



Severn Estuary Shoreline Management Plan Review

Appendix G: Preferred Policy
Management Approach Testing



ATKINS

Severn Estuary Shoreline Management Plan Review (SMP2)



Appendix G : Preferred Policy Management Approach Testing

December 2010

Notice

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Document History – Preferred Policy Management Approach Testing

JOB NUMBER: 5078599			DOCUMENT REF: 5078599/21/DG/022			
01	For PMG Review	CW	KH	JMcC	RS	3 Sept 2009
02	Final Draft Report For QRG Review	SB	KW	JMcC		
03	Final	KW	PC	PC	RS	Dec 2010
Revision	Purpose Description	Originated	Checked	Reviewed	Authorised	Date

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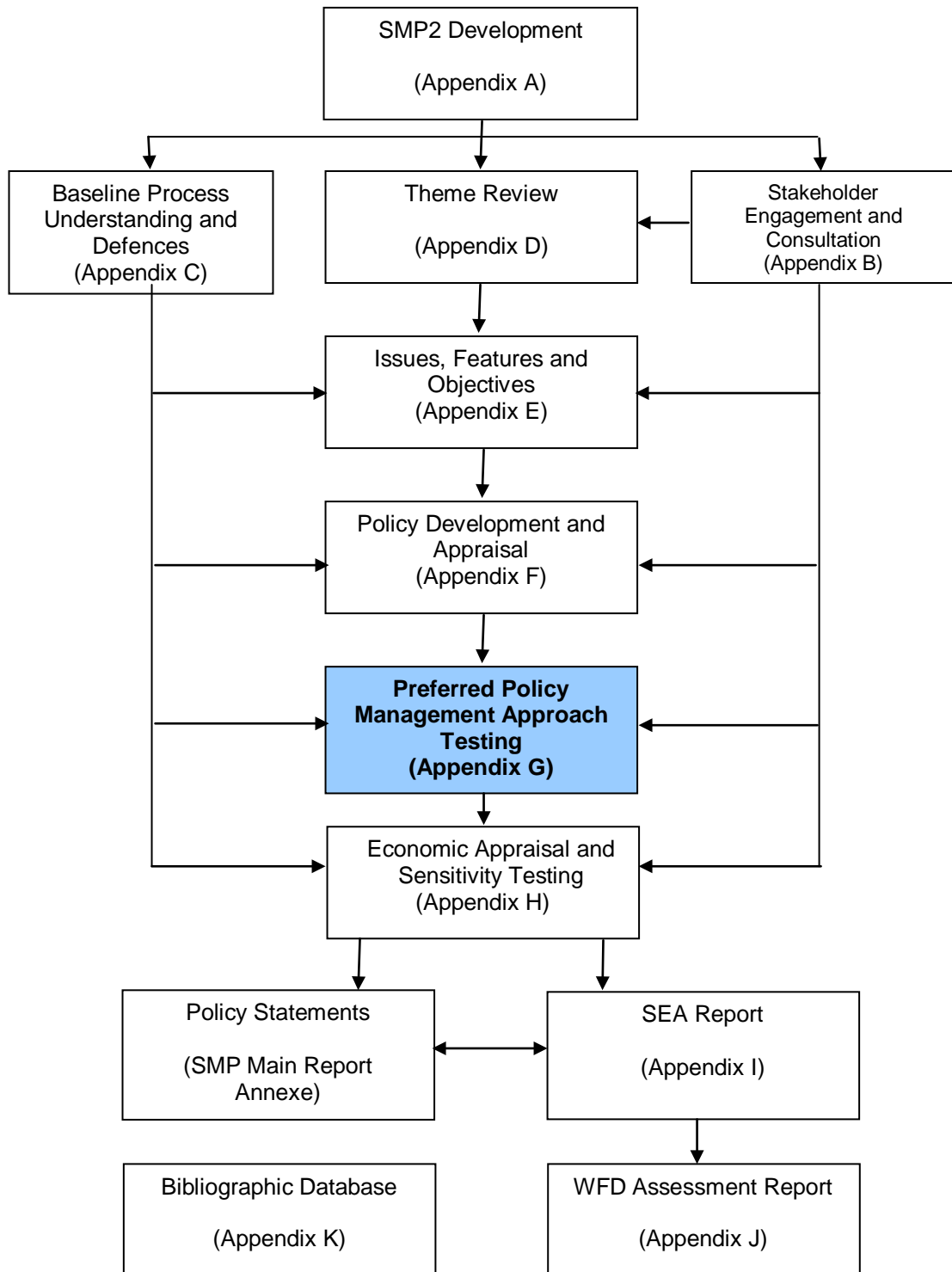
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Supporting Appendices

Information required to support the Severn Estuary Shoreline Management Plan Review (SMP2) is provided in the following appendices. These supporting documents offer transparency to the decision making process that is undertaken, leading to explanations and reasoning for the promoted policies.

