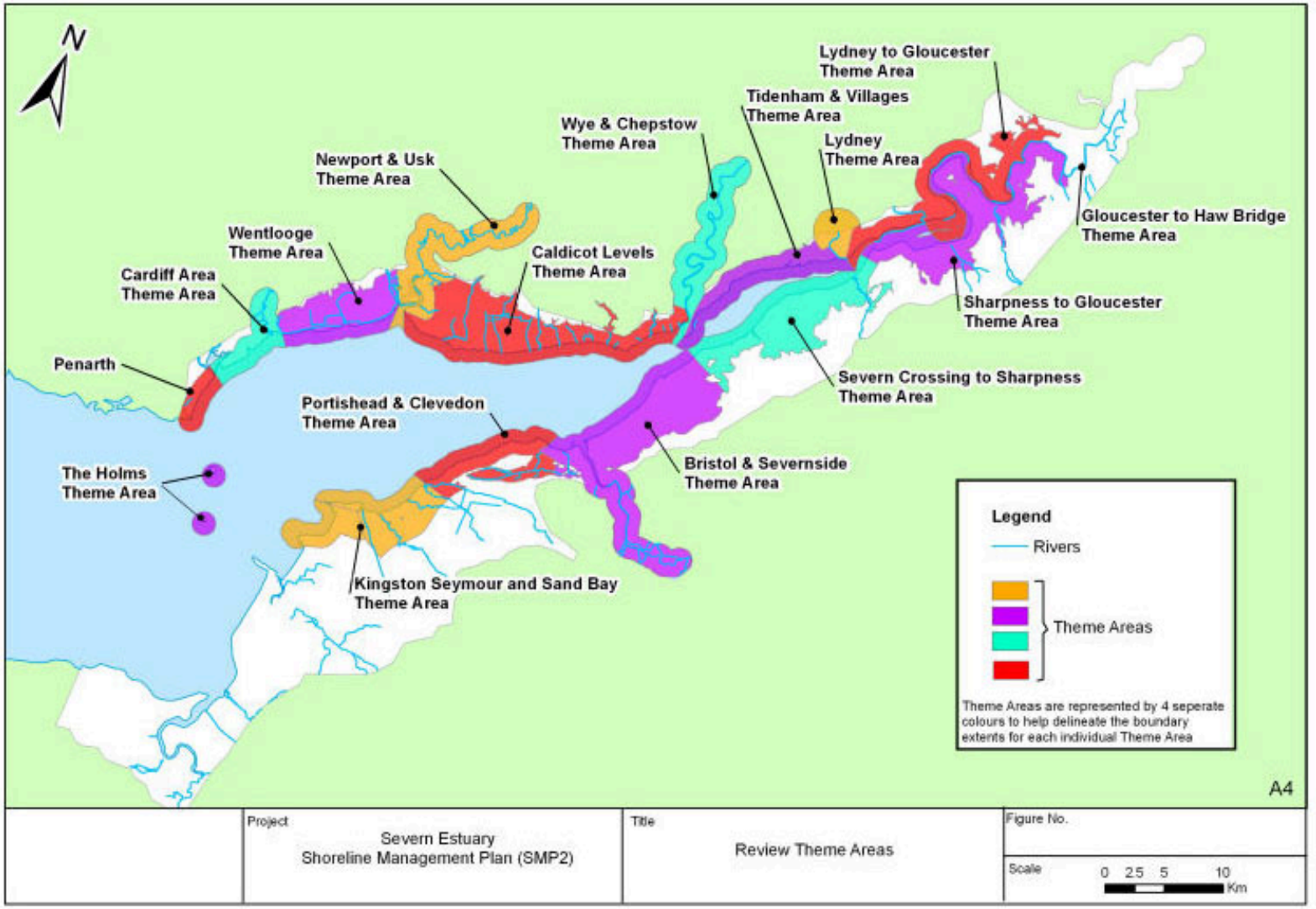


Figure D2 - SMP2 Policy Units or Theme Areas



Annex C

Polices, Plans and Projects reviewed as part of In-Combination Assessment

This Annex presents a summary of relevant plans polices and projects which have the potential to result in in-combination effects on European sites within or adjacent to the SMP2 area. Those giving rise to potential in combination effect have been highlighted.

NATIONAL, REGIONAL AND LOCAL SPATIAL PLANNING

WALES

Wales a Better Country (Welsh Assembly Government, September 2003): sets out WAG guiding vision of a fairer, more prosperous, healthier and better educated country, with commitment to social justice and to putting health and wealth creation that is sustainable at the heart of policy-making. Aspirational and non location specific nature of the document means it is not possible to identify impacts or individual sites with any degree of accuracy. Relevant aims are compatible with SMP2 including conservation of biodiversity. No in-combination effects can be identified at this strategic level.

Environment Strategy for Wales (Welsh Assembly Government, 2006) Addresses key challenges faced by Wales under a number of broad areas: climate change, sustainable resource use, distinctive biodiversity, landscapes and seascapes, local environment and environmental hazards. Aspirational and non location specific nature of the document means it is not possible to identify impacts on individual sites with any degree of accuracy. Relevant aims are compatible with SMP2 including conservation of biodiversity. No in-combination effects can be identified at this strategic level.

Planning Policy Wales (Welsh Assembly Government, March 2002) sets out guidance on the preparation and content of development plans and advice on development control decisions and appeals. Aspirational and non location specific nature of the document means it is not possible to identify impacts on individual sites with any degree of accuracy. Strategic approach to FRM compatible with SMP2. No in-combination effects can be identified at this strategic level.

Sustainable Development Action Plan 2004-2007 (Welsh Assembly Government, 2004) Outlines how WAG will promote sustainable development in the exercise of its functions. Aspirational and non location specific nature of the document means it is not possible to identify impacts on individual sites with any degree of accuracy. Relevant aims are compatible with SMP2 including conservation of biodiversity. No in-combination effects can be identified at this strategic level.

People Places Futures: The Wales Spatial Plan and Wales Spatial Plan Update (Welsh Assembly Government, 2004 and 2008). An HRA of the Wales Spatial Plan concluded that the asprational and non location specific nature of the plan mean to was not possible to identify implications for individual sites with any degree of precision and identified that HRA would be undertaken in greater detail in relation to the lower tier plans including Local Development Plans. Relevant aims are compatible with SMP2 including conservation of biodiversity. No in-combination effects can be identified at this strategic level.

Wales Transport Strategy (Welsh Assembly Government 2006): 'parent document' to Regional Transport plans; sets out how the Welsh Assembly Government proposes to deliver its transport duty to 2030. No location specific proposals; improving the efficient, reliable and sustainable movement of people and freight as well as reducing the contribution of transport to greenhouse gas emissions will help to mitigate or offset any increase in diffuse air pollution as a result of this Strategy. No in-combination effects can be identified at this strategic level.

Minerals Planning Policy Wales Welsh Assembly Government 2001: No locations are specified. The document contains strong policies in regard to the protection of Natura 2000 and Ramsar sites. No in-combination effects can be identified at this strategic level.

Making the Most of Wales' Coast (Welsh Assembly Government 2006) provides management framework for management and informed decision-making on coastal issues so that coastal resources are managed sustainably. Not location specific; relevant aims are compatible with that of the SMP2 including conservation of biodiversity. No in-combination effects can be identified at this strategic level.

Marine Aggregates Dredging Policy (National Assembly for Wales, November 2004): seeks to ensure sustainable, objective and transparent decision-making to meet society's needs for aggregates dredged from the Bristol Channel, Severn Estuary and River Severn. Promotes concept of environmental capacity, along with application of Environmental Impact Assessment (EIA), Regional Environmental Impact Assessment (REIA) and Appropriate Assessment (AA). Non location specific,

but promotes approach to safeguard European sites. No potential for adverse in-combination effects at SM2 level

Welsh Coastal Tourism Strategy – Draft Final Strategy (Welsh Assembly Government, January 2006) sets out a common strategy for developing the tourism potential of the coastline in a sustainable way whilst responding to the needs of growth markets; recognises environmental carrying capacity and potential for conflict of interests. Sets policy context and is non location specific; no adverse in combination effects can be identified at this strategic level.

Wise about Waste: The National Waste Strategy for Wales (WAG 2002). The HRA screening undertaken for this high level Strategy was not able to conclude no likely significant effect, but acknowledged that the approach set out in the Strategy can be implemented without affecting the integrity of Natural 2000 sites through further development of the approach as part of the Sector Plans. Relevant Sector Plans will be subject to their own HRA Assessment, and their development will include consultation with CCW, EAW and local authorities. No adverse in combination effects can be identified at this strategic level

The South East Wales Consultation Draft Regional Waste Plan 1st Revision Oct 2007: within the document Natura 2000 sites have designated as absolute areas of constraint, constituting areas that are unsuitable for waste management facilities. In addition, impacts on designated sites as a result of placing waste management facilities nearby have been considered. Site specific applications with be subject to project level HRA. No adverse in combination effects can be identified at the strategic level.

Responding to Our Changing Climate (Welsh Assembly Government 2007): The SMP2 addresses impacts of climate change and seeks to mitigate adverse effects on European sites. No potential for adverse in combination effects.

Cardiff Local Development Plan 2006- 2021 (Draft). Significant reservations were raised by the Inspectors at the Exploratory Meeting on 25th February 2010, and the Council formally requested that the Inspectors recommend to the Welsh Assembly Government that the LDP be withdrawn from the examination process. The Council will be preparing a new Local Development Plan. The **City of Cardiff Local Plan (1996)** is the main local planning document indentified within the local development framework. However the deposit draft of the **Cardiff Unitary Development Plan (2003)** although in accordance with Draft Welsh Assembly guidance on it remains a consideration in development control decisions until an LDP has been placed on deposit. Note: in May 2005, the council formally resolved to cease work on the Cardiff UDP and begin work on the LDP. At present there is insufficient information available to judge whether the LDP will result in the potential for in-combination effects, however it is likely that policies to protect both the Gwent Levels SSSIs and the Severn Estuary European sites will remain part of the Local Development Framework. There is therfore a high degree of uncertainty regarding whether or not there is the potential for in-combination effects. Relevant issues identified in the Cardiff Minerals Local Plan 1997 include interest in clay extraction from the Wentlooge Levels and ongoing dredging in the Bristol Channel; this document is however over 10 years old; consequently these issues may no longer be pertinent and/or other issues may have arisen. Potential developments identified with the draft UDP which have the potential to give rise to in combination effects include: the Eastern Bylink (proposed road improvement), the St Mellons Wentlooge Link (proposed road improvement) and the development of an integrated waste management system at the Rumney Moors/Lamby Way site, which is currently used primarily for landfill.

Vale of Glamorgan Council Local Development Draft Preferred Strategy Dec 2007: The Habitats Regulations Assessment Screening for the Vale of Glamorgan LDP Draft Preferred Strategy identified the potential for a negative impact on the Severn Estuary European sites. While much of the development arising from the draft preferred strategy is likely to be located well away from the Severn Estuary, the south-eastern zone has been identified as a growth area and abuts the boundary of the designated site. A more detailed assessment of the LDP is to be undertaken following consultation on the Draft Preferred Strategy to ascertain and mitigate against any likely significant effects to the SPA, cSAC, Ramsar. The mechanisms by which these activities could impact upon the designated site(s) are numerous and include land-take, disturbance through noise and vibration, pollution through ground and surface water run-off, and interruption of flight-lines by wind turbines. The potential for in combination effects exists

Monmouthshire County Council Adopted Unitary Development Plan 1996-2011 (adopted 2006): The HRA of the Monmouthshire County Council UDP concluded that it was unlikely that the Plan will have a significant effect on European sites/species, or adversely affect a site's integrity. No in-combination effects can be identified at this strategic level. **The Monmouthshire LDP** is currently in preparation and will contain land use allocations and policies for future development in Monmouthshire for the period 2011-2021. A HRA Screening of the Pre-Deposit Proposals was undertaken in May 2009 and identified the potential for likely significant effects, but identified that these impacts could be entirely avoided or mitigated against through further revisions of the LDP strategy and policies; the HRA will be reviewed at a more advanced version of the plan in order for a complete assessment to take place. Potential impacts were identified on the Usk SAC (arising from: development in Abergavenny/Llanfoist and Usk, a Strategic Employment Site within 2.5km of the site at Llanfoist, sites identified for waste facilities which may lead to waste related development near the SAC and mineral safeguarding policies which may lead to eventual additional mining and quarrying) the Severn SPA/SAC/Ramsar (arising from development in Chepstow, Sudbrook and Magor/Undy, Strategic Housing Sites at Magor/Undy and Portskewett within 5km and 2.5km of the site respectively, a Strategic Mixed Use Site within 2.5km of the site at Chepstow, an Employment site at Sudbrook within 2.5km of the site, and 3 Employment sites at Magor/Undy within 5 km of the site, sites will be identified for waste facilities which may lead to waste related development near the site, mineral safeguarding which may lead to eventual additional mining and quarrying and key strategic transport projects could increase diffuse pollution) and the Wye SAC (arising from: development in Monmouth and Chepstow, a Strategic Mixed Use Site within 2.5km of the site at Monmouth and adjacent a Strategic Mixed Use Site in Chepstow, an Employment site at Sudbrook within 5km of the site, waste facilities which may lead to waste related development near this SAC and mineral safeguarding which may lead to eventual additional mining and quarrying. It is clear at this stage that it will be necessary for the LDP to recognise these sites in preparing the strategy and developing plan policies, and to work in partnership with adjacent local authorities who are producing plans which will in-combination increase the impact on these sites.

Newport City Council Unitary Development Plan 1996-2011 (Adopted May 2006): No HRA of the Plan appears to have been undertaken. The development of brownfield sites in close proximity to the River Usk SAC could have the potential to affect water quality as a result of construction activities. This also has implications for the River Severn SPA/ Ramsar/ cSAC as the River Usk flows into the Severn Estuary. **Newport Local Development Plan 2011 – 2026**: the LDP is currently in preparation; the HRA screening of the LDP is still in draft. A number of recommendations have been made to ensure that the final draft of the LDP avoids and/or minimises impacts on the European sites identified during this study. It is anticipated, however that further appropriate assessment work will be required to assess the in-combination effects of water usage on the River Usk SAC and River Wye SAC, including changes to the LDP policy wording, further investigations to aid future assessments and ways of managing and mitigating specific impacts. At this high level stage it is not possible to identify any in combination effects, however redevelopment in the centre of Newport is likely to rise to opportunity for in-combination effects on the Usk SAC

SOUTH WEST

South West Regional Spatial Strategy Draft 2006-2026 (Government Office South West, 2004). Sets out the regional development framework and the links between broad issues such as healthcare, education and crime as well as basic infrastructure such as transport. It guides the local development framework which provides more site specific development guidance. The HRA of the draft RSS identified mitigation including the introduction of locationally specific safeguarding polices and advocated further more detailed HRA at the local level when specific sites, delivery criteria, and relevant planning conditions and obligations will be considered. These issues will be addressed through LDDs and other planning documents, as well as informing the Screening stages of local level HRAs, including at the project level. The HRA confirmed that the Draft RSS provides a reasonable measure of protection for N2K sites in the South West at the strategic level. No adverse in combination effects can be identified at this strategic level.

Our Environment: Our Future, The Regional Strategy for the South West Environment 2004-2014 (South West Regional Assembly in association with the South West Regional Environment Network, 2004) Strategy provides vision and aims for the environment in the future; identifies pressures threatening the environment and key issues to be tackled. Aspirational and non location specific nature of the document means it is not possible to identify impacts on individual sites with any

degree of accuracy. Relevant aims are compatible with SMP2 including conservation of biodiversity. No in-combination effects can be identified at this strategic level.

South West Regional Housing Strategy 2005-2016 (South West Housing Board July 2005) sets out policy to tackle the under-provision of housing in the South West; it is not location specific which means it is not possible to identify impacts on individual sites. Further, more site specific details are contained with relevant Local Development Framework. No in-combination effects can be identified at this strategic level.

Towards 2015 Shaping Tomorrow's Tourism (South West of England Regional Development Agency/South West Tourism, January 2005): sets strategic context for further development of tourism in the SW; non location specific; no potential for adverse in combination effects at the strategic level.

Bristol City Council Local Plan 1997 A review of the Plan was undertaken in 2000 and an independent assessment (the Sustainability Appraisal) found that it continued to be effective and would only require alterations rather than a replacement plan. The short section of the council that abuts the Estuary (Avonmouth) is already heavily developed by Bristol Ports. The plan does not promote and additional development in the vicinity of the estuary; there is therefore not considered to be the potential for in-combination effects. The Bristol Development Framework Core Strategy is now at submission stage now). Following an initial screening process with Natural England, appropriate assessment was undertaken for designated sites. For two sites, Avon Gorge and Severn Estuary, the appropriate assessment led to refinement of policies relating to 'Avonmouth and Port' , 'Sustainable Energy' and also enhanced the role of BCS9 'Green Infrastructure'. It is considered that the amendment of these policies and additional policies within the document protecting European sites will ensure no in combination effects.

North Somerset Replacement Local Plan (2007) The proposals map for the plan has been reviewed. The plan contains proposals for the regeneration of the waterfront in Weston-super-Mare, however this work will be undertaken behind the existing defence line and as such is considered unlikely to affect the Severn European site There are no polices within the local plan that are likely to give rise to in-combination effects North Somerset Replacement Local Plan will remain the principal planning document until 2011. **The North Somerset Core Strategy** (being produced as part of the Local Development Framework) is currently in preparation. A consultation draft of the Core Strategy was produced in 2009. Preparation of the Habitats Regulations and Sustainability Appraisal in underway and will be made available to support the next stage of the Core Strategy to be adopted in 2011. It is therefore currently not possible to determine whether there is the potential for in-combination effects with the Core Strategy.