A: SMP2 Development	The history, structure and development of the SMP are detailed in this report. The investigation and decision making process are explained more fully to outline the procedure to setting policy.
B: Stakeholder Engagement and Consultation	Stakeholder communication is continuous through the SMP2 process, comments on the progress of the management plan are recorded within Appendix B.
C: Baseline Understanding of Coastal Behaviour and Dynamics, Coastal Defences and Baseline Scenario Report	This report includes detail of coastal dynamics, defence data and shoreline scenario assessments of NAI (No Active Intervention – defences are not maintained, repaired or replaced allowing the shoreline to evolve more naturally) and With Present Management (WPM) i.e.: SMP1 Policy.
D: Theme Review	The identification and evaluation of the natural landscape and conservation, the historic environment and present and future land use of the shoreline.
E: Issues, Features and Objectives	The features of the shoreline are listed within this report. A series of strategic objectives are then set along with commentary on the relative importance of each feature identified.
F: Policy Development and Appraisal	Presents the consideration of generic policy options for each frontage identifying possible acceptable policies and their combination into 'Management Approaches' for testing. Also presents the appraisal of impacts upon shoreline evolution and the appraisal of objective achievement.
G: Preferred Policy Management Approach Testing	Presents the policy assessment of 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 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. This includes work to help towards a Habitat Regulatory Assessment (HRA).
J: Water Framework Assessment Report	Provides a retrospective assessment of the policies defined under the Severn Estuary SMP2 highlighting future issues for consideration at policy implementation stage.
K: Bibliographic Database	All supporting information used to develop the SMP is referenced for future examination and retrieval.

The information presented in each appendix is supported and guided by other appendices; the broad relationships between the appendices are illustrated overleaf.



Acronyms and Abbreviations

Term	Definition
AA	Appropriate Assessment.
ABP	Association of British Ports
AONB	Area of Outstanding Natural Beauty.
ASERA	Association of Severn Estuary Relevant Authorities
ATL	Advance the Line
BAP	Biodiversity Action Plans
BCCPA	Bristol Channel Counter Pollution Association
BMIF	British Marine Federation
CAPE	Community Adaptation Planning and Engagement
CCW	Countryside Council for Wales
CD	Chart Datum.
CFMP	Catchment Flood Management Plan
CHaMP	Coastal Habitat Management Plan
CPSE	Coast Protection Survey England
CSG	Client Steering Group, principal decision-making body for the Shoreline Management Plan = Severn Estuary Coastal Group (SECG)
CV	Capital Value. The actual value of costs or benefits.
DCLG	Department of Communities and Local Government
DECC	Department of Energy and Climate Change
Defra	Department for Food, Environment and Rural Affairs.
EA	Environment Agency, may also be referred to as 'The Agency'
EH	English Heritage
EiP	Examination in Public
EMF	Elected Members Forum (SMP2), comprising an Elected Member from each of the Local Authorities
FCA	Flood Consequence Assessment
FCDPAG3	Flood and Coastal Defences Project Appraisal Guidance
FCS	Favourable Conservation Status

Term	Definition
GCR	Geological Conservation Review site
GES	Good Ecological Status
GHT	Gloucester Harbour Trustees
GIS	Geographic Information System
HAT	Highest Astronomical Tide
HER	Historic Environment Record
HLT	High Level Target
HMWB	Heavily Modified Water Bodies
HRA	Habitats Regulations Assessment
HTL	Hold the Line
ICZM	Integrated Coastal Zone Management
IFCA	Integrated Flood Consequence Assessment
IROPI	Imperative Reasons of Over-riding Public Interest
JAC	Joint Advisory Committee (of the Severn Estuary Partnership)
KSG	Key Stakeholder Group, which acts as a focal point for discussion and consultation through development of the SMP
KWS	Key Wildlife Sites
LAT	Lowest Astronomical Tide
LDP	Local Development Plan
LPA	Local Planning Authority
MAFF	Ministry of Agriculture Fisheries and Food (now DEFRA)
MCZ	Marine Conservation Zone
MHWN	Mean High Water Neap tide
MHWS	Mean High Water Spring tide
MLWN	Mean Low Water Neap tide
MLWS	Mean Low Water Spring tide
MMO	Marine Management Organisation
MoD	Ministry of Defence

Term	Definition
MR	Managed Realignment
MSL	Mean Sea Level
MU	Management Unit
NAI	No Active Intervention
NE	Natural England
NEDS	National Economic Development Strategy
NFDCC	National Flood and Coastal Defence Database
NMR	National Monuments Record
NNR	National Nature Reserve
NT	National Trust
ODPM	Office of the Deputy Prime Minister
PCPA	Planning and Compulsory Purchase Act
PMG	Project Management Group
PPG	Planning Policy Guidance
PPS	Planning Policy Statement
PSA	Public Service Agreement
PU	Policy Unit
PPW	Planning Policy Wales
QRG	Quality Review Group
RBMP	River Basin Management Plan
RCZAS	Rapid Coastal Zone Assessment Survey
RDP	Rural Development Plan
RSS	Regional Spatial Strategy
RYA	Royal Yachting Association
SAC	Special Area of Conservation
SAM	Scheduled Ancient Monument
SDAP	Sustainable Development Action Plan
SDS	Sustainable Development Schemes