WEST MIDLANDS

Regional Spatial Strategy for West Midlands (West Midlands Regional Assembly, January 2008) provides a long term land use and transport planning framework for the Region; guides the preparation of local authority development plans and local transport plans; determines (amongst other things) the scale and distribution of housing and economic development across the Region, investment priorities for transport and sets out policies for enhancing the environment. The screening exercise undertaken as part of Stage 1 of the HRA identified the potential for LSE on the River Wye SAC (from future abstraction of surface and groundwater, land use changes, impacts on water quality and supply and impacts arising from increased levels of recreational use and disturbance) and the Severn SAC, SPA, Ramsar (from increased demand for water supply including increased abstraction, water quality impacts due to increasing surface water run-off, the adequacy of water treatment infrastructure and the possibility of reduced flow concentrating pollutants). As a result Stage 2 revisions of the RSS introduced additional policies offering further safeguards for European sites and emphasises the requirements for HRAs undertaken at the LDD and project level. Taking into consideration the nature of the potential impacts, the conclusions of the HRA and modifications to the Spatial Strategy there is not believed to be potential for adverse in combination effects at this strategic level

West Midlands Regional Waste Planning Strategy 2001: this document identifies a set of strategic principles to guide the planning and provision of waste management facilities in the West Midlands over

a 10-15 year time frame. It is non-location specific so there is no potential for in-combination effects at the SMP2 level.

Forest of Dean District Council Core Strategy Second Preferred Options (March 2008) The Core Strategy is the principal document in the Forest of Dean Local Development Framework, and will guide development and growth for a period of up to twenty years. Potential impacts are associated with Land for housing; provision made for about 310 new dwellings a year until 2026, with approximately 50% identified as being in Lydney and 12% in Coleford. Development pressures identified included land take, increased transport movements and associated air pollutants, water abstraction for expanding communities with potential to impact surface and groundwater and recreational pressures. Lydney lies in close proximity to the Severn Estuary SPA, Ramsar and cSAC.and Coleford lies in close proximity to the River Wye. The HRA of the Publication version concluded the plan would not be likely to adversely impact water quality in the Severn Estuary SPA or SAC. It also concluded that the Core Strategy would not have adverse impacts upon the integrity of the Severn Estuary site, through enhanced water abstraction. Informed by the findings of the HRA, given the detailed and proactive control policies built into the Core Strategy and taking into account the mitigation work being undertaken, the HRA also concluded that the Core Strategy would not have significant adverse impacts upon the Severn Estuary site, by negatively impacting qualifying bird species. The nature of the potential impacts, distance of development areas from the Severn and conclusions of the HRA for the Core Strategy indicate there is little potential for in-combination effects

Gloucestershire County Council Waste Core Strategy, Preferred Options 2008 Provides the framework for sustainable waste management in the County. Natura 2000 sites have designated as absolute areas of constraint, constituting areas that are unsuitable for waste management facilities. In addition, impacts on designated sites as a result of placing waste management facilities nearby have been considered. Policies to avoid internationally designated sites are proposed. No in-combination effects are anticipated

Gloucester, Cheltenham, Tewkesbury Joint Core Strategy: Gloucester City Council is replacing its existing Local Plan with as the 'Local Development Framework' or LDF. The Sustainability Appraisal Screening Report for the core strategy states that It is considered unlikely that the Joint Core Strategy will significantly affect the condition of any of these sites; however, a screening judgement will be commissioned once details of the likely policy direction of the Joint Core Strategy become available. At present the Core Strategy is not considered likely to result in any in-combination effects.

South Gloucestershire Core Strategy (Consultation Draft 2008): Public consultation on the Pre-Submission Publication Draft Core Strategy is currently underway. HRA Screening of the Core Strategy was undertaken as part of the sustainability appraisal for the Strategy. The Severn Estuary is the only European site within the authority, As the Core Strategy is not proposing any development that might affect the biodiversity of the Severn Estuary, the Council, in consultation with Natural England, determined that an Appropriate Assessment of the Core Strategy will not be required. No in combination effects are anticipated.

West of England Joint Waste Core Strategy identifies a number of sites **Considered Appropriate for Residual Waste Treatment Development** in the Avonmouth Area (for waste facilities are near the shoreline. **(**South of Severnside Works, DS07 Selvaco Plant, Severn Road, DS15 Advanced Transport System Ltd, site, DS05 Merebank, Kings Weston Lane, Avonmouth, IS8 Warne Road,Weston-Super-Mare. A Habitats Regulations Assessment of the Strategy was undertaken in 2009 and mitigation identified to manage adverse effects on the sites. Potential impacts from these facilitates is likely to largely relate to disturbance. Given that at present the requirement for and/or timing of the construction of any defences is unknown it is not possible to identify with any certainty likely in combination effects. Further assessment will be undertaken as part of the FRMS.

ENVIRONMENT AGENCY PLANS

Environment Agency Vision – Aims include managing flood risk and conserving the natural environment. Aspiration and non locational nature of the document means it is not possible to identify impacts on individual sites with any degree of accuracy. Relevant aims compatible with SMP2 and conservation of biodiversity. No potential for in-combination effects.

Environment Agency Wales - Creating A Better Wales (2006-11) Aims include managing flood risk and conserving the natural environment. Aspirational and non location specific nature of the document

means it is not possible to identify impacts on individual sites with any degree of accuracy. Relevant aims compatible with SMP2 and conservation of biodiversity. No in-combination effects can be identified at this strategic level.

Environment Agency Wales South East Area Local Contribution (2003-2007) Aims include managing flood risk and conserving the natural environment. Aspiration and non locational nature of the document means it is not possible to identify impacts on individual sites with any degree of accuracy. Relevant aims are compatible with SMP2. No in-combination effects can be identified at this strategic level.

Environment Agency Severn River Basin Management Plan. WFD aims to deliver by 2015: clean water for people and wildlife, wiser sustainable use of water, protect and enhance native wildlife and habitats, protect the natural landscape, promoting the value of recreation. An assessment of the compliance of the SMP2 with the WFD has been undertaken as part of the SMP2 process (see Appendix J of main SMP2 documents). Relevant aims of both plans compatible. No in-combination effects can be identified at this strategic level.

Catchment Flood Management Plans for the Taff and Ely, Eastern Valleys, Wye and Usk, Bristol Avon, Severn Tidal Tributaries and Somerset. CFMPs aim to manage fluvial flooding within technical, environmental and economic constraints. SMP2 took into consideration CFMPs policies. HRAs were undertaken for all the CFMPs delivered. Potential adverse effects on an individual CFMP basis were all considered to be insignificant, although it was recognised that any of the effects might reach a threshold of significance if all the CFMPs were considered together. The in-combination assessment for the CFMPs around the Severn Estuary concluded that there was no evidence that critical thresholds would be exceeded, however it did note two areas of uncertainty in that CFMPs do not identify specific actions with quantifiable outcomes and they may have both positive and negative impacts within the same catchments and no critical thresholds have been identified for any of the features. It was concluded that further more detailed assessment of specific actions in specific locations would be required, as an integral part of the lower tiers of the flood risk management planning process. No in-combination effects can be identified at this strategic level. Potential in-combination effects on the Wye are considered unlikely as the preferred policy for the Lower Wye Policy Unit is to take action to store water or mange runoff in locations which provide overall flood risk reduction and environmental benefits. The preferred policy for the Usk is continue with current or alternative action to mange flood risk and there is therefore the potential for in-combination effects on the Usk SAC.

OTHER

Marine Spatial Planning –The Marine and Coastal Access Act 2009 set up the Marine Management Organisation (MMO) which has responsibility for preparing marine plans for the English and Welsh inshore and offshore regions. These plans will bring together multiple users of the ocean – including energy, industry, government, conservation and recreation, to make informed and coordinated decisions about how to use marine resources. No MSPs are in preparation as yet, so it is not possible to assess potential for in-combination effects. These plans will however be subject to SEA and HRA which will ensure no in-combination effects with the Severn SMP2.

Wetlands, Land Use Change and Flood Management (2003) An agreed position statement prepared by English Nature, the Environment Agency the Department for Environment, Food and Rural Affairs (Defra) and the Forestry Commission on washlands, wetlands and land use changes in relation to flood management. No location specific actions identified, so no potential for in combination effects at this strategic level.

Securing the Future – Delivering UK Sustainable Development Strategy (HM Government 2005) sets out Governments approach to sustainable development; no location specific recommendations/ actions so no potential for in combination effects at this strategic level.

50 Year vision for Wetlands: England's Wetland Landscape: securing a future for nature, people and the historic environment.(RSPB, English Heritage, Natural England, Wildlife Trusts, Environment Agency, May 2008). Joint policy sets out promotes role of wetlands in FRM; not location specific, so no potential for in-combination effects at strategic level.

South West Biodiversity Implementation Plan, Biodiversity: A natural advantage for the South West (South West Regional Biodiversity Partnership, July 2004). Sets out a framework of policy, priorities and actions to assist in a more joined up approach to biodiversity delivery. Regional Plan

informs LBAPS and sets actions to restore floodplains and wetlands. Non location specific but objectives are compatible with interests of biodiversity; no potential for adverse in-combination effects.

Countryside Character Volume 8: South West, The character of England's natural and man-made landscape (The Countryside Agency, 1996). Identifies and describes landscape character of the area; no site specific actions or objectives identified; no potential for adverse in combination effects.

Register of Welsh Historic Landscapes (Countryside Council for Wales, December 1995) identifies the best surviving examples of historic landscapes in Wales and is an importantway of safeguarding the characteristics of these distinctive places. Protects areas and will not affect biodiversity; no potential for adverse in combination effects.

Severn Estuary Rapid Coastal Zone Assessment (English Heritage, 2006) documents state of knowledge on the archaeological resource on the English side of the Severn Estuary and makes an assessment of threat from erosion. No actions arising from study, so no potential for in combination effects.

Heritage Counts 2004 The State of South West's Historic Environment (South West Historic Environment Forum, 2004): Highlights threats to the regions historic coast areas. Non location specific, no potential for in combination effects at the strategic level.

A Strategy for the Recreational Fisheries of Wales (Environment Agency November 2003): high level framework to optimise Welsh coastal and inlands fisheries; non location specific, no potential for in combination effects at the strategic level.

Welsh Fisheries Strategy (Welsh Assembly Government): promotes sustainable fisheries in Wales. Non location specific, no potential for in combination effects at the strategic level.

The Sustainable Fisheries Programme (Environment Agency Wales): aims to ensure Welsh Fisheries are healthy, productive and biologically diverse and provide a valuable and sustainable natural resource. Non location specific, no potential for in combination effects at the strategic level.

Rural Development Plan for Wales (National Assembly for Wales (2000-2006 and 2007-2013) Sets framework for rural development measures; sets framework for policy and is non location specific; no potential for in combination effects at the strategic level.

England Rural Development Programme (Defra 2000) : Sets framework for rural development; sets framework for policy and is non location specific; no potential for in combination effects at the strategic level.

Gwent Levels Foreshore Management Plan (FMP) (Atkins, 2003); strategy to sustain the existing and future sea defences and to optimise the use of resources via planned rather than reactive measures. Precursor to SMP2 and FRMS. No longer a current policy document, although findings will inform future work. No in-combination effects.

Warming to the Idea (South West Climate Change Impacts Partnership, 2003): Sets out potential impacts of climate change. SMP2 addresses impacts of climate change and seeks to mitigate adverse effects on European sites. No potential for adverse in combination effects. No potential for in combination effects.

Making Space for Water: Taking Forward a new Government Strategy for Flood and Coastal Erosion Risk Management in England (Defra, 2005). Highlights the need for an integrated approach to management of flood risk. Ethos of SMP2 is compatible with this approach; no potential for adverse in-combination effects.

Making the most of Wales' Coast – Integrated Coastal Zone Management (ICZM) consultation document. ECM Division (Welsh Assembly Government, January 2006). Provides a management framework to facilitate integrated working along the coast; non location specific; no potential for adverse in combination effects at the strategic level.

Framework For Future Flood Risk Management Programme (WAG, 2006): Documents review of FRM funding and identifies the requirement for a new policy framework to prioritise FRM investment.

Makes no location specific recommendations; no potential for adverse in combination effects at the strategic level.

National Trust Wales Shifting Shores Living with a changing coastline, 2007; identified the fact that 66 of the Trust's coastline properties are at risk from tidal flooding. The trusts policy is to take a long-term view, working with natural coastal change wherever possible. The policy favours adaptation, because this will give the time and space to adjust and provides the best chance of conserving the natural coastline, which is of great cultural and economic value. Early adaptation is also considered likely to be the most realistic and cost-effective approach for the long term. The policy echoes the principles of the SMP2 in seeking to determine long term plan for the management of the coastline. The are no site specific proposals and no potential for in-combination effects.

The Future of Transport: a Network for 2030 (Dept for Transport 2004): is a government white Paper that sets out the national transport expenditure plans to 2015, and considers the factors that will shape the country's various transport networks over the next 30 years. The document contains no site specific proposals and there is no potential for in-combination effects at the SMP2 level

Draft National Policy Statement for Energy Infrastructure (Department for Energy and Climate Change, 2009) : A HRA of the policy statement has been undertaken . Sections EN-1 to EN-5 of the policy statement address: overarching NPS for Energy (EN-1). Fossil Fuel Electricity Generating Infrastructure (EN-2), Renewable Electricity Infrastructure (EN-3), Gas Supply Infrastructure and Gas and Oil Pipelines (EN-4), and Electricity Networks Infrastructure (EN-5). They are all non-locationally specific policies covering England and Wales and do not identify locations to construct new nationally significant infrastructure. As a result it has not been possible to identify specific European site or sites which could potentially be subject to in-combination effects. Section EN-6. Details the draft Nuclear National Policy Statement and identifies Hinkley and Oldbury as two of ten sites potentially suitable for the deployment of new nuclear power by the end of 2025. The HRA undertaken concluded that HRA at this strategic level could not rule out the potential for adverse effects on the integrity of five European Sites (the Severn Estuary cSAC, SPA, Ramsar and the River Wye SAC and the River Usk SAC (Hinkley only) through impacts on water resources and quality, habitat and species loss and fragmentation/ coastal squeeze and disturbance (noise, light and visual). It went on to say further assessment supported by detailed data at the project level will be required before it can be concluded that nuclear power development at this nominated site can be undertaken without adversely impacting upon the integrity of the European Sites. Therefore, only at the project level HRA can a conclusion of no adverse effect on site integrity be made with any confidence.

Other SMP2s around the Estuary

Draft North Devon and Somerset , 2009. This SMP is adjacent to the Severn SMP2 study are and extends west from Hartland Point in Devon to Anchor Head in Somerset. An HRA for this SMP2 is also being prepared however there is the potential for in-combination effects on the Severn Estuary European Sites

Swansea and Carmarthen Bay SMP. The SMP study area extends from St. Anne's Head in Pembrokeshire to Lavernock Point in Vale of Glamorgan. The SMP is still under development. No conclusive assessment on the potential for in-combination effects can be undertaken until preferred policies for the South Wales SMP have been identified.

PROJECTS

Private Defences: Along parts of the SMP2 shoreline, there are private defences that have been built by individual landowners. The preferred policy within the SMP2 indicate where defences could, or could not, be maintained for technical and / or environmental reasons, i.e. influence on coastal erosion or flooding. It is acknowledged that at some point individuals may wish to build new defences where presently there are none or increase / improve existing defences. In these situations, these actions may be permitted, but it is the responsibility of the landowner to demonstrate there would be no adverse impacts on coastal processes (either upstream or downstream or in the area offshore) or designated and protected features, as part of the normal planning application process. It is not possible to prescribe specific policies for this situation as it is unknown if, when or where individual landowners may wish to build or amend private defences.

Oldbury Power Station Oldbury will continue to generate electricity until the end of 2010. Decommissioning ofnthe site will run from 2010 to 2101. The existing power station is located behind the defences and outside the European site, so the potential for in-combination effects is considered unlikely. In addition Oldbury has been identified as a potentially suitable location for the deployment of new nuclear power by the end of 2025. Due to uncertainties surrounding the nature and timing of any redevelopment it is not possible to undertake any assessment of in-combination effects at this stage.

Severn Tidal Power: The extremely high tidal range of the Severn Estuary means that the Estuary could generate renewable energy from wave and tidal power technologies. The Department for Energy and Climate Change (DECC) and WAG are currently part way through funding a study of possible renewable energy generation technologies in the Severn Estuary. A two year project to evaluate the potential for electricity generation from the Severn Estuary has reached its midpoint. Updates on the progress of the project are available at the DECC website:

http://www.decc.gov.uk/en/content/cms/what_we_do/uk_supply/energy_mix/renewable/severn_tidal_power/severn_tidal_power.aspx

The study aims to gather and assess evidence to help Government to decide if it should use public money to help support a renewable energy generation scheme in the Severn. Phase 1 of the study reduced a long list of 10 possible schemes down to a shorter list of 5 possible scheme types. These are being considered in more detail in Phase 2. A public consultation on Phase 2 will probably take place some time during 2010. If a Severn tidal power project does go ahead, it would have to go through the normal planning and permitting process that other developments go through. This could take 3 - 5 years and would include more public consultation. The HRA cannot take into account the impacts of any of the possible schemes, as no decision has been made on which one (if any) would be supported by Government. This means there are too many uncertainties surrounding the option and potential impacts to allow any meaningful assessment to be made.

Uskmouth Power Station Severn Power Ltd (owned by Carron Energy) have planning permission for a CCGT (Combined Cycle Gas Turbine) with construction due to start in 2010. It is assumed that an HRA of the project has been undertaken and signed off by CCW; no significant loss of intertidal habitat is anticipated to result from the proecjt, which from necessity will be locate behind existing defecnes. SMP2 polices in the vicinity of the power station are Hold the Line, however it is unlikely that works on the defences (if required) will be undertaken in this area during the construction phase. No in-combination effects are anticipated

Bristol Container Port : On 25th March 2010, the Department for Transport gave consent for the construction of Bristol's Deep Sea Container Terminal. The facility will be located with the estuary and will have four berths capable of receiving vessels of 16 metre draft, at all states of the tide. The HRA undertaken for the project concluded it was likely to have a significant effect on the Severn Estuary SPA, Ramsar site and the SAC. The main impacts were identified as: the permanent loss of a small area of intertidal habitat from within the SPA and SAC; the alteration of conditions that support sea bed dwelling animal communities within an area of approximately 80 hectares of intertidal mudflat due to increased accretion; and a resultant reduction, that could be temporary, in available feeding resources for waterfowl and waders, within the above intertidal area, of approximately 60 hectares of intertidal area due to potential changes in seabed life. The Secretary of State considered that there were imperative reasons of overriding public interest, of an economic and social nature, as to why the proposals should be permitted, in spite of a negative assessment of their impact on European and international sites of conservation significance. Natural England and the Countryside Council for Wales advised that their objections could be overcome through implementation of a Compensation Mitigation and Monitoring Agreement. This included, among other measures, the provision of compensation habitat on the Steart Peninsula on the Severn Estuary or an appropriate alternative site. The loss of intertidal habitat means there is the potential for in-combination effects.