Term	Definition
SEA	Strategic Environmental Assessment
SECG	Severn Estuary Coastal Group = Client Steering Group (CSG)
SEFRMS	Severn Estuary Flood Risk Management Strategy
SEP	Severn Estuary Partnership
SESMP2	Severn Estuary Shoreline Management Plan Review
SFC	Sea Fisheries Committee
SFRA	Strategic flood risk assessment
SMP	Shoreline Management Plan
SMP1	A first-round Shoreline Management Plan
SMP2	A second-round Shoreline Management Plan
SMR	Sites and Monuments Record
SoP	Standard of Protection
SPA	Special Protection Area
SRS	Single Regional Strategy
SSSI	Site of Special Scientific Interest
SuD _s	Sustainable Urban Drainage System
TAN	Technical Advice Note
UKCiP	United Kingdom Climate Impacts Programme
UKCP	UK Climate Projections
WAG	Welsh Assembly Government
WFD	Water Framework Directive
WPM	With Present Management
WSP	Wales Spatial Plan

Compliance to the SMP2 Quality Review Group (QRG) Terms of Reference

This Appendix of the SMP 2 seeks to meet the following requirements set out by the Terms of Reference (ToR) of the Quality Review Group:

- *The justification (or rejection) of policies is clearly defined in terms of processes, environment, social and economic parameters, both in the short and long-term.*
- *The decision process is logical and there is a clear audit trail for decisions.*
- *Appropriate Management Approach testing has been undertaken with appropriate sensitivity assessments and all uncertainties clearly set out.*
- *Both the flood and erosion risks are clearly set out in the plan in map format.*

1. Introduction

1.1 Aim

The following report considers how each stretch of shoreline (**Policy Unit**) interacts with the adjacent units and how this impacts on the choice of policy to develop **Management Approaches**.

The term '**Scenario**' (set within the Defra SMP2 Procedural Guidance) was seen as misleading to many stakeholders. To this end, this term has been replaced with **Management Approach** as this is seen as more appropriate for communication purposes for stakeholders such as Elected Members, planners and decision makers.

1.2 Approach

Where apparent, the basic interactions between policy units were established in order for a combined assessment for managing the shoreline to be undertaken.

The Management Approach Assessments (Section 2) are presented as tables showing interacting policy units in terms of alongshore processes and tidal flood cell linkages.

Flood cell linked information is derived from the Severn Estuary Flood Risk Management Strategy (SEFRMS). The management implications of this are very important to future policy decision making as it is evident that flood pathways from one Policy Unit may impact significantly on the decision making for a number of adjoining Policy Units. In the example of the Cardiff and Wentlooge (**Section 2.2**) Theme Area it is apparent that one common flood cell covers 5 separate Policy Units, whereby a flood breach in any one Policy unit may impact on some or all of the other 4.

Conversely, some policy units are isolated in terms of alongshore processes and tidal flooding and therefore have been considered in terms of shoreline development individually, without consideration of processes operating at adjacent or opposite cells.

Management Approach options (A to D) are used to help impartially assess these inter-linkages between Policy Units. Particular focus is then placed on the shoreline development implications of the specific Management Approach being considered. The definitions of these approaches are identified below:

Management Approach A	Initial Starting Point for appraisal based on what could be an SMP2 appropriate policy Management Approach on technical, economic, environmental and social grounds.
Management Approach B	Modification of Management Approach A, assuming primary driver is a return to more natural situation. This will consider policies of No Active Intervention or Managed Realignment, constrained by the appropriate policy filtering identified in Task 3.1b.
Management Approach C	Modification of Management Approach A, assuming primary driver is to protect most assets, so greater armouring of coast. This will consider policies of Hold The Line or Advance The Line, constrained by the appropriate policy filtering identified in Task 3.1b.
Management Approach D	The Management Approach assuming that the current SMP1 policies are continued (With Present Management).

Interlinked Policy Units have not been assessed for all Management Approaches. Where a Management Approach has been deemed unsuitable based on the policy assessment against area objectives (see **Appendix F**) the Approach has not been considered in the assessment.

1.3 Identification of Preferred Policy

Completion of the Management Approach tables leads toward the final determination of a policy option which is deemed most appropriate and sustainable in the long term. The following tables allow the decision of preferred policy to take account of the views and comments provided by stakeholders throughout the Severn Estuary SMP2 process (see **Appendix B**). The preferred policies following analysis of the tables presented in this report are given in the **SMP2 Final Report: Annex A**. It should be noted that this task assists in the identification of the preferred policy; however, the preferred policy selected may be a combination of management approaches over the 3 epochs.

This Appendix should contribute (in part) to helping planners to better understand coastal change and importantly, which areas are most likely to change over time. Consideration of the impact of coastal change should form an integral part of planning strategies and plan making at national, regional and local levels and of decision-making on all types of application for consent required for development in areas that might be vulnerable to coastal change.

Developments will often recover from flooding (albeit at a cost). In the case of coastal erosion, what is lost is irrecoverably lost. Whilst coastal erosion is of lesser significance in this SMP2 than in others, reliance measures for individual properties are needed, even though the overall scale of the impact of erosion is smaller. A single flood event can, however, affect hundreds or thousands of properties. Also, a development which requires a coastal location in areas of coastal change (such as beach huts, cafes /tea rooms, shops, hotels and other tourist accommodation) can only be in these areas, and as well as supporting the economy of their communities, they require links to communities and infrastructure to support them. **Figure 1.2** below, illustrates the extent and interconnectivity of the flood cells between policy units. This interaction between policy units has been pivotal in the determination of the preferred policy and has been tested in the management approach tables within this appendix.