River Usk Strategy and resultant projects : The Council seeking to regenerate the centre of Newport around the Usk. An HRA of the Strategy has been undertaken. The potential for in-combination effects exists primarily arising from the loss of intertidal habitat and the possible impacts on otter habitat.

North Devon and Somerset SMP2 HRA

THIS DOCUMENT IS BEING SENT: -
FOR CONSULTATION.

Form HR01: Proforma for new applications within Stage 2 criteria.

ENVIRONMENT AGENCY

ENVIRONMENT AGENCY RECORD OF ASSESSMENT OF LIKELY SIGNIFICANT EFFECT ON A EUROPEAN SITE (STAGE 2)

The North Devon and Somerset Shoreline Management Plan, detailed below, is within the Stage 1 criteria of Plans or Strategies that, in accordance with Environment Agency policy, should be subject to Appropriate Assessment under the Conservation of Habitats and Species regulations 2010 (the Habitats Regulations). In order to progress the plan a Stage 2 assessment and consultation with Natural England is required.

PART A
To be completed by relevant technical/project officer in consultation with Conservation/Ecology section and Natural England/CCW

1. Type of permission/activity:	Plan / Strategy
2. Agency reference no:	N/A
3. National Grid reference:	N/A
4. Site reference:	*North Devon and Somerset Coast (Hartland Point to Anchor Head)*
5. Brief description of proposal:	Shoreline Management Plan (SMP2)
6. European site name(s) and status:	Lundy Special Area of Conservation (SAC), Tintagel-Marsland-Clovelly Coast SAC, Braunton Burrows SAC, Exmoor Heaths SAC, Severn Estuary Special Protection Area (SPA), SAC and Ramsar site, Mendip Limestone Grasslands SAC.
7. List of interest features:	**Lundy SAC:** Annex I habitats: • Reefs • Sandbanks which are slightly covered by sea water all the time [not a primary reason for selection of this site] • Submerged or partially submerged sea caves [not a primary reason for selection of this site] Annex II species: • Grey seal *Halichoerus grypus* [not a primary reason for selection of this site] **Tintagel-Marlsand-Clovelly Coast SAC:** Annex I habitats: • Vegetated sea cliffs of the Atlantic and Baltic coasts • Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles • European dry heaths [not a primary reason for selection of this site] **Braunton Burrows SAC:** Annex I habitats: • Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes)

	• Fixed dunes with herbaceous vegetation (grey dunes) • Dunes with *Salix repens* ssp.*argenta (Salicion arenariae)* • Humid dune slacks • Mudflats and sandflats not covered by seawater at low tide [not a primary reason for selection of this site] Annex II species: • Petalwort *Petalophyllum ralfsii* **Exmoor Heaths SAC:** Annex I habitats: • North Atlantic Wet Heaths with *Erica tetralix* • European dry heaths • Vegetated sea cliffs along the Atlantic and Baltic Coasts [not a primary reason for selection of the site] • Blanket bogs [not a primary reason for selection of the site] • Alkaline fens [not a primary reason for selection of the site] • Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [not a primary reason for selection of the site] **Mendip Limestone Grasslands SAC:** Annex I habitats: • Semi natural dry grasslands and scrubland facies: on calcareous substrates *(Festuco-Brometalia)* • European dry heaths [not a primary reason for selection of the site] • Caves not open to the public [not a primary reason for selection of the site] • *Tilio-Acerion f*orests of slopes, screes and ravines [not a primary reason for selection of the site] Annex II species: • Greater horseshoe bat *Rhinolophus ferrumequinum* [not a primary reason for selection of the site] **Severn Estuary SPA:** Under Article 4.1 of the Directive (79/409/EEC): *Over winter;* • Bewick's Swan *Cygnus columbianus bewickii* Under Article 4.2 of the Directive (79/409/EEC): *On passage;* • Ringed Plover *Charadrius hiaticula* *Over winter;* • Curlew *Numenius arquata* • Dunlin *Calidris alpina alpina* • Pintail *Anas acuta* • Redshank *Tringa totanus* • Shelduck *Tadorna tadorna* Under Article 4.2 of the Directive (79/409/EEC) by regularly supporting at least 20,000 waterfowl: • Over winter, the area regularly supports 93,986 individual waterfowl (5 year peak mean 1991/2 -

	1995/6). **Severn Estuary Ramsar Site:** *Criterion 1 – Immense tidal range affecting the physical environment and biological communities* (including those identified for the SAC, below). *Criterion 3 – Due to unusual estuarine communities, reduced diversity and high productivity.* *Criterion 4 – Important migratory fish populations that pass through the estuary between the sea and river, and important migratory bird populations.* *Criterion 8 – Important fish populations within the whole estuary and river system, with over 110 species recorded.* *Criterion 5 – Bird assemblages of international importance:* • 70919 waterfowl (5 year peak mean 1998/99-2002/2003) *Criterion 6 – Bird species with peak counts in winter:* • Tundra (Bewick's) swan *Cygnus columbianus bewickii* • Greater white-fronted goose *Anser albifrons albifrons* • Common shelduck *Tadorna tadorna* • Gadwall *Anas strepera strepera* • Dunlin *Calidris alpina alpina* • Common redshank *Tringa totanus totanus* **Severn Estuary SAC:** Annex I habitats: • Estuaries • Intertidal mudflats and sandflats not covered by seawater at low tide • Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) • Subtidal sandbanks which are slightly covered by sea water all the time [not a primary reason for selection of this site] • Reefs [not a primary reason for selection of this site] Annex II species: • Sea lamprey *Petromyzon marinus* • River lamprey *Lampetra fluviatilis* • Twaite shad *Alosa fallax* Under Article 4.1 of the Directive (79/409/EEC):

	Overwinter; • Bewick's swan (*Cygnus columbianus bewickii*) (2.7% of wintering population in GB) • Golden Plover (*Pluvialis apricaria*) (1.2% of wintering population in GB) **Somerset Levels and Moors SPA** Under Article 4.2 of the Directive (79/409/EEC): *Overwinter*; • Teal (*Anas crecca*) (3.3% of the population) • Lapwing (*Vanellus vanellus*) (0.5% of the population) • Supports species which are considered internationally important assemblage of waterfowl populations. **Somerset Levels and Moors Ramsar Site** *Criterion 2* – Supports 17 species of British Red Data Book invertebrates. *Criterion 5* – Assemblages of international importance species with peak counts in winter: 70919 waterfowl (5 year peak mean 1998/99-2002/2003). *Criterion 6* – Species occurring at internationally important levels. *Species with peak counts in winter:* • Bewick's swan (*Cygnus columbianus bewickii*) • Teal (*Anas creecca*) • Northern lapwing (*Vanellus vanellus*)
8. Is the proposal directly connected with or necessary to the management of the site for nature conservation?	No

9. What potential hazards are likely to affect the interest features? (Refer to relevant sensitivity matrix and only include those to which the interest features are sensitive). **Are the interest features potentially exposed to the hazard?**

Lundy SAC: This SAC lies within coastal unit A, and policy units 7c01 and 7c02. The preferred policy for all epochs within 7c01 (Landing beach) is 'hold the line', and within 7c02 (Lundy except landing beach) is 'no active intervention'. This is unchanged from SMP1.

Sensitive Interest Feature:	**Potential hazard:**	**Potential exposure to hazard and mechanism of effect/impact if known:** **[LSE = Likely Significant Effect** **No LSE = No Likely Significant Effect]**
Lundy SAC: Reefs	Changes in sediment supply	'Hold the line' has potential to affect natural sediment supply. There is a low risk that this could affect reef habitats, for

		example by smothering, in the medium to long term. **LSE**
Lundy SAC: Sandbanks which are slightly covered by sea water all the time	Changes in sediment supply	'Hold the line' has potential to affect natural sediment supply. This could affect the extent and distribution of sandbanks in the long term. **LSE**
Lundy SAC: Submerged or partially submerged sea caves	Sea level rise	Sea level rise could affect the extent and duration of inundation for sea caves in the long term. However, this would not be the result of a change in SMP policy. **No LSE**
Lundy SAC: Grey seal	Sea level rise	Sea level rise could affect the availability of caves used by pupping seals. However, this would not be the result of a change in SMP policy. **No LSE**

Tintagel-Marlsand-Clovelly Coast SAC: This SAC lies within Coastal Unit B, and policy units 7c03 and 7c05. The preferred policy for all epochs for 7c03 (Hartland Point to Clovelly) and 7c05 (Clovelly to Westward Ho! (Seafield House)) is 'no active intervention'. This is unchanged from SMP1.

Sensitive Interest Feature:	**Potential hazard:**	**Potential exposure to hazard and mechanism of effect/impact if known:**
Tintagel-Marlsand-Clovelly Coast SAC: Vegetated sea cliffs of the Atlantic and Baltic coasts	Sea level rise	Sea level rise may accelerate natural erosion patterns, resulting in the loss of cliff habitats in the long term. However, this would not be the result of a change in SMP policy. **No LSE**
Tintagel-Marlsand-Clovelly Coast SAC: Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles	These habitats lie mainly on landward slopes of the site, and are unlikely to be affected by SMP policy.	No effects foreseen. **No LSE**
Tintagel-Marlsand-Clovelly Coast SAC: European dry heaths	These habitats lie mainly on landward slopes of the site, and are unlikely to be affected by SMP policy.	**No effects foreseen.** No LSE

Braunton Burrows SAC: This SAC lies within Coastal Unit C, and policy units 7c28, 7c29 and 7c30. It is considered that the preferred policies within units 7c07 and 7c08 also have the potential to affect this site. The preferred policies of these units are:

- 7c28 (Horsey Island to Crow Point): 'hold the line' in the short term, 'managed realignment' in the medium term and 'hold the line' (of the realigned defence) in the long term; this is a change from the SMP1 policy of 'observe and monitor'
- 7c29 (Crow Point & Crow Neck): 'managed realignment' for all epochs, although implementation of this will be dependent on investigations to its importance in protecting

the wider estuary ; this is a change from the SMP1 policy of 'observe and monitor'

- 7c30 (Braunton Burrows): 'no active intervention'. This is unchanged from SMP1.
- 7c07 (Northam Burrows): 'managed realignment'. This is unchanged from SMP1 ('retreat').
- 7c08 (Skern saltmarsh to Appledore (west)): 'hold the line'; this is a change from the SMP1 policy of 'retreat'.

Sensitive Interest Feature:	**Potential hazard:**	**Potential exposure to hazard and mechanism of effect/impact if known:**
Braunton Burrows SAC: All interest features (dune habitats, intertidal habitats, petalwort)	Coastal squeeze	If natural processes arising from sea level rise (e.g. rolling back of dune habitats and species) are constrained by human intervention, this may have a significant effect on these features (e.g. through habitat loss) in the medium / long term. **LSE**
Braunton Burrows SAC: All interest features (dune habitats, intertidal habitats, petalwort)	Managed realignment	Managed realignment at Northam Burrows or Crow Point may affect the geomorphological regime at Braunton Burrows. This could have significant effects on the interest features of the site. **LSE**
Braunton Burrows SAC: All interest features (dune habitats, intertidal habitats, petalwort)	No active intervention	'No active intervention' at Braunton Burrows should benefit natural processes within the site, and hence its interest features. However, significant effects may occur if processes are constrained (see above), particularly to those features on the seaward side of the site. However, these effects would not be as a result of SMP policy. **No LSE**

Exmoor Heaths SAC: This SAC lies within Coastal Unit E, and policy units 7d11 (Combe Martin to Lynmouth), 7d13 (Lynmouth to Foreland Point), 7d14 (Foreland Point to Gore Point), and 7d18 (Hurlstone Point to Minehead (west)). The policy in all of these units is 'no active intervention' for all epochs, and is unchanged from SMP1.

Sensitive Interest Feature:	**Potential hazard:**	**Potential exposure to hazard and mechanism of effect/impact if known:**
Exmoor Heaths SAC: European dry heaths	These habitats lie mainly on landward slopes of the site, and are unlikely to be affected by SMP policy.	No effects foreseen. **No LSE**

Exmoor Heaths SAC: Vegetated sea cliffs of the Atlantic and Baltic coasts	Sea level rise	Sea level rise may accelerate natural erosion patterns, resulting in the loss of cliff habitats in the long term. However, this would not be the result of a change in SMP policy. **No LSE**
Exmoor Heaths SAC: North Atlantic Wet Heaths with *Erica tetralix* Blanket bogs Alkaline fens	These habitats lie mainly on landward slopes of the site, and are unlikely to be affected by SMP policy.	No effects foreseen. **No LSE**
Exmoor Heaths SAC: Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles	These habitats lie mainly on landward slopes of the site, and are unlikely to be affected by SMP policy.	No effects foreseen. **No LSE**

Severn Estuary SPA, Ramsar Site and SAC: This site lies within Coastal units F, G and H. The policy units and preferred policies within this area are:

- 7d30 (Lilstock to Hinkley Point): 'no active intervention' (unchanged from SMP1).
- 7d31 (Hinkley Point): 'hold the line' (unchanged from SMP1)
- 7d32 (Hinkley Point to Stolford): 'hold the line' in the short term, 'managed realignment' in the medium term and 'hold the line' (of the realigned defence) in the long term. SMP1 policy was 'hold the line'.
- 7d33 (Stolford): 'hold the line' in the short term, 'managed realignment' in the medium term and 'hold the line' (of the realigned defence) in the long term. SMP1 policy was 'observe and monitor'.
- 7d34 (Stolford to Wall Common): 'managed realignment' in the short term and 'hold the line' (of the realigned defence) in the medium to long term, or potentially 'no active intervention' in the long term. SMP1 policy was 'observe and monitor'.
- 7d35 (Steart Village): 'hold the line' in the short term and 'no active intervention' in the medium and long term. SMP1 policy was 'observe and monitor'.
- 7d36 (Steart Village to north of Combwich (line of national grid power lines)): 'hold the line' in the short term and 'no active intervention' in the medium and long term. SMP1 policy was 'observe and monitor'.
- 7d37 (Parrett Estuary from line of national grid power lines to Combwich): 'hold the line' in the short term and 'no active intervention' in the medium and long term. SMP1 policy was 'observe and monitor'.
- 7d38 (Combwich): 'hold the line' (unchanged from SMP1)
- 7d39 (Combwich to Bridgwater (Parrett west)): 'hold the line' in the short and medium term, and 'managed realignment' in the long term. This area was not included in SMP1.
- 7d42 (Dunball to River Brue): 'hold the line' in the short term; 'managed realignment' along Pawlett Hams and hold the line' along Pawlett and Huntspill Levels in the medium term; and 'hold the line' (of the realigned defence) at Pawlett Hams / 'managed realignment' along Pawlett and Huntspill Levels in the long term. SMP1 policy was 'hold the line'.
- 7d43 (Burnham-on-Sea and Highbridge): 'hold the line'. SMP1 policy was 'hold the line / observe and monitor'.
- 7d44 (Berrow to Brean (north): 'managed realignment'. SMP1 policy was 'observe and monitor'.
- 7d45 (Brean (north) to Brean Down): 'hold the line' in the short and medium term, and 'no active intervention' in the long term. SMP1 policy was 'hold the line'.
- 7d46 (Brean Down (south side)): 'no active intervention' (unchanged from SMP1).
- 7e01 (Brean Down (north side) to Axe Estuary mouth (west): 'no active intervention' (unchanged from SMP1).
- 7e02 (Axe Estuary left (west) bank (mouth to near Diamond Farm)): 'hold the line' in the short and medium term and managed realignment' in the long term. SMP1 policy was 'hold the line (locally retreat)'.
- 7e03 (Axe Estuary right (east) bank (near Diamond Farm to mouth)): 'hold the line' in the

short term, ‘managed realignment’ in the medium term and ‘hold the line’ (of the realigned defence) in the long term. SMP1 policy was ‘hold the line (locally retreat)’.

- 7e04 (Axe Estuary mouth to Uphill): ‘hold the line’ in the short term, ‘managed realignment’ in the medium term and ‘hold the line’ (of the realigned defence) in the long term. SMP1 policy was ‘hold the line (possibly retreat in the long term)’.
- 7e05 (Uphill to Weston-super-Mare (south)): ‘managed realignment’ for all epochs. SMP1 policy was ‘hold the line (possibly retreat in the long term)’.
- 7e06 (Weston-super-Mare): ‘hold the line’ (unchanged from SMP1).

Sensitive Interest Feature:	**Potential hazard:**	**Potential exposure to hazard and mechanism of effect/impact if known:**
Severn Estuary SPA and Ramsar Site: All interest features (wintering and passage bird populations)	Coastal squeeze	In areas where ‘hold the line’ policies apply, sea level rise will result in the progressive loss of intertidal and supratidal habitats. This will reduce the availability of feeding and roosting sites for bird populations in the estuary. **LSE**
	Sea level rise	In areas where ‘no active intervention’ policy applies, there may be the progressive loss of intertidal and supratidal habitats used by birds, particularly where constrained by natural features that prevent the natural roll-back of habitats. However, in most cases the losses would not be the result of SMP policy. There is also the potential that terrestrial habitats outside of the designated site that support its interest features could be affected by changes in salinity and tidal inundation. This may affect use of these areas by bird species; such changes could be negative or positive. In most cases the changes would not be the result of SMP policy. **No LSE**
	Managed realignment	Where ‘managed realignment’ policies apply, this should allow the creation of new intertidal habitat that can be used by feeding and roosting birds from the estuary. This will mitigate

		for losses due to coastal squeeze, and has the potential to increase the available resource, providing a net benefit. **No LSE**
Severn Estuary SAC and Ramsar Site: • Estuaries • Mudflats and sandflats not covered by seawater at low tide • Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)	Coastal squeeze	In areas where 'hold the line' policies apply, sea level rise will result in the progressive loss of intertidal and supratidal habitats. **LSE**
	Sea level rise	In areas where 'no active intervention' policy applies, there may be the progressive loss of intertidal and supratidal habitats, particularly where constrained by natural features that prevent the natural roll-back of habitats. However, in most cases the losses would not be the result of SMP policy. **No LSE**
	Managed realignment	Where 'managed realignment' policies apply, this should allow the creation of new intertidal habitat. This will mitigate for losses due to coastal squeeze, and has the potential to increase the available resource, providing a net benefit. **No LSE**
Severn Estuary SAC and Ramsar Site: Sandbanks which are slightly covered by sea water all the time	Coastal squeeze / sea level rise / managed realignment	Natural geomorphological processes have the potential to be influenced or disrupted by coastal management and other, semi-natural processes, such as sea level rise. This may lead to changes in the extent and distribution of sandbanks in the medium or long term; which could result in significant impacts on this interest feature. **LSE**
Severn Estuary SAC: Reefs	Coastal squeeze / sea level rise / managed realignment	Reefs have the potential to be affected by a variety of mechanisms; for example, changes in sediment regime could smother reef habitats, or expose new substrate

		where reefs could develop. Similarly, sea level rise may increase or decrease areas suitable for reef habitats. There may therefore be significant effects on this interest feature as a result of SMP policy. **LSE**
Severn Estuary SAC and Ramsar Site: Fish populations, including Sea Lamprey, River Lamprey, Twaite Shad	The main hazards to these species are obstacles to migration and pollution. It is not considered that these hazards will be significantly affected by SMP policy	No effects foreseen. **No LSE**

Mendip Limestone Grasslands SAC: This site lies on the boundary of Coastal Areas G and H, and lies within policy units 7d46 (Brean Down (south side)) and 7e01 (Brean Down (north side) to Axe Estuary mouth (west). The policy in both of these units is 'no active intervention' for all epochs, and is unchanged from SMP1.

Sensitive Interest Feature:	**Potential hazard:**	**Potential exposure to hazard and mechanism of effect/impact if known:**
Mendip Limestone Grasslands SAC: Semi natural dry grasslands and scrubland facies: on calcareous substrates *(Festuco-Brometalia)*	Sea level rise	Sea level rise may accelerate natural erosion patterns, resulting in the loss of grassland habitats on Brean Down in the long term. However, this would not be the result of a change in SMP policy. **No LSE**
Mendip Limestone Grasslands SAC: European dry heaths	These habitats occur on the landward parts of the site, and are unlikely to be affected by SMP policy.	No effects foreseen. **No LSE**
Mendip Limestone Grasslands SAC: Caves not open to the public	These features occur on the landward parts of the site, and are unlikely to be affected by SMP policy.	No effects foreseen. **No LSE**
Mendip Limestone Grasslands SAC: *Tilio-Acerion f*orests of slopes, screes and ravines	These habitats occur on the landward parts of the site, and are unlikely to be affected by SMP policy.	No effects foreseen. **No LSE**
Mendip Limestone Grasslands SAC: Greater horseshoe bat	The habitats and features on which this species depends occur on the landward parts of the site, and are unlikely to be affected by SMP policy.	No effects foreseen. **No LSE**

Somerset Levels and Moors SPA and Ramsar Site: The site lies outside the study area, (located approximately 12 km inland of Bridgwater Bay) but is potentially hydraulically linked to the study area via flooding from the Severn Estuary. The levels are currently at risk from extreme flood events from the estuary (e.g. 1 in 1000 year events). The preferred SMP2 policies will not increase tidal flood risk to the site.

Sensitive Interest Feature:	Potential hazard:	Potential exposure to hazard and mechanism of effect/impact if known:
Somerset Levels and Moors SPA and Ramsar Site: Wintering bird populations (Including Bewick's Swan, Teal and Lapwing, and bird assemblage).	Coastal squeeze	Although direct effects on the site are not likely to occur, there is the potential that in areas where 'hold the line' policies apply on the Severn Estuary, sea level rise will result in the progressive loss of intertidal and supratidal habitats. These habitats may provide feeding and roosting habitat for bird populations that use the Levels and Moors. Effects on these supporting features for the designated bird populations may therefore result in a significant effect on the interest features of the site. **LSE**
Somerset Levels and Moors Ramsar Site: Red Data Book invertebrates	No mechanisms have been identified that are likely to affect these populations. In the long-term, increased tide locking as a result of sea level rise may affect fluvial water levels; however, this would not be as a result of SMP policy.	No effects foreseen. **No LSE**

10. Is the potential scale or magnitude of any effect likely to be significant?	
a) Alone?	**Lundy SAC:** **Yes** The policy of 'hold the line' at the landing beach may affect reef and sandbank features at this site. Although the risk of such an effect is considered low, it cannot be discounted at this stage. **Tintagel-Marlsand-Clovelly Coast SAC:** **No** The policy of 'no active intervention', which is unchanged from SMP1, is not considered to affect the interest features of this site. Although the progressive loss of cliff habitats due to sea level rise can be foreseen, this loss is not the result of SMP policy. **Braunton Burrows SAC:** **Yes** SMP policy of 'no active intervention', or 'managed realignment' has the potential to affect geomorphological processes that are critical to maintenance of interest features on the site. Such effects may be positive or

	negative. **Exmoor Heaths SAC:** **No** The policy of 'no active intervention', which is unchanged from SMP1, is not considered to affect the interest features of this site. Although the progressive loss of cliff habitats due to sea level rise can be foreseen, this loss is not the result of SMP policy. **Severn Estuary SPA / Ramsar Site:** **Yes** Where a policy of 'hold the line' applies, this will lead to the progressive loss of intertidal and supratidal habitats, due to coastal squeeze, that may be used by feeding and roosting birds. Where 'managed realignment' policy applies, this will result in the creation of new habitat that can mitigate or compensate for loss, and may increase the available resource. **Severn Estuary SAC:** **Yes** SMP policies, particularly where 'hold the line' applies, may affect the extent and distribution of estuary habitats, for example as a result of coastal squeeze or through geomorphological changes. These effects may have significant effects on the interest features of the site. **Mendip Limestone Grasslands SAC:** **No** The policy of 'no active intervention', which is unchanged from SMP1, is not considered to affect the interest features of this site. Although the progressive loss of grassland habitats caused by erosion as a result of sea level rise can be foreseen, this loss is not the result of SMP policy. **Somerset Levels and Moors SPA and Ramsar Site:** **Yes** Policies within the Severn Estuary that affect the availability of roosting and feeding habitat for birds that use the Somerset Levels and Moors have the potential to adversely affect these interest features.
b) In combination with other Environment Agency permissions and/or other plans or projects?	**No** The following Environment Agency plans are considered to have the potential to interact with the policies of the SMP: • River Basin Management Plans (RBMPs) (draft) for the Severn and the South West. • Catchment Flood Management Plans (CFMPs) for North Devon, West Somerset, Parrett and North & Mid Somerset. • The Severn Estuary Coastal Habitat Management Plan (CHaMP), which is informing the Severn Estuary Strategy (in prep.) • The Parrett Estuary Flood Risk Management Strategy (FRMS) • Severn Estuary Shoreline Management Plan

	The objectives of the RBMPs are focussed towards achieving 'good ecological status' of watercourses within the plan areas, in order to meet the requirements of the Water Framework Directive. The effects on internationally designated sites are therefore likely to be neutral or positive, and no in combination effects with the SMP are foreseen. It is not considered that there will be in-combination effects with CFMPs. The Appropriate Assessment for the North Devon CFMP considers potential effects on Braunton Burrows SAC and concludes that there will be no adverse effect on the integrity of the site as a result of CFMP policy. Similarly, the CFMPs for North and Mid Somerset and The Parrett have considered effects on the Severn Estuary European Sites and the Somerset Levels and Moors SPA / Ramsar site. It is concluded that measures resulting from the implementation of the CFMPs can incorporate appropriate protection for these sites, and that there will be no adverse effects on integrity. This SMP is adjacent to the Severn Estuary SMP2 study area. An HRA for this SMP2 is also being prepared and there is the potential for in-combination effects on the Severn Estuary European Sites, particularly cumulative and in-combination effects that could arise from coastal squeeze and habitat loss arising from footprint of defences. The Severn Estuary CHaMP and FCRM Strategy identify the potential habitat losses within the estuary as a result of sea level rise and the means by which these losses can be offset. The Strategy will reflect the policies of the SMP. For the Severn Estuary, therefore, it is considered that whilst no in-combination effects are foreseen with the Severn Estuary CHaMP and Strategy *per se*, all of these documents reflect the wider management proposals for the Seven Estuary, and this is the basis for the Stage 3 Appropriate Assessment for this SMP. The Appropriate Assessment for the Parrett Estuary FRMS identifies significant effects on the interest features of the Severn Designated sites as a result of coastal squeeze against coastal defences, resulting in the loss of saltmarsh and effects on wintering bird populations that it supports. The strategy has been approved on the grounds of imperative reasons of overriding public interest (IROPI). Compensatory habitat will be provided to offset these losses through managed realignment at Steart, Pawlett Hams or elsewhere.
c) In combination with permissions and/or plans/projects of other Competent Authorities?	**No** The following plans are considered to have the potential to interact with the policies of the SMP: • Draft Revised Regional Spatial Strategy for the South West • North Devon District Local Plan • Torridge District Local Plan • North Somerset Replacement Local Plan

	• Sedgemoor District Local Plan • West Somerset District Local Plan In all cases, however, it is considered that any-in combination effects would not be significant, as each plan contains policies that seek to protect and enhance biodiversity. This should therefore ensure that there are no significant effects on these sites. The Habitat Regulations Assessment for the Draft Revised Regional Spatial Strategy for the South West identifies the potential effects of coastal squeeze and port development on the Severn Estuary designated sites. However, it concludes that through the implementation of policy safeguards, the integrity of the sites can be protected. There is uncertainty regarding effects of water quality, water abstraction and air quality on these sites, but it is not considered that there would be a significant interaction between these effects, should they occur, and those from the SMP. A Harbour Revision Order has recently been granted for the creation of a new deep sea terminal at the Port of Bristol. The Appropriate Assessment for this development concluded that there would be a significant impact on the Severn Estuary designated sites, as a result of habitat loss and hydrodynamic changes, but that the project has been approved on the grounds of imperative reasons of overriding public interest (IROPI). Compensatory measures will be provided to ensure that the integrity of the site is maintained; these will include the creation of new intertidal habitat at the Steart Peninsula or elsewhere. New projects have been identified that have the potential to affect the designated sites. However, the detail of these projects is not yet known and no Habitat Regulations Assessment is available for them. These are the proposed expansion of Hinkley Point Nuclear Power Station, and industrial development at Avonmouth / Severnside. There is also the potential that proposals for Severn tidal power project may be brought forward in the future. However, as the detail of these schemes is not yet known the in-combination effects cannot be considered; it will be for those projects to consider in-combination effects once details are known and appropriate assessments undertaken, if required.
11.Conclusion: **Is the proposal likely to have a significant effect 'alone and/or in combination' on a European site?**	**Lundy SAC:** **Yes** There is the potential that reef and sandbank features could be affected by SMP policy. **Tintagel-Marlsand-Clovelly Coast SAC:** **No** No significant effects on the site are foreseen as a result of SMP policy. **Braunton Burrows SAC:** **Yes** SMP policy has the potential to affect geomorphological

	processes, which in turn may affect the interest features of the site. **Exmoor Heaths SAC:** **No** No significant effects on the site are foreseen as a result of SMP policy. **Severn Estuary SPA / Ramsar Site:** **Yes** SMP policy has the potential to affect the extent and distribution of habitats within the site, which in turn will affect the ability of the site to support wintering and passage bird species. **Severn Estuary SAC:** **Yes** SMP policy has the potential to affect the extent and distribution of habitats within the site. **Mendip Limestone Grasslands SAC:** No No significant effects on the site are foreseen as a result of SMP policy. **Somerset Levels and Moors SPA and Ramsar Site:** **Yes** Policies within the Severn Estuary that affect the availability of roosting and feeding habitat for birds that use the Somerset Levels and Moors have the potential to adversely affect these interest features.	
12. Justification for Reduced Consultation review process :	The SMP includes a thorough consultation process. An 'elected members forum' and 'key stakeholders forum' are consulted via meetings, emails and the internet. The Plan is also subject to a 3 month consultation period with the general public. Any potential impacts of policy implementation that arise from the SMP will be subject to further assessment at the strategy and/or project stages.	
13. Name of EA Officer:		**Date:**
14. <Natural England/CCW comment on assessment: (If the Natural England/CCW officer disagrees with the conclusion of 10c, please include details of the other Competent Authorities which should be consulted)>	For use when the Appendix 11 is to be sent to Natural England /CCW **for consultation**.	
15. <Name of Natural England/CCW Officer:>		**Date:**

Form HR02: Proforma for FRM stage 3 Appropriate Assessment

PART A: Technical Consideration

1 Table 1 – Plan summary

Type of plan:	Shoreline Management Plan (SMP)								
Site reference:	North Devon and Somerset Coast (Hartland Point to Anchor Head)								
Date, version and author	6 July 2010, Version 4, Ross Bower, Halcrow Group Ltd								
Plan Elements/Components (refs)	**Hazard (SMP)**								
	Habitat loss	**Changes in physical regime**	**Physical damage**	**Changes in turbidity**	**Habitat and community simplification**	**Disturbance**	**Changes in sediment supply**	**Watercourse modification**	**Shorter/longer duration of inundation**
SMP Plan Component assessed as having 'likely significant effect' (HR01)									
a) 'Hold the line' Apples in parts of coastal units A (Lundy SAC), C (Braunton Burrows SAC) and F/G/H (Severn Estuary SPA, Ramsar site and SAC).	✓	✓	✓	✓	✓	✓	✓	✓	✓
b) 'Managed realignment' Applies in parts of coastal units C (Braunton Burrows SAC) and F/G/H (Severn Estuary SPA, Ramsar site and SAC).	✓	✓	?	?	✓	?	✓	✓	✓

2 Table 2 – Features List:

Features (current status)	**Plan has associated hazards to which features are sensitive?**	**Details of Hazard (plan component reference)**
Lundy SAC		
Reefs	✓	• Habitat loss • Changes in sediment supply
Sandbanks which are slightly covered by sea water all the time [not a primary reason for selection of this site]	✓	• Habitat loss • Changes in sediment supply
Submerged or partially submerged sea caves [not a primary reason for selection of this site]	×	n/a
Grey seal *Halichoerus grypus* [not a primary reason for selection of this site]	×	n/a
Braunton Burrows SAC		

Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes)	✓	• Habitat loss / physical damage • Changes in physical regime • Habitat and community simplification • Disturbance • Changes in sediment supply • Shorter / longer duration of inundation
Fixed dunes with herbaceous vegetation (grey dunes)	✓	• Habitat loss / physical damage • Changes in physical regime • Habitat and community simplification • Disturbance • Changes in sediment supply • Shorter / longer duration of inundation
Dunes with *Salix repens* ssp.*argenta (Salicion arenariae)*	✓	• Habitat loss / physical damage • Changes in physical regime • Habitat and community simplification • Disturbance • Changes in sediment supply • Shorter / longer duration of inundation
Humid dune slacks	✓	• Habitat loss / physical damage • Changes in physical regime • Habitat and community simplification • Disturbance • Changes in sediment supply • Shorter / longer duration of inundation
Mudflats and sandflats not covered by seawater at low tide [not a primary reason for selection of this site]	✓	• Habitat loss / physical damage • Changes in physical regime • Habitat and community simplification • Disturbance • Changes in sediment supply • Shorter / longer duration of inundation
Petalwort *Petalophyllum ralfsii*	✓	• Habitat loss / physical damage • Changes in physical regime • Habitat and community simplification • Disturbance • Changes in sediment supply • Shorter / longer duration of inundation
Severn Estuary SPA & Ramsar Site		
SPA: Under Article 4.1 of the Directive (79/409/EEC): *Over winter;* • Bewick's Swan *Cygnus columbianus bewickii* Under Article 4.2 of the Directive (79/409/EEC): *On passage;* • Ringed Plover *Charadrius hiaticula* *Over winter;* • Curlew *Numenius arquata* • Dunlin *Calidris alpina alpina* • Pintail *Anas acuta* • Redshank *Tringa totanus* • Shelduck *Tadorna*	✓	• Habitat loss / physical damage • Changes in physical regime • Habitat and community simplification • Disturbance • Changes in sediment supply • Watercourse modification • Shorter / longer duration of inundation

tadorna Under Article 4.2 of the Directive (79/409/EEC) by regularly supporting at least 20,000 waterfowl: • Over winter, the area regularly supports 93,986 individual waterfowl (5 year peak mean 1991/2 - 1995/6). **Ramsar Site:** *Bird assemblages of international importance:* • 70919 waterfowl (5 year peak mean 1998/99-2002/2003) *Bird species with peak counts in winter:* • Tundra (Bewick's) swan *Cygnus columbianus bewickii* • Greater white-fronted goose *Anser albifrons albifrons* • Common shelduck *Tadorna tadorna* • Gadwall *Anas strepera strepera* • Dunlin *Calidris alpina alpina* • Common redshank *Tringa totanus totanus*		
Severn Estuary SAC & Ramsar Site		
• Estuaries • Mudflats and sandflats not covered by seawater at low tide • Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) (SAC and Ramsar site)	✓	• Habitat loss / physical damage • Changes in physical regime • Habitat and community simplification • Disturbance • Changes in sediment supply • Watercourse modification • Shorter / longer duration of inundation
Sandbanks which are slightly covered by sea water all the time [not a primary reason for selection of the SAC] (SAC and Ramsar site)	✓	• Habitat loss • Changes in physical regime • Changes in sediment supply
Reefs [not a primary reason for selection of this site] (SAC)	✓	• Habitat loss • Changes in physical regime • Changes in sediment supply
Migratory and resident fish populations (Ramsar Site) Sea Lamprey (SAC) River Lamprey (SAC) Twaite Shad (SAC)	×	n/a
Somerset Levels and Moors SPA and Ramsar Site		
SPA Under Article 4.2 of the	✓	• Habitat loss / physical damage • Changes in physical regime

Directive (79/409/EEC): Overwinter; • Teal *Anas crecca* • Lapwing *Vanellus vanellus* • internationally important assemblage of waterfowl **Ramsar Site** Assemblages of international importance species with peak counts in winter. Species occurring at internationally important levels. Species with peak counts in winter: • Bewick's swan *Cygnus columbianus bewickii* • Teal *Anas creecca* • Northern lapwing *Vanellus vanellus*		• Habitat and community simplification • Disturbance • Changes in sediment supply • Watercourse modification • Shorter / longer duration of inundation
Ramsar Site 17 species of British Red Data Book invertebrates.	×	n/a

3 Introduction

The North Devon and Somerset Coast SMP is a non-statutory policy document for coastal flood and erosion risk management planning. It takes account of other existing planning initiatives and legislative requirements, and is intended to inform wider strategic planning. The SMP does not set policy for anything other than coastal defence management.