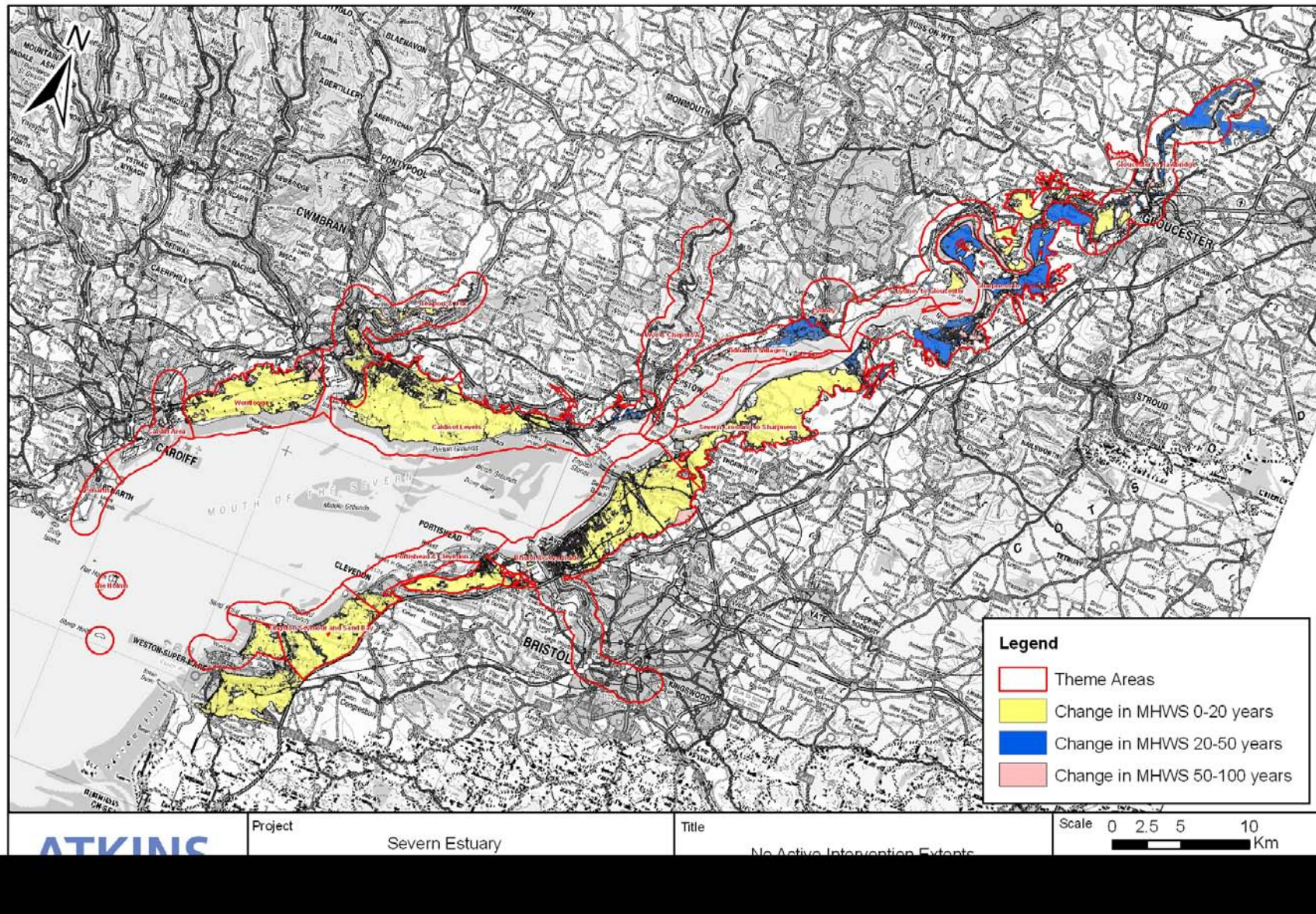
SMP2s should provide the input for regional planning consideration. Where the SMP indicates that the coast is expected to change (through erosion and other geomorphologic changes) then the regional decision is how the affected communities should adapt to the risk as part of the regional strategy. This is where the initial decisions about how those communities contribute to and work within the regional economy are taken.

An action to arise from the SMP2 should aim to provide the indication of the level of risk over time to inform that decision, linked to the flood risk appraisals in the RFRA and SFRA.

Where it is decided in principle that development is needed in areas of coastal change to meet regional and local sustainable development objectives, more detailed information on how the risk impacts on the proposed development is needed, this can be provided by undertaking the vulnerability assessment proposed in the draft policy (PPS 20).

Post-consultation amendments It should be noted that the management approaches assessed in this Appendix are those undertaken to prepare the draft SMP2 prior to the public consultation in 2009. Following the analysis of the consultation results, policy options may be changed, based on the feedback and comments received during the consultation. The policies presented in the final SMP2 document could, therefore, differ from those assessed in this Appendix. Comments received and amendments made as a result of the public consultation are set out in Appendix B – Stakeholder Involvement.