The SMP promotes management policies for the coastline into the 22nd Century, to achieve long-term objectives, while being technically sustainable, environmentally acceptable and economically viable. It is, however, recognised that given the differences between short and long term objectives, changes to management policy in the short term may be unacceptable. Thus, the SMP provides an approach for meeting objectives through appropriate management change, i.e. a 'route map' for decision makers to move from the present situation towards the future.

The SMP covers the area between Hartland Point, in North Devon, and Anchor Head at Weston-Super-Mare in Somerset, and also includes Lundy Island. It will replace SMPs that covered this area in two parts; Hartland Point to Brean Down (including Lundy Island) (adopted 1998); and the Severn Estuary (Brean Down and Anchor Head)(adopted 2000).

The SMP area is divided into eight coastal units, and each of these is sub-divided into a total of 88 policy units, defined by geographical boundaries. Within each policy unit, an appraisal of four potential policy options has been undertaken:

- **Hold the Line**: defences are maintained and upgraded/replaced in their current position or renewed. "Renewed defences" refers to the construction of new, more robust defences, immediately landward of the existing shoreline. This may require some land take. The aim of this is to retain the existing character and form of the coast with minimal disruption while maintaining all existing assets. An example of how this could be implemented is by placing the new defences immediately behind those existing and planning for any losses that may be incurred.

- **Advance the Line**: new defences are built seaward of existing defences, involving a significant reclamation of land in the process.

- **Managed Realignment**: allow retreat (or advance) of the shoreline, with management to control or limit that movement. Any increase of flood risk will also be managed. This policy typically applies to low-lying areas at risk of flooding, but can equally apply to cliffed areas, whereby management intervention slows or limits cliff recession for a period of time.

- **No Active Intervention**: a decision not to invest in providing or maintaining any defences. Where there are presently no defences, this policy means that the shoreline will continue to evolve naturally. However, this policy can mean areas that are currently defended, may not be defended in the future, meaning such areas will be at increased risk of flooding and coastal erosion in the future.

Note that an 'advance the line' policy does not apply within any of the policy units likely to influence European sites.

Through the policy appraisal process, a preferred policy for each policy unit has been determined, based on fulfilment of objectives for a variety of human, biodiversity, historic environment and economic factors. The preferred policies have been considered over three epochs, to reflect the potential changes in environment and policy that are foreseen in coming decades. These are:

- **Short term**: present day to 20 years
- **Medium term**: 20 to 50 years
- **Long term**: 50 to 100 years

This assessment considers the impacts of the preferred policies on the interest features of European sites where a Likely Significant Effect could not be screened out at Stage 2 (HRO1). For the following European sites, it was considered that there was no Likely Significant Effect, and therefore no further assessment is being undertaken:

- Mendip Limestone Grasslands SAC
- Exmoor Heaths SAC
- Tintagel-Marlsand-Clovelly Coast SAC

The HRO1 has also concluded that there are no Likely Significant Effects on some interest features of European sites within the plan area, and similarly these are not being considered further (see Table 2).

4 Table 3 – Appendix 12: Proforma for Stage 3 (Appropriate Assessment Record)

Summarised Conclusions:

Hazard	Interest feature	Favourable condition target for relevant attribute[1] based on conservation objectives *(taken from underlying SSSI VAM plans or Regulation 33 advice)*	Contribution of attribute[1] to ecological structure and function of site	Contribution of management[2] or other unauthorised sources to attribute and /or feature condition	Adverse Effect of proposal alone and in-combination on attribute[1] and/or feature	CAN ADVERSE AFFECTS BE AVOIDED?	Adverse affect on integrity; long term, medium term, short term. Yes, No or uncertain?
Lundy SAC Applicable policies: 7c01 (Landing beach) 'hold the line' [all epochs] 7c02 (Lundy except landing beach) 'no active intervention' [all epochs] Condition assessment: n/a (SSSI and SAC boundaries not concurrent)							
• Habitat loss • Changes in sediment supply	1170 - Reefs	Favourable condition is dependent on extent of reef habitats, water quality (which includes clarity, temperature and salinity), and the range of biotopes present within the site.	Granite reefs are the most important marine habitat around Lundy. They are very varied in nature, extend well over 1 km offshore, and drop steeply into deep water in some areas. They are biologically extremely rich, and are considered some of the best examples of this habitat in the UK.	Anthropogenic influences are not significant in the management of this feature. In the past, fishing activities may have adversely affected reef habitats, but these are now controlled through the site's designation as a marine nature reserve. Activities that affect sediment supply and water quality may adversely affect reef habitats. This may include impediment to natural geomorphological processes, or pollution from agricultural pesticides and fertilisers.	- A policy of 'hold the line' at the Landing Beach has the potential to affect sediment supply, which could affect reef habitats by restricting sediment availability or smothering habitats where sediment levels increase. However, the Landing Beach occupies only a small section of the Lundy coastline, and this policy is unchanged from the existing; there is no evidence to suggest that this is adversely affecting this interest feature at present. Therefore, no adverse effects are foreseen. - A policy of 'no active intervention' applies around most of the Lundy coastline. This is unchanged from the existing policy, and will allow natural processes. No adverse effects on this interest feature are therefore foreseen as a result of this policy.	**Yes** Adverse effects are not foreseen.	**No**
• Habitat loss • Changes in sediment supply	1044 - Sandbanks which are slightly covered by sea water all the time [not a primary reason for selection of this site]	Favourable condition is dependent on: • Extent, community composition and age structure. • Availability of suitable substrates. • Supply of larvae. • Abundance of food in the water column.	Sandbanks on Lundy occur primarily on the more sheltered, eastern side of the island. They support species that are tolerant of the shifting seabed and scouring action of suspended sand, including a range of worms, shrimps, snails and bivalves. The species diversity of these habitats is often low but	Anthropogenic influences are not significant in the management of this feature. Activities that affect sediment supply and water quality may adversely affect sandbank habitats. This may include impediment to natural	- Where a 'hold the line' policy applies this has the potential to affect natural geomorphological processes, affecting sediment supply and distribution. However, the Landing Beach occupies only a small section of the Lundy coastline, and this policy is unchanged from the existing; there is no evidence to suggest that this is adversely affecting this interest feature.	**Yes** Adverse effects are not foreseen.	**No**

Hazard	Interest feature	Favourable condition target for relevant attribute[1] based on conservation objectives *(taken from underlying SSSI VAM plans or Regulation 33 advice)*	Contribution of attribute[1] to ecological structure and function of site	Contribution of management[2] or other unauthorised sources to attribute and /or feature condition	Adverse Effect of proposal alone and in-combination on attribute[1] and/or feature	CAN ADVERSE AFFECTS BE AVOIDED?	Adverse affect on integrity; long term, medium term, short term. Yes, No or uncertain?
			overall biomass can be high.	geomorphological processes, or pollution from agricultural pesticides and fertilisers.	Therefore, no adverse effects are foreseen. - A policy of 'no active intervention' applies around most of the Lundy coastline. This is unchanged from the existing policy, and will allow natural processes. No adverse effects on this interest feature are therefore foreseen as a result of this policy.		
Braunton Burrows SAC Applicable policies: 7c28 (Horsey Island to Crow Point): 'hold the line' in the short term, 'managed realignment' in the medium term and 'hold the line' (of the realigned defence) in the long term 7c29 (Crow Point & Crow Neck): 'managed realignment' for all epochs, although implementation of this will be dependent on investigations to its importance in protecting the wider estuary 7c30 (Braunton Burrows): 'no active intervention' [all epochs]. 7c07 (Northam Burrows): 'managed realignment' [all epochs] 7c08 (Skern saltmarsh to Appledore (west)): 'hold the line' [all epochs] Condition assessment: (Braunton Burrows SSSI) 23% favourable; 70% unfavourable recovering; 7% unfavourable declining							
• Habitat loss / physical damage • Changes in physical regime • Habitat and community simplification • Disturbance • Changes in sediment supply • Shorter / longer duration of inundation	• 2120 - Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) • 2130 - Fixed dunes with herbaceous vegetation (grey dunes) • 2170 - Dunes with *Salix repens* ssp.*argenta (Salicion arenariae)* • 2190 – Humid dune slacks • 1395 - Petalwort *Petalophyllum ralfsii*	- management should maintain the range of habitats and associated species reflecting the different stages of succession by maintaining, or restoring where necessary, the natural processes and dynamics of dune development and succession. - Selective scrub management and grazing or mowing may be necessary. - Management should aim to promote the creation of new slacks and avoid the artificial stabilisation of dunes. In particular the areas of bare ground associated with the early successional dune slacks on this site are important for a number of plant species including fen orchid, water germander and petalwort.	Maintenance of natural processes is critical in maintaining the quality and extent of dune habitats within the site, and the species that they support (including petalwort).	- Currently, dune habitats within the site are considered to be in 'favourable' or 'unfavourable recovering' condition. - Management may be required to control scrub or other invasive plant species. - Dune vegetation can be vulnerable to erosion from trampling or other disturbance. - Natural processes can be disrupted by activities such as construction of defences or abstraction of material. Disruption can be the result of activities within or outside of the site.	- A policy of 'hold the line' can constrain natural processes, and may therefore adversely affect the interest features of the site. However, such a policy will only apply in the short term in 7c25. The effects of a 'hold the line' policy at the Skern (7c08), which lies outside the site, are not known. As dune habitats within the site are considered to be in 'favourable' or 'unfavourable recovering' condition, it is considered that current policy is not significantly adversely affecting these interest features; no adverse effects are foreseen in the short term. - A policy of 'managed realignment' may allow natural processes to establish where they have previously been constrained. This should bring long-term benefits to the interest features of the site.	**Yes** Adverse effects are not foreseen.	**No**
• Habitat loss / physical damage • Changes in	1140 - Mudflats and sandflats not covered by	- Management should enable natural processes and ensure landward roll-	Estuarine habitats occur on the southern side of the site, at the mouth of the Taw-	Natural England has assessed the management unit at the	In the short term, a continued policy of 'hold the line' is being applied in unit 7c25 while further investigation	**Yes** No significant adverse effects are foreseen.	**No**

Hazard	Interest feature	Favourable condition target for relevant attribute[1] based on conservation objectives *(taken from underlying SSSI VAM plans or Regulation 33 advice)*	Contribution of attribute[1] to ecological structure and function of site	Contribution of management[2] or other unauthorised sources to attribute and /or feature condition	Adverse Effect of proposal alone and in-combination on attribute[1] and/or feature	CAN ADVERSE AFFECTS BE AVOIDED?	Adverse affect on integrity; long term, medium term, short term. Yes, No or uncertain?
physical regime • Habitat and community simplification • Disturbance • Changes in sediment supply • Shorter / longer duration of inundation	seawater at low tide [not a primary reason for selection of this site]	back can take place in response to sea-level rise. - Good water quality and sediment quality should be maintained, and sediment budget within the estuarine or coastal system should not be restricted by anthropogenic influences. - Significant disturbance to roosting and feeding birds should be avoided, particularly during periods of peak stress (e.g. severe winter weather).	Torridge estuary. They form an important transition between dune habitats and the estuary. This area is geomorphologically dynamic, and includes Crow Point, a sand spit.	southern end of the site as 'unfavourable declining' due to 'inappropriate coastal management'. This is due to the presence of rock armour along the spit, installed during the 1990s to prevent overtopping. The rock armour is thought to constrain natural processes.	of the options for managed realignment is undertaken. It is not thought that this short term policy would have a significant effect on mudflat and sandflat habitats. In the medium and long term, a 'managed realignment' policy should allow natural development of this feature.		
Severn Estuary SPA & Ramsar site Applicable policies: 7d30 (Lilstock to Hinkley Point): 'no active intervention' [all epochs] 7d31 (Hinkley Point): 'hold the line' [all epochs] 7d32 (Hinkley Point to Stolford): 'hold the line' in the short term, 'managed realignment' in the medium term and 'hold the line' (of the realigned defence) in the long term 7d33 (Stolford): 'hold the line' in the short term, 'managed realignment' in the medium term and 'hold the line' (of the realigned defence) in the long term 7d34 (Stolford to Wall Common): 'managed realignment' in the short term and 'hold the line' (of the realigned defence) in the medium to long term, or potentially 'no active intervention' in the long term 7d35 (Steart Village): 'hold the line' in the short term and 'no active intervention' in the medium and long term 7d36 (Steart Village to north of Combwich (line of national grid power lines)): 'hold the line' in the short term and 'no active intervention' in the medium and long term 7d37 (Parrett Estuary from line of national grid power lines to Combwich): 'hold the line' in the short term and 'no active intervention' in the medium and long term 7d38 (Combwich): 'hold the line' [all epochs] 7d39 (Combwich to Bridgwater (Parrett west)): 'hold the line' in the short and medium term, and 'managed realignment' in the long term 7d42 (Dunball to River Brue): 'hold the line' in the short term; 'managed realignment' along Pawlett Hams and hold the line' along Pawlett and Huntspill Levels in the medium term; and 'hold the line' (of the realigned defence) at Pawlett Hams / 'managed realignment' along Pawlett and Huntspill Levels in the long term 7d43 (Burnham-on-Sea and Highbridge): 'hold the line' [all epochs] 7d44 (Berrow to Brean (north): 'managed realignment' [all epochs] 7d45 (Brean (north) to Brean Down): 'hold the line' in the short and medium term, and 'no active intervention' in the long term 7d46 (Brean Down (south side)): 'no active intervention' [all epochs] 7e01 (Brean Down (north side) to Axe Estuary mouth (west): 'no active intervention' [all epochs] 7e02 (Axe Estuary left (west) bank (mouth to near Diamond Farm)): 'hold the line' in the short and medium term and 'managed realignment' in the long term 7e03 (Axe Estuary right (east) bank (near Diamond Farm to mouth)): 'hold the line' in the short term, 'managed realignment' in the medium term and 'hold the line' (of the realigned defence) in the long term 7e04 (Axe Estuary mouth to Uphill): 'hold the line' in the short term, 'managed realignment' in the medium term and 'hold the line' (of the realigned defence) in the long term 7e05 (Uphill to Weston-super-Mare (south)): 'managed realignment' [all epochs] 7e06 (Weston-super-Mare): 'hold the line' [all epochs] Condition assessment: Bridgwater Bay SSSI – 90% favourable; 8% unfavourable recovering; 1% unfavourable no change; 1% unfavourable declining Severn Estuary SSSI – 96% favourable; 2% unfavourable no change; 2% unfavourable declining							
• Habitat loss / physical damage • Changes in physical regime • Habitat and community simplification	SPA: Under Article 4.1 of the Directive (79/409/EEC): Over winter; • Bewick's Swan Cygnus	- Wintering and passage bird populations are dependent on an adequate supply of food and undisturbed areas where they can feed and roost during the tidal cycle.	The quality of estuarine habitats is critical to the internationally important bird populations that the Severn supports.	Estuarine habitats upon which birds are dependent do not usually require active management to maintain their interest. A variety of unauthorised human	- Where a 'hold the line' policy applies this will result in the progressive loss of intertidal habitat due to coastal squeeze. This will result in the modification or loss of habitat used by feeding and roosting birds. There may also be disturbance	**Partly** - Disturbance during maintenance or construction can be avoided, for example by timing works outside of key wintering / passage times for birds. - Progressive implementation of	**Yes - short, medium and long term**

Hazard	Interest feature	Favourable condition target for relevant attribute[1] based on conservation objectives *(taken from underlying SSSI VAM plans or Regulation 33 advice)*	Contribution of attribute[1] to ecological structure and function of site	Contribution of management[2] or other unauthorised sources to attribute and /or feature condition	Adverse Effect of proposal alone and in-combination on attribute[1] and/or feature	CAN ADVERSE AFFECTS BE AVOIDED?	Adverse affect on integrity; long term, medium term, short term. Yes, No or uncertain?
• Disturbance • Changes in sediment supply • Watercourse modification • Shorter / longer duration of inundation	columbianus bewickii Under Article 4.2 of the Directive (79/409/EEC): On passage; • Ringed Plover *Charadrius hiaticula* Over winter; • Curlew *Numenius arquata* • Dunlin *Calidris alpina alpina* • Pintail *Anas acuta* • Redshank *Tringa totanus* • Shelduck *Tadorna tadorna* Under Article 4.2 of the Directive (79/409/EEC) by regularly supporting at least 20,000 waterfowl: • Over winter, the area regularly supports 93,986 individual waterfowl (5 year peak mean 1991/2 - 1995/6). Ramsar Site: Assemblages of international importance: • 70919 waterfowl (5 year peak mean	Therefore, in order to maintain populations in a favourable condition, the extent and quality of feeding and roosting habitat should be maintained. Quality will include the availability of food prey (which will vary between species), water and sediment quality, and frequency of human disturbance.		activities may adversely affect bird populations, particularly through disturbance. This includes a variety of recreational activities such as jet skiing, bait digging and walking. Sediment / water quality, and hence prey availability, is sensitive to pollution, for example pesticides and fertilisers used both within and outside the site. Man-made features, such as flood banks or walls, have the potential to prevent natural movement of estuarine habitats, which may lead to a progressive loss of extent due to sea level rise / coastal squeeze. They may also affect bird populations by affecting sight lines; many birds seek areas where they have uninterrupted views so that they are able to maintain vigilance against predators, and will avoid areas where structures restrict visibility.	to birds during maintenance or construction of flood defence structures. This policy is restricted mainly to areas of human habitation. - Where a 'no active intervention' policy applies, this should enable natural processes, including the roll back of habitats where sea level rise results in the loss of intertidal areas. However, this may not be the case where habitats are constrained by natural features, such as hard cliffs. In this case, there may be a net loss of intertidal habitats, but it is not considered that this would be the result of SMP policy. - Where a 'managed realignment' policy applies, this will allow new intertidal habitat to be created, providing new areas where birds can feed or roost. This can mitigate for losses due to coastal squeeze, and has the potential to enhance the value of the designated sites. There may be temporary adverse effects during the managed realignment process, for example through disturbance where engineered structures are removed or modified, or during the likely 'settling in' period after realignment, where new habitats establish and, potentially, some localised areas of habitat are lost where water flow patterns change.	managed realignment policies would reduce the potential effects of sudden changes to water flow and geomorphology. For example, through creation of regulated tidal exchange initially, followed by full removal of defences. The appropriateness of different implementation policies will need to be considered on a case by case basis. - It may not be possible to avoid habitat loss due to coastal squeeze in all cases. Where this is the case, adverse effects on the designated bird populations may occur as a result of loss of foraging or roosting habitat. Where adverse effects are foreseen, it will be necessary to demonstrate that no alternative solutions exist and that the plan should be progressed due to imperative reasons of overriding public interest (IROPI). Through this process, it will also be necessary to demonstrate that appropriate compensation measures can be put in place to offset any habitat losses. New estuarine/intertidal habitat can be created through managed realignment, although in some cases it may not be possible to achieve an exact like-for-like replacement. This will be achieved through the *Severn Estuary Flood Risk Management Study Habitat Delivery Plan*, which is currently being developed by the Environment Agency. Further detail of this plan is provided below. In considering the effects on the designated features of Severn Estuary, it is important to consider the cumulative effects of the North Devon and Somerset SMP and the Severn Estuary SMP. Therefore, the delivery plan considers the estuary as a whole, rather than just those areas affected by this SMP. **Severn Estuary Flood Risk**	

<table>
<tr><th>Hazard</th><th>Interest feature</th><th>Favourable condition target for relevant attribute[1] based on conservation objectives (taken from underlying SSSI VAM plans or Regulation 33 advice)</th><th>Contribution of attribute[1] to ecological structure and function of site</th><th>Contribution of management[2] or other unauthorised sources to attribute and /or feature condition</th><th>Adverse Effect of proposal alone and in-combination on attribute[1] and/or feature</th><th>CAN ADVERSE AFFECTS BE AVOIDED?</th><th>Adverse affect on integrity; long term, medium term, short term. Yes, No or uncertain?</th></tr>
<tr><td></td><td>1998/99-2002/2003)
Species with peak counts in winter:
• Tundra (Bewick's) swan Cygnus columbianus bewickii
• Greater white-fronted goose Anser albifrons albifrons
• Common shelduck Tadorna tadorna
• Gadwall Anas strepera strepera
• Dunlin Calidris alpina alpine
• Common redshank Tringa totanus tetanus
[A037; A137; A160; A149; A054; A162; A048; and A394]</td><td></td><td></td><td></td><td></td><td>Management Study Habitat Delivery Plan:
This plan, currently being drafted by the Environment Agency, assesses habitat loss within the Severn Estuary due to flood risk management actions, through coastal squeeze and sea level rise. This change is predicted for 20, 50 and 100 years from a 2005 baseline, based on a conservative assessment of estimated sea level rise. The loss of the three key habitat types (mudflat & sandflat, saltmarsh and transitional grassland) has been calculated for each epoch. Note that transitional grassland is not a qualifying feature of the designated sites, and has not been included:

<table>
<tr><th rowspan="2">Habitat</th><th rowspan="2">2005 Area (ha)</th><th colspan="3">Change in Area (ha) compared to 2005 baseline</th></tr>
<tr><th>2025</th><th>2055</th><th>2105</th></tr>
<tr><td>Mudflat and Sandflat</td><td>20,216</td><td>-606</td><td>-1,212</td><td>-2,628</td></tr>
<tr><td>Saltmarsh</td><td>1,654</td><td>-33</td><td>-215</td><td>-1,042</td></tr>
<tr><td>Total Area</td><td>21,870</td><td>-639</td><td>-1,427</td><td>-3,670</td></tr>
</table>

A screening process has been undertaken to establish the potential areas for habitat creation in the estuary:

<table>
<tr><th></th><th colspan="3">Intertidal habitat creation opportunities</th></tr>
<tr><th></th><th>2025</th><th>2055</th><th>2105</th></tr>
<tr><td>Number of Sites</td><td>13</td><td>11</td><td>25</td></tr>
<tr><td>Area (ha)</td><td>2,492</td><td>1,300</td><td>3,768</td></tr>
<tr><td>Total area</td><td>2,492</td><td>3,792</td><td>7,560</td></tr>
</table>

In some cases, however, the delivery of these areas may not be achievable, and therefore a second screening exercise has been undertaken to identify a realistic habitat delivery programme for the next 20 years. This has concluded that:

• 4 priority sites can be progressed</td><td></td></tr>
</table>

Hazard	Interest feature	Favourable condition target for relevant attribute[1] based on conservation objectives *(taken from underlying SSSI VAM plans or Regulation 33 advice)*	Contribution of attribute[1] to ecological structure and function of site	Contribution of management[2] or other unauthorised sources to attribute and /or feature condition	Adverse Effect of proposal alone and in-combination on attribute[1] and/or feature	CAN ADVERSE AFFECTS BE AVOIDED?	Adverse affect on integrity; long term, medium term, short term. Yes, No or uncertain?
						within the next 10 to 20 years; Steart, Congresbury, Slimbridge and Awre. • These can provide potential habitat creation of between 550 and 700ha. This therefore provides the potential to meet the intertidal target for the Severn of 639ha. The Environment Agency will deliver habitat replacement through the SW Regional Habitat Creation Programme, and will aim to keep pace with habitat loss on a 1 to 1 basis in the long term.	
Severn Estuary SAC Applicable policies: See Severn Estuary SPA & Ramsar Site Condition assessment: See Severn Estuary SPA & Ramsar Site							
• Habitat loss / physical damage • Changes in physical regime • Habitat and community simplification • Disturbance • Changes in sediment supply • Watercourse modification • Shorter / longer duration of inundation	1130 – Estuaries 1140 - Mudflats and sandflats not covered by seawater at low tide 1330 - Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)	Favourable condition will be dependent on the extent and quality of estuarine habitats, and their ability to support the species that are dependent on them. Quality is dependent on good water and sediment quality, levels of disturbance to birds and other species, and the ability of the estuary to exhibit natural change.	The extent and quality of estuarine habitats is key to the integrity of the site and the important plant and animal populations that it supports, including internationally important bird populations.	Estuarine habitats do not usually require active management to maintain their interest. Saltmarsh habitats have traditionally been grazed, and may reduce in diversity if this is not maintained. Sediment / water quality is sensitive to pollution, for example pesticides and fertilisers used both within and outside the site. Man-made features, such as flood banks or walls, have the potential to prevent natural movement of estuarine habitats, which may lead to a progressive loss of extent due to sea level rise / coastal squeeze.	- Where a 'hold the line' policy applies this will result in the progressive loss or modification of intertidal habitat due to coastal squeeze. There may also be physical loss of habitat within the footprint of flood defence structures. This policy is restricted mainly to areas of human habitation. - Where a 'no active intervention' policy applies, this should enable natural processes, including the roll back of habitats where sea level rise results in the loss of intertidal areas. However, this may not be the case where habitats are constrained by natural features, such as hard cliffs. In this case, there may be a net loss of intertidal habitats, but it is not considered that this would be the result of SMP policy. - Where a 'managed realignment' policy applies, this will allow new intertidal habitat to be created, providing new areas where birds can feed or roost. This can mitigate for losses due to coastal squeeze, and has the potential to enhance the value of the designated site. There	**Partly** - Progressive implementation of managed realignment policies would reduce the potential effects of sudden changes to water flow and geomorphology. For example, through creation of regulated tidal exchange initially, followed by full removal of defences. The appropriateness of different implementation policies will need to be considered on a case by case basis. - It may not be possible to avoid habitat loss due to coastal squeeze in all cases, with saltmarsh habitats being particularly vulnerable as they lie in the upper section of the tidal range. Therefore, it will be necessary to progress the plan under IROPI, with compensatory habitat provided under the *Severn Estuary Flood Risk Management Study Habitat Delivery Plan* (see above for further detail), which is currently being developed by the Environment Agency.	**Yes – short, medium and long term**

Hazard	Interest feature	Favourable condition target for relevant attribute[1] based on conservation objectives *(taken from underlying SSSI VAM plans or Regulation 33 advice)*	Contribution of attribute[1] to ecological structure and function of site	Contribution of management[2] or other unauthorised sources to attribute and /or feature condition	Adverse Effect of proposal alone and in-combination on attribute[1] and/or feature	CAN ADVERSE AFFECTS BE AVOIDED?	Adverse affect on integrity; long term, medium term, short term. Yes, No or uncertain?
					may be temporary adverse effects during the managed realignment process, for example through disturbance where engineered structures are removed or modified, or during the likely 'settling in' period after realignment, where new habitats establish and, potentially, some localised areas of habitat are lost where water flow patterns change.		
• Habitat loss / physical damage • Changes in physical regime • Habitat and community simplification • Disturbance • Changes in sediment supply • Watercourse modification • Shorter / longer duration of inundation	1110 - Sandbanks which are slightly covered by sea water all the time [not a primary reason for selection of this site]	Favourable condition is dependent on: • Extent, distribution and composition of sandbank habitats and communities. • Distribution of sediment types across the site. • Depth, distribution and profile of sandbank features across the site.	Sandbanks within the Severn Estuary include some more permanent, stable areas and more mobile, ephemeral features. Sandbanks support species that are tolerant of the shifting seabed and scouring action of suspended sand, including a range of worms, shrimps, snails and bivalves. The species diversity of these habitats is often low but overall biomass can be high. Sandbanks also play an important role in holding and supplying sediment for other habitats; notably the intertidal mud and sandflats, saltmarshes and reef features and it is likely that subtidal invertebrate communities play a role as a food resource for some species of the fish assemblage feature of the SAC and Ramsar Site.	Anthropogenic influences are not significant in the management of this feature. Activities that affect sediment supply and water quality may adversely affect sandbank habitats. This may include impediment to natural geomorphological processes, or pollution from agricultural pesticides and fertilisers.	- Where a 'hold the line' policy applies this has the potential to affect sandbank habitats through the progressive effects of coastal squeeze. There is the potential that natural geomorphological processes could be constrained, affecting sediment supply and distribution. However, although there may be localised effects, it is considered unlikely that these would be significant in terms of the overall resource within the site. - Where a 'no active intervention' policy applies, this should enable natural processes, and no adverse effects on sandbank habitats would be expected due to SMP policy. - Where a 'managed realignment' policy applies, this should promote natural processes, and remove constraints that have previously existed. There is the potential that this could affect geomorphological processes, resulting in a change to sediment supply. However, such effects are likely to be localised and unlikely to be significant.	**Yes** - Any effects on sandbank habitats are likely to be localised and are unlikely to be significant.	**No** Any effects on sandbank habitats are likely to be localised and are unlikely to be significant.
• Habitat loss • Changes in physical regime • Changes in sediment supply	1170 - Reefs [not a primary reason for selection of this site]	Favourable condition is dependent on: • Extent, community composition and age structure. • Availability of suitable substrates.	The Severn Estuary has areas of biogenic reefs, formed by the tube-dwelling polychaete worm *Sabellaria alveolata*. *Sabellaria alveolata* reefs in the UK are predominantly an intertidal habitat but the	Anthropogenic influences are not significant in the management of this feature. Activities that affect sediment supply and	- Where a 'hold the line' policy applies this has the potential to affect reef habitats through the progressive effects of coastal squeeze. However, as this habitat occurs primarily within the subtidal zone the extent of such effects are likely to be localised, and	**Yes** - Any effects on reef habitats are likely to be localised and are unlikely to be significant.	**No** Any effects on reef habitats are likely to be localised and are unlikely to be significant.

Hazard	Interest feature	Favourable condition target for relevant attribute[1] based on conservation objectives *(taken from underlying SSSI VAM plans or Regulation 33 advice)*	Contribution of attribute[1] to ecological structure and function of site	Contribution of management[2] or other unauthorised sources to attribute and /or feature condition	Adverse Effect of proposal alone and in-combination on attribute[1] and/or feature	CAN ADVERSE AFFECTS BE AVOIDED?	Adverse affect on integrity; long term, medium term, short term. Yes, No or uncertain?
		• Supply of larvae. • Abundance of food in the water column.	Severn Estuary is one of the few places where *Sabellaria alveolata* reefs occur extensively in the subtidal, as well as the intertidal. These biogenic reefs tend to increase habitat diversity for other species, sometimes leading to higher species diversity within *Sabellaria* reefs compared to the surrounding sediment or rock habitats.	water quality may adversely affect reef habitats. This may include impediment to natural geomorphological processes, or pollution from agricultural pesticides and fertilisers.	unlikely to be significant. - Where a 'no active intervention' policy applies, this should enable natural processes, and no adverse effects on reef habitats would be expected due to SMP policy. - Where a 'managed realignment' policy applies, this should promote natural processes, and remove constraints that have previously existed. There is the potential that this could affect geomorphological processes, resulting in a change to sediment supply. However, such effects are likely to be localised and unlikely to be significant.		
Somerset Levels and Moors SPA & Ramsar site Applicable policies: n/a – site does not directly adjoin SMP boundary. Condition assessment: Catcott, Edington and Chilton Moors SSSI – 6% favourable; 5% unfavourable recovering; 89% unfavourable no change Curry and Hay Moors SSSI – 2% favourable; 98% unfavourable no change King's Sedgemoor SSSI – 27% favourable; 73% unfavourable no change Moorlinch SSSI – 16% favourable; 54% unfavourable recovering; 30% unfavourable no change Shapwick Heath SSSI – 72% favourable; 28% unfavourable recovering Southlake Moor SSSI – 99% favourable; 1% unfavourable no change Tealham and Tadham Moors SSSI – 11% favourable; 5% unfavourable recovering; 84% unfavourable no change West Moor SSSI – 3% favourable; 97% unfavourable recovering West Sedgemoor SSSI – 99% unfavourable recovering; 1% unfavourable no change Westhay Heath SSSI – 55% favourable; 45% unfavourable recovering Westhay Moor SSSI – 24% favourable; 3% unfavourable recovering; 73% unfavourable no change West Moor SSSI – 42% favourable; 39% unfavourable recovering; 19% unfavourable no change At this site unfavourable condition is principally as a result of water quality issues, such as high phosphate levels, as a result of agricultural activities.							
• Habitat loss / physical damage • Changes in physical regime • Habitat and community simplification • Disturbance • Changes in sediment supply • Watercourse modification	SPA: Under Article 4.2 of the Directive (79/409/EEC): Overwinter; • Teal *Anas crecca* • Lapwing *Vanellus vanellus* • internationally important	Favourable condition is dependent on the extent, quality and distribution of wetland / grazing marsh communities used by wintering birds and levels of human disturbance, particularly during periods of high stress (i.e. cold weather). Birds require adequate areas to feed and roost throughout daily and	The extent and quality of wetland habitats, and levels of human disturbance, are key to the survival of bird populations during the winter period. Birds will also be dependent on areas outside the designated site to provide feeding and roosting habitat, particularly on the Severn Estuary.	The site lies within the flood plains of a number of large rivers and drains with many areas below high tide levels. Peat extraction occurs over part of the site. This is not currently thought to pose a risk, and future extraction will be subject to controls under the Habitats Regulations. The	- It is not considered that SMP policies will have a significant effect on the designated features within the boundary of the site, which lies approximately 12km inland of SMP policy units at its closest point. - Where a 'hold the line' policy applies this is likely to result in coastal squeeze in the medium to long term, reducing the extent of intertidal habitat; This could	**Partly** – see Severn Estuary SPA / Ramsar site above.	**Yes - short, medium and long term**

Hazard	Interest feature	Favourable condition target for relevant attribute[1] based on conservation objectives *(taken from underlying SSSI VAM plans or Regulation 33 advice)*	Contribution of attribute[1] to ecological structure and function of site	Contribution of management[2] or other unauthorised sources to attribute and /or feature condition	Adverse Effect of proposal alone and in-combination on attribute[1] and/or feature	CAN ADVERSE AFFECTS BE AVOIDED?	Adverse affect on integrity; long term, medium term, short term. Yes, No or uncertain?
• Shorter / longer duration of inundation	assemblage of waterfowl Ramsar Site: Assemblages of international importance species with peak counts in winter. Species occurring at internationally important levels. Species with peak counts in winter: • Bewick's swan *Cygnus columbianus bewickii* • Teal *Anas creecca* • Northern lapwing *Vanellus vanellus*	seasonal cycles.		majority of land is farmed and under private ownership. Most farms have dairy or beef herds. Trends in agriculture and support schemes have a critical influence as improvement with conversion of grassland to arable, land drainage, increased applications of inorganic fertilisers and cutting of silage are major threats to vulnerable peat soils and the nature conservation value of the site. Less intensive practices are encouraged through the ESA scheme, WES and Section 15 agreements. Water Level Management is critical and is being addressed through the Water Level Management Plans process and the development of Raised Water Level Areas and Environmentally Sensitive Area (ESA).	adversely affect feeding and roosting habitats on the Severn Estuary which support bird populations on the site, potentially altering bird population size, density and distribution on the Somerset Levels and Moors.		