Figure 1.1 – Potential flood extents and policy unit linkages under a NAI scenario



2. Policy Management Approach Testing

2.1 Penarth

Linked Policy Units	Management Approach A				Management Approach B				Management Approach C				Management Approach D			
	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments
PEN 1	NAI	NAI	NAI	Timing of Defence Failure: The concrete and masonry sea wall alongside Cliff Hill would deteriorate in the medium term, with Penarth Esplanade seawall deteriorating and failing in the medium term.	NAI	NAI	NAI	The same as Management Approach A.	HTL	HTL	HTL	Timing of Defence Failure: The concrete and masonry sea wall alongside Cliff Hill and Penarth Esplanade would require significant maintenance from the medium term onwards.	NAI	NAI	NAI	Timing of Defence Failure: The concrete and masonry sea wall alongside Cliff Hill would deteriorate significantly in the medium term. Penarth Esplanade seawall would remain in place, with significant maintenance required in the medium to long term. Managed realignment in the medium to long term along Penarth Head would require controlled cliff management.
PEN 2	NAI*	NAI*	NAI*	Shoreline Response and Climate Change: Current low rates of cliff erosion rates are likely to increase due to sea level rise and greater storminess, with the shoreline at the esplanade moving landwards towards a more natural alignment position. The foreshore along the cliffs and esplanade would continue to flatten and erode.	NAI	NAI	NAI		HTL	HTL	HTL	Shoreline Response and Climate Change: The shoreline position would be maintained by the seawalls, although the low lying foreshore erosion would accelerate due to reduced sediment availability.	HTL	HTL / MR	HTL / MR	Shoreline Response and Climate Change: Cliff erosion rates would increase due to sea level rise and greater storminess. The foreshore along the cliffs and esplanade would continue to flatten and erode. Penarth Esplanade would experience significant wave overtopping during storms. Managed realignment of defences along Penarth Head would result in cliff profile redesign.

*investigate the H&S implications of NAI in areas where built structures may become unsafe for public use.

2.2 Cardiff and Wentlooge

Linked Policy Units	Management Approach A				Management Approach B				Management Approach C				Management Approach D					
	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments		
CAR 1	HTL	HTL	HTL	<p>Timing of Defence Failure: The Cardiff Bay Barrage would remain in place with some maintenance. The rock armoured and embankment frontage along Tremorfa, the River Rhymney and the Wentlooge Levels would remain in place with increasingly significant maintenance and probably foreshore management. The city of Cardiff and smaller conurbations, major transport routes, power transmission lines, agricultural land, and environmental and archaeological designations would be protected behind defences. Intertidal areas in front of defences would erode and be lost.</p> <p>Shoreline Response and Climate Change: Foreshore erosion rates and lowering would increase, and expanses of saltmarsh would lose their coherency in the medium term, due to sea level rise and greater storminess. However the maintained defences would result in the shoreline being held with increasingly heavy engineered solutions.</p>	HTL	HTL	HTL	<p>Timing of Defence Failure: The Cardiff Bay Barrage would remain in place with some maintenance. The rock armoured and embankment frontage along Tremorfa and the River Rhymney would progressively fail in the short to medium term, whilst along the Wentlooge Levels they would remain in place with some maintenance. In the long term, potential NAI along the Wentlooge Levels would result in failure of the embankments, with significant impacts on the city of Cardiff and smaller conurbations, major transport routes, power transmission lines, agricultural land, and environmental and archaeological designations behind defences. Intertidal areas in front of defences would erode and be lost.</p> <p>Shoreline Response and Climate Change: Foreshore erosion rates would increase due to sea level rise and greater storminess, with the foreshore along Tremorfa and the Wentlooge Levels experiencing significant erosion and recession and the River Rhymney being free to meander. This would result in a flood route through to the wider Wentlooge Levels, with MHWS being located at the back of the floodplain.</p>	HTL	HTL	HTL	<p>Timing of Defence Failure: The Cardiff Bay Barrage would remain in place with some maintenance. The rock armoured and embankment frontage along Tremorfa, the River Rhymney and the Wentlooge Levels would remain in place with increasingly significant maintenance and probably foreshore management. The city of Cardiff and smaller conurbations, major transport routes, power transmission lines, agricultural land, and environmental and archaeological designations would be protected behind defences. Intertidal areas in front of defences would erode and be lost.</p> <p>Shoreline Response and Climate Change: Foreshore erosion rates and lowering would increase, and expanses of saltmarsh would lose their coherency in the medium term, due to sea level rise and greater storminess. However the maintained defences would result in the shoreline being held with increasingly heavy engineered solutions.</p>	HTL	HTL	HTL	<p>Timing of Defence Failure: The Cardiff Bay Barrage would remain in place with some maintenance. The rock armoured and embankment frontage along Tremorfa, the River Rhymney and the Wentlooge Levels would remain in place with increasingly significant maintenance and probably foreshore management. Managed realignment along the Wentlooge Levels in the medium to long term would require new embankments to be built. The city of Cardiff and smaller conurbations, major transport routes, and environmental and archaeological designations would be protected, whilst agricultural land would convert to saltmarsh in the long term. Areas of protected terrestrial sites in front of realigned defences would be lost while areas behind realigned defences would be protected.</p> <p>Shoreline Response and Climate Change: Foreshore erosion rates and lowering would increase, and expanses of saltmarsh would lose their coherency in the medium term, due to sea level rise and greater storminess. The maintained defences would result in the shoreline being held with increasingly heavy engineered solutions, unless</p>		
CAR 2	HTL	HTL	HTL		NAI	NAI	NAI		HTL	HTL	HTL		HTL	HTL	HTL		HTL	HTL
CAR 3	HTL	HTL	HTL		NAI	NAI	NAI		HTL	HTL	HTL		HTL	HTL	HTL		HTL	HTL
WEN 1	HTL	HTL	HTL		HTL	HTL	NAI		HTL	HTL	HTL		HTL	HTL	HTL		HTL	HTL / MR
WEN 2	HTL	HTL	HTL		HTL	HTL	NAI		HTL	HTL	HTL		HTL	HTL	HTL / MR		HTL / MR	HTL / MR