Notes:
1 ATTRIBUTE = Quantifiable aspects of interest features (subject to natural variation in some cases) that can be used to help define favourable condition for that feature. See Site Conservation Objectives
2 MANAGEMENT = in this context management refers to management of the European site
3 If uncertain consider time-limited consent, or other legally enforceable modifications

Stage 3 Environment Agency conclusion

Can it be ascertained that the plan will not adversely affect the integrity of the European site(s)?

No

This assessment had been carried out considering the likely effects of the implementation of policies identified in the draft North Devon and Somerset Coast Shoreline Management Plan (SMP) alone and in-combination, on site integrity of a number of European sites. The policies, are, by their nature, high level and lack specific detail. However, in the absence of mitigation there is the potential that interest features, and hence the integrity of some European sites, may be adversely affected. The Stage 3 Appropriate Assessment makes the following conclusions for those sites and features 'scoped in' by the Stage 2 assessment:

- **No adverse effects** are foreseen for **Lundy SAC** and **Braunton Burrows SAC**.

- **No adverse effects** are foreseen for **reef and sandbank features** designated within the **Severn Estuary SAC**.

- There would be a **potentially adverse effect** on estuary, mudflat and Atlantic salt meadow habitats designated within the **Severn Estuary SAC**, the wintering and passage bird populations that these support designated within the **Severn Estuary SPA and Ramsar site** and wintering bird populations within the **Somerset Levels and Moors SPA and Ramsar site**.

The predicted adverse effects will be as a result of coastal squeeze, causing the progressive loss of habitats and their associated species through sea level rise against coastal defences. In order for the plan to be progressed, therefore, it will be necessary to demonstrate that no alternative solutions exist and that the plan is necessary due to imperative reasons of overriding public interest. Through this process, it will also be necessary to demonstrate that appropriate compensation measures can be put in place to offset any habitat losses. New estuarine/intertidal habitat can be created through managed realignment and this will be achieved through the *Severn Estuary Flood Risk Management Study Habitat Delivery Plan*, which is currently being developed by the Environment Agency. The Coastal Group will be committed to ensuring that such measures are implemented to ensure that there are no net adverse effects on integrity of European sites as a result of SMP policy.

This assessment at the plan level does not remove the need for an assessment at the project level. This SMP has been signed off as setting the strategic direction for managing coastal flood risk, on the basis that it cannot be put into effect until more detailed appraisal and assessment has taken place on plans or projects arising out of this SMP to show it and they have met the requirements of the Habitats Regulations.

If a project is not consistent with the plan then a new Habitats Regulations Assessment may well be required. Furthermore, a project may be entirely consistent with this plan but still require further Appropriate Assessment as detail emerging at the scheme-design stage may identify additional impacts that have not been assessed here. Any project arising out of the plan will ensure any adverse effects on integrity of European site are avoided.

Name of EA officer undertaking appropriate assessment:
Signed: **Date:**

Endorsed by (if appropriate)

EN/CCW COMMENTS ON APPROPRIATE ASSESSMENT:
IS THERE AGREEMENT WITH THE CONCLUSION? YES/NO
(Please provide summary and explanation for answer given)

Signed: (EN local team manager/ CCW area officer) **Date:**

PART B: Final Appropriate Assessment Record

- North Devon and Somerset Coast Shoreline Management Plan
- 7th May 2010

This is a record of the appropriate assessment required by Regulation 61 of the Conservation of habitats and Species regulations 2010, undertaken by the Environment Agency in respect of the above plan, in accordance with the Habitats Directive (Council Directive 92/43/EEC). Having considered that the plan would be likely to have a significant effect on Lundy SAC, Braunton Burrows SAC and Severn Estuary SAC, SPA and Ramsar Site and that the plan was not directly connected with or necessary to the management of the sites for nature conservation, an appropriate assessment has been undertaken of the implications of the proposal in view of the site's conservation objectives.

*Natural England was consulted under Regulation 61 on [date] and their representations, to which the Agency has had regard, are attached at Annex 1. The conclusions of this appropriate assessment **are / are not** in accordance with the advice and recommendations of Natural England".*

The assessment has concluded that, providing avoidance measures are put in place as set out in Table 3:

- The plan as proposed **can** be shown to have **no adverse effect** on the integrity of Lundy SAC and Braunton Burrows SAC.
- The plan as proposed is shown to have a **potentially adverse effect** on the Severn Estuary SPA, SAC and Ramsar site.

Signed (relevant Area Management Team member) and date.

Appendix D – Summary of Features Potentially Adversely Affected by the SMP2s

This table summarises the features which were identified within the Appropriate Assessment as potentially being adversely affected by the SMP2s. Features potentially affected and relevant conservation objectives for these features are provided. A full list of features and their conservation objectives can be found in Appendix E.

Severn SPA			
Feature	**Supporting Habitat and Attribute**	**Relevant Conservation Objectives**	**Impact Identified in Appropriate Assessment**
Bewick's swan	All species: Lowland wet grasslands used at various times of day for feeding and roosting. **Bewick Swan** are mainly found in upper Severn around Slimbridge. They are dependent on the saltmarsh habitats and often graze on a range of 'soft' meadow grasses found in the wet meadows and more recently have taken to foraging on agricultural land in particular waste root crops, grain stubbles and winter cereals. Key supporting habitats: Intertidal mudflats and sandflats , saltmarsh Bewick Swan : dependent on the saltmarsh habitats and often graze on a range of 'soft' meadow grasses found in the wet meadows. Key supporting habitats: Intertidal mudflats and sandflats, saltmarsh	**Bewick Swan** ii) the extent of saltmarsh at the Dumbles is maintained; (iii) the extent of intertidal mudflats and sandflats at Frampton Sands, Waveridge Sands and the Noose is maintained; (iv) the extent of vegetation with an effective field size of >6 ha and with unrestricted bird sightlines > 500m at feeding, roosting and refuge sites are maintained; (v) greater than 25% cover of suitable soft leaved herbs and grasses in winter season throughout the transitional saltmarsh at the Dumbles is maintained;	In areas where no active intervention and /or MR are proposed increased inundation, changes in physical processes and increased salinity may affect lowland grassland or freshwater habitats which the birds use for feeding and roosting particularly affecting population distribution and densities across the estuary A Hold the Line Policy is likely to result in coastal squeeze in the short, medium and long term, reducing the extent of intertidal habitat; this could reduce the suitability of areas for bird feeding and roosting potentially affecting population distribution and densities across the estuary**.**
Internationally important populations of migratory occurring migratory bird species: European white-fronted goose Dunlin (Redshank Shelduck Gadwall Curlew Pintail Ringed plover internationally important assemblages of waterfowl populations	**Redshank and dunlin** are distributed widely and feed throughout the estuary on marine polychaete worms, crustaceans and molluscs. They frequently feed along undisturbed strandlines throughout the estuary. Dunlin are found mostly on the mid shore whereas redshank are more thinly distributed and are often found in smaller groups in the creeks and sub-estuaries. The Severn has the third largest wintering population of Dunlin in Britain. Feeding flocks are widely distributed around the estuary particularly downstream of the first Severn Bridge, with particular concentrations at Rhymney/Peterstone, Uskmouth, Welsh Grounds, Undy, Clevedon and Bridgwater Bay. There are notable concentrations of redshank at the mouths of the Rhymney, Wye, Avon and Parrett rivers **Dunlin & Redshank**: Key supporting habitats: Intertidal mudflats and sandflats, saltmarsh and hard substrate habitats (rocky shores) **European white fronted goose**: key supporting habitats: Intertidal mudflats and sandflats and saltmarsh **Gadwall** are predominantly a freshwater species preferring the wetland habitats that occur within the SPA behind the flood defences	**Other relevant Species:** **Dunlin redshank,** the extent of saltmarsh and associated strandlines is maintained; (iii) the extent of intertidal mudflats and sandflats is maintained; (iv) the extent of hard substrate habitats is maintained; (v) the extent of vegetation with a sward height of <10cm is maintained throughout the saltmarsh ; (vi) the abundance and macro-distribution of suitable invertebrates in intertidal mudflats and sandflats is maintained; (vii) the abundance and macro-distribution of suitable invertebrates in hard substrate habitats) is maintained; (viii) unrestricted bird sightlines of >200m at feeding and roosting sites are maintained; **Internationally important aseimblages of wildfowl** (viii) greater than 25% cover of suitable soft leaved herbs	

	most notably the freshwater wetlands at Slimbridge and Bridgwater bay. However, they do make use of the estuary but this is largely restricted to areas where freshwater flows come into the estuary, particularly larger pills and rivers- most notably at Avonmouth, between the two Severn Bridges and at Woodspring and Weston Bays. **Pintail** are widely distributed around the estuary with a notable concentration at the New Grounds. Pintail are also found at Peterstone/Rhymney **Shelduck**: Key supporting habitats: Intertidal mudflats and sandflats, saltmarsh, hard substrate habitats (rocky shores) **Gadwall:** Key supporting habitats Intertidal mudflats and sandflats	and grasses during the winter on saltmarsh areas is maintained; (ix) unrestricted bird sightlines of >500m at feeding and roosting sites are maintained; **European white-fronted goose:** (ii) the extent of saltmarsh at the Dumbles is maintained; (iii) the extent of intertidal mudflats and sandflats at Frampton Sands, Waveridge Sands and the Noose : is maintained; (iv) greater than 25% cover of suitable soft-leaved herbs and grasses is maintained during the winter on saltmarsh areas; (v) unrestricted bird sightlines of >200m at feeding and roosting sites are maintained; **Shelduck**: (i) the extent of saltmarsh is maintained; (ii) the extent of intertidal mudflats and sandflats is maintained; (iii) the extent of hard substrate habitats is maintained; (iv) the abundance and macro-distribution of suitable invertebrates in intertidal mudflats and sandflats is maintained; (v) the abundance and macro-distribution of suitable invertebrates in intertidal mudflats and sandflats is maintained; (vi) unrestricted bird sightlines of >200m at feeding and roosting sites are maintained; **Gadwall:** (ii) the extent of intertidal mudflats and sandflats is maintained; (iii) unrestricted bird sightlines of >200m at feeding and roosting sites are maintained; (iv) aggregations of gadwall at feeding or roosting sites are not subject to significant disturbance. Conservation objectives specifically for pintail curlew, or ringed plover are not available.	

Severn Estuary Ramsar			
Feature	**Supporting Habitat and Attribute**	**Relevant Conservation Objetives**	**Impact Identified in Appropriate Assessment**
Estuarine and Intertidal habitats	**Estuaries:** The Estuary is an over-arching feature which incorporates all aspects of the physical, chemical and biological attributes of the estuary as an ecosystem. The physical nature of the tidal regime determines not only the structure of the estuary and individual habitats but also the conditions affecting it and the biological communities it therefore supports. It is one of the largest and most important in Britain and its range of habitats provide an ecosystem of great importance for a wide range of fish and bird species – for feeding, breeding, resting and migration. **Intertidal Mudflats and Sandflats:** The intertidal part of the Severn Estuary supports extensive mudflats and sandflats, covering approximately 20,300 ha - the fourth largest area in a UK estuary and representing approximately 7 % of the total UK resource of this habitat type (approximately 10% of the UK Natura 2000 resource for Intertidal mudflats and sandflats, by area. The habitat feature is distributed throughout the Severn Estuary with extensive mudflats fronting the Welsh shore and Bridgwater Bay, and large banks of clean sands in the more central parts of the estuary at Middle and Welsh Grounds. It is influenced by strong tidal streams and extreme silt loading. Gravel and clean sand communities occur predominantly in the mid and upper parts of the estuary forming large banks in the centre the estuary (Frampton Sands, Lydney Sands, Oldbury Sands, Bedwyn Sands and the Welsh Grounds) through which the main tidal channel flows keeping sediments mobile. Sandy mud communities occur in restricted locations forming the transition between the clean sand and mud communities particularly in the mid estuary and at the lowest extremes of the tide and at the flanks of the main channel. Mud communities form in the sheltered edges of the estuary particularly where the coastline forms natural embayments and are predominantly found in the mid to outer estuary at Bridgewater Bay and on the Cardiff and Newport frontages although a narrow fringe of these communities is present throughout the estuary. These communities take the form of firm mud banks adjacent to the saltmarshes often with a liquid mud surface kept fluid by the high tidal currents. Intertidal mudflats and sandflats support a variety of different wildlife communities. These are predominantly infaunal communities of a variety of different animal species such as worms, molluscs and crustaceans living within the sediment habitat. The type of	Maintain the feature in favourable condition as defined by the conservation objectives outlined for the SAC fearure	A Hold the Line Policy is likely to result in coastal squeeze in the short, medium and long term, reducing the extent of intertidal habitat; this could reduce the

	sediment, its stability and the salinity of the water have a large influence on the wildlife species present. The high biomass of invertebrates in the mudflats of the Severn provide an important food source for a diverse range and large number of fish and benthic predators. These intertidal areas are therefore important in supporting the fish assemblage subfeature of the Ramsar Site Mudflats also provide a valuable feeding, roosting and resting area for a wide range of species of wading birds and waterfowl and are therefore important supporting habitats for the wintering and passage bird features of the Ramsar Site Atlantic Salt Meadow The Severn Estuary holds the largest aggregation of saltmarsh in the south and south-west of the UK. It covers approximately 1,400 ha, representing about 4% of the total area of saltmarsh in the UK (Dargie, 2000). Saltmarshes and mudflats have an important role to play both through the recycling of nutrients and as soft sea defences, dissipating wave energy. They are highly productive biologically, providing organic material that support other features within the marine ecosystem and they also have an important physical role, acting as a sediment store to the estuary as a whole. Saltmarshes also provide a valuable feeding and roosting and resting areas (particularly at high tide) for a wide range of species of waterfowl and are therefore very important supporting habitats for the wintering and passage bird features of the SPA and Ramsar Site. The habitats within the “pills” provide important shelter and feeding habitats for both fish and bird species. The Severn Estuary saltmarshes are generally grazed by sheep and/or cattle. Grazing is a significant factor in determining the plant communities found within them and their value for dependant species such as birds and rare plants.		suitability of areas for bird feeding and roosting potentially affecting population distribution and densities across the estuary**.**
Waterbirds: Species with peak counts in winter: Bewick’s swan, European white-fronted goose, Dunlin, Redshank, Shelduck Gadwall, Ringed plover, Teal, Pintail Lesser black-backed gull, Pochard, Tufted Duck, Grey Plove,r Curlew, Whimbrel,Wigeon	See relevant Supporting Habitat and Attribute for Severn SPA	Maintain the feature in favourable condition as defined by the conservation objectives outlined for the SPAfeature	

Severn SAC			
Feature	**Supporting Habitat and Attribute**	**Relevant Conservation Objectives**	**Impact Identified in Appropriate Assessment**
Estuarine and Intertidal habitats	See relevant Supporting Habitat and Attribute for Severn Ramsar	**Estuaries:** Maintain feature in favourable condition by meeting the following conditions: i. the total extent of the estuary is maintained; ii. the characteristic physical form (tidal prism/cross sectional area) and flow (tidal regime) of the estuary is maintained; iii. the characteristic range and relative proportions of sediment sizes and sediment budget within the site is maintained; iv. the extent, variety and spatial distribution of estuarine habitat communities within the site is maintained; v. the extent, variety, spatial distribution and community composition of hard substrate habitats and their notable communities is maintained; vi. the abundance of the notable estuarine species assemblages is maintained or increased; vii. the physico-chemical characteristics of the water column support the ecological objectives described above; viii. Toxic contaminants in water column and sediment are below levels which would pose a risk to the ecological objectives described above. ix. Airborne nutrient and contaminant loads are below levels which would pose a risk to the ecological objectives described above **Mudflats and Sandflats**: The feature will be considered to be in favourable condition when, subject to natural processes, each of the following conditions are met: i. The total extent of the mudflats and sandflats feature is maintained; ii. the variety and extent of individual mudflats and sandflats communities within the site is maintained; iii. the distribution of individual mudflats and sandflats communities within the site is maintained; iv. the community composition of the mudflats and sandflats feature within the site is maintained; v. the topography of the intertidal flats and the morphology (dynamic processes of sediment movement and channel migration across the flats) are maintained. **Atlantic Salt Meadow**: The feature will be considered to be in favourable condition when, subject to natural processes, each of the following conditions are met: i. the total extent of Atlantic salt meadow and associated transitional vegetation communities within the site is maintained; ii. the extent and distribution of the individual Atlantic salt meadow and associated transitional vegetation communities within the site is maintained; iii. the zonation of Atlantic salt meadow vegetation communities and their associated transitions to other estuary habitats is maintained; iv. the relative abundance of the typical species of the Atlantic salt meadow and associated transitional vegetation communities is maintained; v. the abundance of the notable species of the Atlantic salt meadow and associated transitional vegetation communities is maintained.	A Hold the Line Policy is likely to result in coastal squeeze in the short, medium and long term, reducing the extent of intertidal habitat; this could reduce the suitability of areas for bird feeding and roosting potentially affecting population distribution and densities across the estuary**.**

		vi. the structural variation of the salt marsh sward (resulting from grazing) is maintained within limits sufficient to satisfy the requirements of conditions iv and v above and the requirements of the Ramsar and SPA features vii. the characteristic stepped morphology of the salt marshes and associated creeks, pills, drainage ditches and pans, and the estuarine processes that enable their development, is maintained. viii Any areas of *Spartina anglica* salt marsh (SM6) are capable of developing naturally into other saltmarsh communities.	

Somerset Levels and Moors SPA			
Feature	**Supporting Habitat and Attribute**	**Relevant Conservation Objectives**	**Impact Identified in Appropriate Assessment**
Supports species of birds overwinter: Bewick's Swan, Golden Plover, Teal, Lapwing	The site lies within the flood plains of a number of large rivers and drains with many areas below high tide levels. Peat extraction occurs over part of the site. This is not currently thought to pose a risk, and future extraction will be subject to controls under the Habitats Regulations. The majority of land is farmed and underprivate ownership. Most farms have dairy or beef herds. Trends in agriculture and support schemes have a critical influence as improvement with conversion of grassland to arable, land drainage, increased applicationsof inorganic fertilisers and cutting of silage are major threats to vulnerable peat soils and the natureconservation value of the site. Less intensive practices are encouraged through the ESA scheme, WES and Section 15 agreements. Water Level Management is critical and is being addressed through the Water Level Management Plans process and the development of Raised Water Level Areas and Environmentally Sensitive Area (ESA).	The Somerset Levels and Moors SPA and Ramsar sites comprise twelve constituent SSSIs. The conservation objectives for these SSSIs are summarised below: To maintain at, or restore to, favourable conservation status, the natural habitats and/or the species for which the site has been selected. The conservation status of a species is defined as favourable when the population, range and natural habitats of the species are stable or increasing. **Targets** In relation to the bird species the following targets must be reached to achieve a favourable condition: • Maintain wet grassland with rhynes and ditches; • No significant displacement of birds attributable to human disturbance • Daytime feeding areas and roosting areas within c50 metres of each other; • No significant reduction in view lines in feeding and roosting areas; • No significant reduction in presence and abundance of food species; • No significant reduction in extent of short vegetation areas for feeding and longer vegetation for roosting; • No significant reduction in reedbed, fen, swamp and open water communities; • Maintain water levels at summer pen which supports reedbed, fen, swamp and open water communities; • Maintain differential margin lengths for corresponding area of open water and area of swamp. Targets may vary slightly depending on component site except the first six bullet points remain constant throughout.	A Hold the Line Policy is likely to result in coastal squeeze in the medium to long term, reducing the extent of intertidal habitat; This could adversely affect feeding and roosting habitats which support bird populations on the site potentially altering bird population size, density and distribution on the Somerset Levels and Moors. KIN 3 is the only frontage along this policy unit with a HTL policy. There is the potential for intertidal habitat loss along the frontage of KIN3.
Internationally important assemblage of waterfowl populations			A Hold the Line Policy is likely to result in coastal squeeze in the medium to long term, reducing the extent of intertidal habitat; This could adversely affect feeding and roosting habitats which support bird populations on the site potentially altering bird population size, density and distribution on the Somerset Levels and Moors. KIN 3 is the only frontage along this policy unit with a HTL policy. There is the potential for intertidal habitat loss along the frontage of KIN3.

Somerset Levels and Moors Ramsar			
Feature	**Supporting Habitat and Atribute**	**Relevant Conservation Objectives**	**Impact Identified in Appropriate Assessment**
Assemblages of international importance species with peak counts in winter	The site lies within the flood plains of a number of large rivers and drains with many areas below high tide levels. Peat extraction occurs over part of the site. This is not currently thought to pose a risk, and future extraction will be subject to controls under the Habitats Regulations. The majority of land is farmed and under private ownership. Most farms have dairy or beef herds. Trends in agriculture and support schemes have a critical influence as improvement with conversion of grassland to arable, land drainage, increased applicationsof inorganic fertilisers and cutting of silage are major threats to vulnerable peat soils and the nature conservation value of the site. Less intensive practices are encouraged through the ESA scheme, WES and Section 15 agreements. Water Level Management is critical and is being addressed through the Water Level Management Plans process and the development of Raised Water Level Areas and Environmentally Sensitive	The Somerset Levels and Moors SPA and Ramsar sites comprise twelve constituent SSSIs. The conservation objectives for these SSSIs are summarised below: To maintain at, or restore to, favourable conservation status, the natural habitats and/or the species for which the site has been selected. The conservation status of a species is defined as favourable when the population, range and natural habitats of the species are stable or increasing. **Targets** In relation to the bird species the following targets must be reached to achieve a favourable condition: • Maintain wet grassland with rhynes and ditches; • No significant displacement of birds attributable to human disturbance • Daytime feeding areas and roosting areas within c50 metres of each other; • No significant reduction in view lines in feeding and roosting areas; • No significant reduction in presence and abundance of food species; • No significant reduction in extent of short vegetation areas for feeding and longer vegetation for roosting; • No significant reduction in reedbed, fen, swamp and open water communities; • Maintain water levels at summer pen which supports reedbed, fen, swamp and open water communities; • Maintain differential margin lengths for corresponding area of open water and area of swamp. Targets may vary slightly depending on component site except the first six bullet points remain constant throughout.	A Hold the Line Policy is likely to result in coastal squeeze in the medium to long term, reducing the extent of intertidal habitat; This could adversely affect feeding and roosting habitats which support bird populations on the site potentially altering bird population size, density and distribution on the Somerset Levels and Moors. KIN 3 is the only frontage along this policy unit with a HTL policy. There is the potential for intertidal habitat loss along the frontage of KIN3.
Species occurring at internationally important levels. Species with peak counts in winter: Bewick's swan, Teal, Northern lapwing			A Hold the Line Policy is likely to result in coastal squeeze in the medium to long term, reducing the extent of intertidal habitat; This could adversely affect feeding and roosting habitats which support bird populations on the site potentially altering bird population size, density and distribution on the Somerset Levels and Moors. KIN 3 is the only frontage along this policy unit with a HTL policy. There is the potential for intertidal habitat loss along the frontage of KIN3.

Appendix E - Full list of Features and their Conservation Objectives

Severn SPA	
Interest feature	**Conservation Objectives**
Bewick's Swan	Bewick's Swan: (i) the 5 year peak mean population size for the Bewick's swan population is no less than 289 individuals (ie the 5 year peak mean between 1988/9 - 1992/3); (ii) the extent of saltmarsh at the Dumbles is maintained; (iii) the extent of intertidal mudflats and sandflats at Frampton Sands, Waveridge Sands and the Noose is maintained; (iv) the extent of vegetation with an effective field size of >6 ha and with unrestricted bird sightlines > 500m at feeding, roosting and refuge sites are maintained; (v) greater than 25% cover of suitable soft leaved herbs and grasses in winter season throughout the transitional saltmarsh at the Dumbles is maintained; (vi) aggregations of Bewick's swan at feeding, roosting and refuge sites are not subject to significant disturbance.
Internationally important populations of regularly occurring migratory bird species (European white-fronted goose Dunlin Redshank Shelduck Gadwall Curlew, Pintail, Ringed plover) **Internationally important assemblages of waterfowl populations**	**Dunlin**: (i)the 5 year peak mean population size for the wintering dunlin population is no less than 41,683 individuals (i.e. the 5 year peak mean between 1988/9 - 1992/3); (ii) the extent of saltmarsh and associated strandlines is maintained; (iii) the extent of intertidal mudflats and sandflats is maintained; (iv) the extent of hard substrate habitats is maintained; (v) the extent of vegetation with a sward height of <10cm is maintained throughout the saltmarsh ; (vi) the abundance and macro-distribution of suitable invertebrates in intertidal mudflats and sandflats is maintained; (vii) the abundance and macro-distribution of suitable invertebrates in hard substrate habitats) is maintained; (viii) unrestricted bird sightlines of >200m at feeding and roosting sites are maintained; (ix) aggregations of dunlin at feeding or roosting sites are not subject to significant disturbance. **Redshank**: (i) the 5 year peak mean population size for the wintering redshank population is no less than 2,013 individuals (ie the 5 year peak mean between 1988/9 - 1992/3); (ii) the extent of saltmarsh and associated strandlines is maintained; (iii) the extent of intertidal mudflats and sandflats) is maintained; (iv) the extent of hard substrate habitats) is maintained; (v) the extent of vegetation with a sward height of <10cm throughout the saltmarsh (Appendix 8) is maintained; (vi) the abundance and macro-distribution of suitable invertebrates in intertidal mudflats and sandflats is maintained; (vii) the abundance and macro-distribution of suitable invertebrates in hard substrate habitats is maintained; (viii) unrestricted bird sightlines of >200m at feeding and roosting sites are maintained; ix) aggregations of redshank at feeding or roosting sites are not subject to significant disturbance.

Severn SPA	
Interest feature	**Conservation Objectives**
	Shelduck: (i) the extent of saltmarsh is maintained; (ii) the extent of intertidal mudflats and sandflats is maintained; (iii) the extent of hard substrate habitats is maintained; (iv) the abundance and macro-distribution of suitable invertebrates in intertidal mudflats and sandflats is maintained; (v) the abundance and macro-distribution of suitable invertebrates in intertidal mudflats and sandflats is maintained; (vi) unrestricted bird sightlines of >200m at feeding and roosting sites are maintained; (vii) aggregations of shelduck at feeding or roosting sites are not subject to significant disturbance. **Gadwall:** (i) the 5 year peak mean population size for the wintering gadwall population is no less than 330 (ie the 5 year peak mean between 1988/9 - 1992/3); (ii) the extent of intertidal mudflats and sandflats is maintained; (iii) unrestricted bird sightlines of >200m at feeding and roosting sites are maintained; (iv) aggregations of gadwall at feeding or roosting sites are not subject to significant disturbance. Conservation objectives specifically for pintail, curlew or ringed plover are not available. Internationally important assemblage of waterfowl: (i) the 5 year peak mean population size for the waterfowl assemblage is no less than 68,026 individuals (ie the 5 year peak mean between 1988/9 - 1992/3); (ii) the extent of saltmarsh and their associated strandlines is maintained; (iii) the extent of intertidal mudflats and sandflats is maintained; (iv) the extent of hard substrate habitats is maintained; (v) extent of vegetation of <10cm throughout the saltmarsh is maintained; (vi) the abundance and macroscale distribution of suitable invertebrates in intertidal mudflats and sandflats is maintained; (vii) the abundance and macroscale distribution of suitable invertebrates in hard substrate habitats is maintained; (viii) greater than 25% cover of suitable soft leaved herbs and grasses during the winter on saltmarsh areas is maintained; (ix) unrestricted bird sightlines of >500m at feeding and roosting sites are maintained; (x) waterfowl aggregations at feeding or roosting sites are not subject to significant disturbance

Severn Estuary Ramsar	
Interest Feature	**Conservation Objectives**
1.12 Estuarine and Intertidal habitats	Maintain the feature in favourable condition as defined by the conservation objectives outlined for the SAC (where applicable)
Waterbirds : Bewick's Swan, European white-fronted goose, Dunlin Redshank, Shelduck Gadwall, Ringed plover, Teal, Pintail, Lesser black-backed gull, Pochard, Tufted Duck, Grey Plover, Curlew,Whimbrel, Wigeon Waterfowl	Maintain the feature in favourable condition as defined by the conservation objectives outlined for the SPA feature

Severn Estuary SAC	
Interest feature	**Conservation Objectives**
1.12 Estuarine & Intertidal habitats (includes: Estuaries; Intertidal Mudflats and Sandflats and Atlantic Salt Meadows	**Estuaries:** Maintain feature in favourable condition by meeting the following conditions: i. the total extent of the estuary is maintained; ii. the characteristic physical form (tidal prism/cross sectional area) and flow (tidal regime) of the estuary is maintained; iii. the characteristic range and relative proportions of sediment sizes and sediment budget within the site is maintained; iv. the extent, variety and spatial distribution of estuarine habitat communities within the site is maintained; v. the extent, variety, spatial distribution and community composition of hard substrate habitats and their notable communities is maintained; vi. the abundance of the notable estuarine species assemblages is maintained or increased; vii. the physico-chemical characteristics of the water column support the ecological objectives described above; viii. Toxic contaminants in water column and sediment are below levels which would pose a risk to the ecological objectives described above. ix. Airborne nutrient and contaminant loads are below levels which would pose a risk to the ecological objectives described above **Mudflats and Sandflats**: The feature will be considered to be in favourable condition when, subject to natural processes, each of the following conditions are met: i. The total extent of the mudflats and sandflats feature is maintained; ii. the variety and extent of individual mudflats and sandflats communities within the site is maintained; iii. the distribution of individual mudflats and sandflats communities within the site is maintained; iv. the community composition of the mudflats and sandflats feature within the site is maintained; v. the topography of the intertidal flats and the morphology (dynamic processes of sediment movement and channel migration across the flats) are maintained.

	Atlantic Salt Meadow: The feature will be considered to be in favourable condition when, subject to natural processes, each of the following conditions are met: i. the total extent of Atlantic salt meadow and associated transitional vegetation communities within the site is maintained; ii. the extent and distribution of the individual Atlantic salt meadow and associated transitional vegetation communities within the site is maintained; iii. the zonation of Atlantic salt meadow vegetation communities and their associated transitions to other estuary habitats is maintained; iv. the relative abundance of the typical species of the Atlantic salt meadow and associated transitional vegetation communities is maintained; v. the abundance of the notable species of the Atlantic salt meadow and associated transitional vegetation communities is maintained. vi. the structural variation of the salt marsh sward (resulting from grazing) is maintained within limits sufficient to satisfy the requirements of conditions iv and v above and the requirements of the Ramsar and SPA features vii. the characteristic stepped morphology of the salt marshes and associated creeks, pills, drainage ditches and pans, and the estuarine processes that enable their development, is maintained. viii Any areas of *Spartina anglica* salt marsh (SM6) are capable of developing naturally into other saltmarsh communities.

Somerset Levels and Moors SPA	
Interest feature	**Conservation Objectives**
Overwinteirng: Bewick's Swan and Golden Plover	The Somerset Levels and Moors SPA and Ramsar sites comprise twelve constituent SSSIs. The conservation objectives for these SSSIs are summarised below: To maintain at, or restore to, favourable conservation status, the natural habitats and/or the species for which the site has been selected. The conservation status of a species is defined as favourable when the population, range and natural habitats of the species are stable or increasing. **Targets** In relation to the bird species the following targets must be reached to achieve a favourable condition: • Maintain wet grassland with rhynes and ditches; • No significant displacement of birds attributable to human disturbance • Daytime feeding areas and roosting areas within c50 metres of each other; • No significant reduction in view lines in feeding and roosting areas; • No significant reduction in presence and abundance of food species; • No significant reduction in extent of short vegetation areas for feeding and longer vegetation for roosting; • No significant reduction in reedbed, fen, swamp and open water communities; • Maintain water levels at summer pen which supports reedbed, fen, swamp and open water communities; • Maintain differential margin lengths for corresponding area of open water and area of swamp. Targets may vary slightly depending on component site except the first six bullet points remain constant throughout.
Overwintering: Teal, Lapwing, intenrantionall important assemblages of waterfowl populations	

Somerset Levels and Moors SPA	
Interest feature	**Conservation Objectives**
Waterfowl Internationallu important numbers of overwintering irds: Bewick's Swan, Teal and lapwing	The Somerset Levels and Moors SPA and Ramsar sites comprise twelve constituent SSSIs. The conservation objectives for these SSSIs are summarised below: To maintain at, or restore to, favourable conservation status, the natural habitats and/or the species for which the site has been selected. The conservation status of a species is defined as favourable when the population, range and natural habitats of the species are stable or increasing. **Targets** In relation to the bird species the following targets must be reached to achieve a favourable condition: • Maintain wet grassland with rhynes and ditches; • No significant displacement of birds attributable to human disturbance • Daytime feeding areas and roosting areas within c50 metres of each other; • No significant reduction in view lines in feeding and roosting areas; • No significant reduction in presence and abundance of food species; • No significant reduction in extent of short vegetation areas for feeding and longer vegetation for roosting; • No significant reduction in reedbed, fen, swamp and open water communities; • Maintain water levels at summer pen which supports reedbed, fen, swamp and open water communities; • Maintain differential margin lengths for corresponding area of open water and area of swamp. Targets may vary slightly depending on component site except the first six bullet points remain constant throughout.

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Date: 10 May 2016

Dave Harris
c/o the Severn Estuary Coastal Group
Monmouthshire County Council
Raglan Depot
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RAGLAN
Monmouthshire
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Dear Dave

Severn Estuary and North Devon and Somerset SMP2 - Habitats Regulations Assessment

1. Further to the Severn Estuary Coastal Group's submission of the Habitats Regulations Assessment and the statement of case for the Severn Estuary and North Devon and Somerset Shoreline Management Plans (SMP2), Ministers have agreed that the competent authority has fulfilled its obligations under regulation 62 of the Habitats Regulations 2010 and appropriately assessed the impacts of the SMP2 on the European sites that may be affected.

2. This is a cross border SMP and also requires the agreement of Welsh Government. I understand that the Welsh Government has confirmed that they are satisfied that this Plan meets the requirements of the Habitats Regulations Assessment on the grounds of imperative reasons of overriding public interest.

3. Defra is satisfied that a thorough evaluation of alternative solutions has been carried out and we accept that there are no alternative solutions to the preferred options that would have a lesser effect on the integrity of the European sites.

4. Given that coastal flooding and erosion poses a serious risk to human health and public safety, with unacceptable social and economic consequences (the loss of, or risk to, residential and commercial properties and key infrastructure, including Weston-Super-Mare, major south west road and rail routes, Oldbury and Berkeley Nuclear power stations and Avonmouth docks), there is a strong case to justify the potential damage on grounds of imperative reasons of overriding public interest.

5. We note that it has been difficult to provide the level of detail necessary to identify all impacts and that where this is the case, screening has been deferred to the lower tier Strategy plans and projects (i.e. there will be a cumulative assessment of impacts through the more detailed strategies and schemes that flow from the plan).

6. We note that Compensatory measures have already been secured through a habitat creation project at the Steart Peninsula, on the English side of the channel, and that in addition to the environmental benefits, the Steart scheme also provides significant flood reduction for the local community including protection to Steart Drove, the only access route to Steart village. We also understand that the new set-back flood defences constructed to the south of the village will also provide better flood protection to the village against flooding from the River Parrett.

7. We understand that the Environment Agency has completed a detailed habitat survey of the coastal zone around the Severn as part of the South West Coastal Monitoring Programme, which has identified and mapped both intertidal and adjoining coastal habitats and will establish a firm baseline from which to monitor future change.

8. We note that the final spatial extent of required compensatory habitat in the longer term will require further ongoing review and monitoring. Compensation should take place in advance of predicted losses as far as possible, unless failure to act would result in significant risk to life and property.

9. On this basis, we are content that appropriate steps have been taken to ensure that compensatory measures will be in place to offset predicted losses before they arise. Consequently, I can confirm that Defra has no objections to the Coastal Group's approval of the SMP2.

10. I am copying this letter to Paul Murby in Defra, Nick Hardiman at the Environment Agency and Barry Phillips in Natural England.

Kind regards

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