2.3 Newport and the River Usk (Usk Right Bank, Lower Estuary)

Linked Policy Units	Management Approach A				Management Approach B				Management Approach C				Management Approach D			
	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments
NEW 1	HTL	HTL	HTL	Timing of Defence Failure: The earth embankments and masonry walls along the River Usk right bank would be maintained through to the long term. The city of Newport and the docks would be protected.	NAI	HTL	HTL	Timing of Defence Failure: The earth embankments and masonry walls along the River Usk right bank would begin to fail in the short term, and require reconstruction for the medium to long term. The city of Newport and the docks would be protected.	HTL	HTL	HTL	Timing of Defence Failure: The earth embankments and masonry walls along the River Usk right bank would be maintained through to the long term. The city of Newport and the docks would be protected.	HTL	HTL	HTL	Timing of Defence Failure: The earth embankments and masonry walls along the River Usk right bank would be maintained through to the long term. Limited managed realignment in the long term, upstream of the Transporter Bridge, would require new defences to be built. The city of Newport and the docks would be protected.
NEW 2	HTL	HTL	HTL	Shoreline Response and Climate Change: The river channel would remain stable, with increasing tidal influence due to sea level rise.	NAI	HTL	HTL	Shoreline Response and Climate Change: The river channel would remain relatively stable, with increasing tidal influence due to sea level rise.	HTL	HTL	HTL	Shoreline Response and Climate Change: The river channel would remain stable, with increasing tidal influence due to sea level rise.	HTL	HTL	HTL / MR	Shoreline Response and Climate Change: The river channel would remain stable except where managed realignment occurs, with increasing tidal influence due to sea level rise.

2.4 Newport and the River Usk (Usk Upper Estuary)

Linked Policy Units	Management Approach A				Management Approach B				Management Approach C				Management Approach D			
	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments
NEW 3	NAI	NAI	MR	Timing of Defence Failure: Once maintenance was withdrawn after the medium term, the earth embankments along the River Usk would progressively fail. Shoreline Response and Climate Change: The river channel, whilst historically stable, could meander in the long term, and would have increasing tidal influence due to sea level rise.	NAI	NAI	NAI	Timing of Defence Failure: The earth embankments along the River Usk would fail in the short term. Shoreline Response and Climate Change: The river channel, whilst historically stable, could meander, and would have increasing tidal influence due to sea level rise.	HTL	HTL	HTL	Timing of Defence Failure: The earth embankments along the River Usk would be maintained through to the long term. Shoreline Response and Climate Change: The river channel would remain stable, with increasing tidal influence due to sea level rise.	HTL	HTL	MR	Timing of Defence Failure: Once maintenance was withdrawn after the medium term, the earth embankments along the River Usk would progressively fail. Shoreline Response and Climate Change: The river channel, whilst historically stable, could meander in the long term, and would have increasing tidal influence due to sea level rise.

2.5 Newport and the River Usk (Usk Left Bank, Lower Estuary), and the Caldicot Levels

Linked Policy Units	Management Approach A				Management Approach B				Management Approach C				Management Approach D			
	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments
NEW 4	HTL	HTL	HTL	<p>Timing of Defence Failure: The embankments and masonry walls along the River Usk left bank and the Caldicot Levels would be maintained through to the long term, with the Caldicot Levels defences requiring significant maintenance and foreshore management. The city of Newport and smaller conurbations, major transport routes, environmental and archaeological designations, power transmission lines, Uskmouth Power Station, and agricultural land would be protected behind defences. Intertidal areas in front of defences would erode and be lost.</p> <p>Shoreline Response and Climate Change: The River Usk river channel would remain relatively stable, with increasing tidal influence. The Caldicot Levels shoreline would further erode and steepen, with the saltmarsh losing its coherency in the medium to long term.</p>	HTL	HTL	HTL	<p>Timing of Defence Failure: The embankments and masonry walls along the River Usk left bank and the Caldicot Levels would be maintained through to the long term, with the Caldicot Levels defences requiring significant maintenance and foreshore management. The city of Newport and smaller conurbations, major transport routes, environmental and archaeological designations, power transmission lines, Uskmouth Power Station, and agricultural land would be protected. Potential managed realignment in the long term along the Caldicot Levels would require new defences to be built, with agricultural land converting to saltmarsh. Areas of protected terrestrial sites in front of realigned defences would be lost while areas behind realigned defences would be protected.</p> <p>Shoreline Response and Climate Change: The River Usk river channel would remain relatively stable, with increasing tidal influence. The Caldicot Levels shoreline would further erode and steepen, with the saltmarsh losing its coherency in the medium to long term. Potential managed realignment along the Caldicot Levels would allow the shoreline to evolve towards its natural state with</p>	HTL	HTL	HTL	<p>Timing of Defence Failure: The embankments and masonry walls along the River Usk left bank and the Caldicot Levels would be maintained through to the long term, with the Caldicot Levels defences requiring significant maintenance and foreshore management. The city of Newport and smaller conurbations, major transport routes, environmental and archaeological designations, power transmission lines, Uskmouth Power Station, and agricultural land would be protected behind defences. Intertidal areas in front of defences would erode and be lost.</p> <p>Shoreline Response and Climate Change: The River Usk river channel would remain relatively stable, with increasing tidal influence. The Caldicot Levels shoreline would further erode and steepen, with the saltmarsh losing its coherency in the medium to long term.</p>	HTL	HTL	HTL	The same as Management Approach B.
NEW 5	HTL	HTL	HTL		HTL	HTL	HTL		HTL	HTL	HTL		HTL			
CALD1	HTL	HTL	HTL		HTL	HTL	MR		HTL	HTL	HTL		HTL	MR		

								new saltmarsh being created.											
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2.6 Sudbrook Point, at Caldicot (Severn Right Bank)

Linked Policy Units	Management Approach A				Management Approach B				Management Approach C				Management Approach D			
	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments
CALD2	NAI	NAI	NAI	<p>Timing of Defence Failure: The rock armour and groyne system would fail in the short term.</p> <p>Shoreline Response and Climate Change: The hard geology headland would erode slowly at first, accelerating under climate change.</p>	NAI	NAI	NAI	The same as Management Approach A.	HTL	HTL	HTL	<p>Timing of Defence Failure: The rock armour and groyne system would be maintained through to the long term.</p> <p>Shoreline Response and Climate Change: The hard geology headland would erode slowly through to the long term.</p>	NAI / HTL	NAI / HTL / MR	NAI / HTL / MR	<p>Timing of Defence Failure: The rock armour and groyne system would be maintained through to the long term.</p> <p>Shoreline Response and Climate Change: The hard geology headland would erode slowly through to the long term.</p>

2.7 Severn Crossings (Severn Right Bank)

Linked Policy Units	Management Approach A				Management Approach B				Management Approach C				Management Approach D			
	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments
CALD3	HTL	HTL	HTL	<p>Timing of Defence Failure: The embankments along the Caldicot Levels would be maintained through to the long term, with the Caldicot Levels defences requiring significant maintenance and foreshore management. Villages, major transport routes and power transmission lines and agricultural land would be protected. Intertidal protected areas in front of defences would erode and be lost.</p> <p>Shoreline Response and Climate Change: The Caldicot Levels shoreline would further erode and steepen, with the saltmarsh losing its coherency in the medium to long term.</p>	NAI	NAI	NAI	<p>Timing of Defence Failure: The embankments along the Caldicot Levels would deteriorate and fail in the medium term. Villages, major transport routes and power transmission lines would not be protected, with agricultural land converting to saltmarsh. Areas of protected terrestrial sites in front of realigned defences would be lost while areas behind realigned defences would be protected.</p> <p>Shoreline Response and Climate Change: The Caldicot Levels shoreline would evolve towards its natural landward state with new saltmarsh being created, with MHWS being located at the back of the floodplain.</p>	HTL	HTL	HTL	<p>Timing of Defence Failure: The embankments along the Caldicot Levels would be maintained through to the long term, with the Caldicot Levels defences requiring significant maintenance and foreshore management. Villages, major transport routes and power transmission lines and agricultural land would be protected. Intertidal protected areas in front of defences would erode and be lost.</p> <p>Shoreline Response and Climate Change: The Caldicot Levels shoreline would further erode and steepen, with the saltmarsh losing its coherency in the medium to long term.</p>	HTL / NAI	HTL / MR	HTL / MR	<p>Timing of Defence Failure: The embankments along the Caldicot Levels would be maintained through to the long term, with the Caldicot Levels defences requiring significant maintenance and foreshore management. Potential managed realignment along the Caldicot Levels would require new defences to be built. Villages, major transport routes and power transmission lines would be protected, with agricultural land converting to saltmarsh. Areas of protected terrestrial sites in front of realigned defences would be lost while areas behind realigned defences would be protected.</p> <p>Shoreline Response and Climate Change: The Caldicot Levels shoreline would further erode and steepen, with the saltmarsh losing its coherency in the medium to long term. Potential managed realignment along the Caldicot Levels would allow the shoreline to evolve towards its natural state with new saltmarsh being created.</p>

2.8 Chepstow and the River Wye (Wye Lower Estuary)

Linked Policy Units	Management Approach A				Management Approach B				Management Approach C				Management Approach D						
	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments			
WYE 1	NAI	NAI	NAI	<p>Timing of Defence Failure: The flood defences at Chepstow would need significant maintenance to continue through to the long term.</p> <p>Shoreline Response and Climate Change: The river channel would remain relatively stable with increasing tidal influence, although MHWS would be located landwards near Beachley Point.</p>	HTL	HTL	HTL	The same as Management Approach A.	HTL	HTL	HTL	The same as Management Approach A.	NAI / HTL	NAI / HTL	NAI / HTL	The same as Management Approach A.			
WYE 3	NAI	NAI	NAI		NAI	NAI	NAI		NAI	NAI	NAI		NAI	NAI	NAI		NAI	NAI	NAI
WYE 4	NAI	NAI	NAI		NAI	NAI	NAI		NAI	NAI	NAI		NAI	NAI	NAI		NAI	NAI	NAI

2.9 Chepstow and the River Wye (Wye Upper Estuary)

Linked Policy Units	Management Approach A				Management Approach B				Management Approach C				Management Approach D			
	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments
WYE 2	NAI	NAI	NAI	<p>Timing of Defence Failure: There are no flood defences in this locality.</p> <p>Shoreline Response and Climate Change: The river channel would remain relatively stable with increasing tidal influence. Some flood risk at Tintern would result in MHWS being landward.</p>	NAI	NAI	NAI	The same as Management Approach A.	NAI	NAI	NAI	The same as Management Approach A.	NAI / HTL	NAI / HTL	NAI / HTL	The same as Management Approach A.

2.10 Beachley Head to Tidenham (Severn Right Bank)

Linked Policy Units	Management Approach A				Management Approach B				Management Approach C				Management Approach D			
	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments
TID 1	NAI	NAI	NAI	<p>Timing of Defence Failure: The embankment at Sturch Pill would fail in the medium term, whilst the railway embankment tide flaps have already failed.</p> <p>Shoreline Response and Climate Change: The present day variable evolution of the shoreline would erode increasingly in the medium to long term, with MHWS located at the back of the floodplain.</p>	NAI	NAI	NAI	The same as Management Approach A.	NAI	NAI	NAI	The same as Management Approach A.	NAI	NAI	NAI	The same as Management Approach A.

2.11 Tidenham to and including Lydney Harbour (Severn Right Bank)

Linked Policy Units	Management Approach A				Management Approach B				Management Approach C				Management Approach D			
	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments
TID 2	HTL	HTL	MR	<p>Timing of Defence Failure: The rock armoured embankment would require increasing maintenance in the medium term. The railway line and agricultural land would be protected. Potential managed realignment in the long term would require new defences to be built, with agricultural land converting to saltmarsh.</p>	HTL	HTL	MR	The same as Management Approach A.	HTL	HTL	HTL	<p>Timing of Defence Failure: The rock armoured embankment would require significant maintenance and foreshore management in the long term. The railway line and agricultural land would be protected. Intertidal protected areas in front of defences would erode and be lost.</p>	HTL	HTL	HTL / MR	The same as Management Approach A.
LYD 1	HTL	HTL	HTL	<p>Shoreline Response and Climate Change: The present day variable evolution of the shoreline would erode increasingly in the medium to long term due to sea level rise.</p>	HTL	HTL	HTL		HTL	HTL	HTL	<p>Shoreline Response and Climate Change: The present day variable evolution of the shoreline would erode increasingly in the medium to long term.</p>	HTL	HTL	HTL / MR	

2.12 Lydney Cliffs to Northington Farm at Awre (Severn Right Bank)

Linked Policy Units	Management Approach A				Management Approach B				Management Approach C				Management Approach D			
	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments
GLO1	NAI	NAI	NAI	<p>Timing of Defence Failure: The railway retaining wall and embankment would require significant maintenance and foreshore management in the medium to long term. The embankments would require some maintenance in the short term, with longer term managed realignment requiring new defences to be built.</p>	NAI	NAI	NAI	<p>Timing of Defence Failure: The railway retaining wall would fail in the medium term, with the embankments failing in the short term.</p>	HTL	HTL	HTL	<p>Timing of Defence Failure: The railway retaining wall and embankment would require significant maintenance and foreshore management in the medium to long term.</p>	NAI	NAI	NAI	<p>Timing of Defence Failure: The railway retaining wall and embankment would require significant maintenance and foreshore management in the medium to long term. The embankments would require some maintenance in the short term, with longer term managed realignment requiring new defences to be built.</p>
GLO 2	NAI	MR	MR	<p>Shoreline Response and Climate Change: The mudstone cliffs would undergo limited erosion with the foreshore eroding and lowering significantly. Saltmarsh would be created at Awre peninsula in the medium to long term.</p>	NAI	NAI	NAI	<p>Shoreline Response and Climate Change: The mudstone cliffs would undergo limited erosion, with the foreshore eroding and lowering significantly. Unmanaged saltmarsh would be created at Awre peninsula.</p>	MR	MR	MR	<p>Shoreline Response and Climate Change: The mudstone cliffs would undergo limited erosion with the foreshore eroding and lowering significantly. Saltmarsh would be created at Awre peninsula.</p>	NAI	MR	MR	<p>Shoreline Response and Climate Change: The mudstone cliffs would undergo limited erosion with the foreshore eroding and lowering significantly. Saltmarsh would be created at Awre peninsula in the medium to long term.</p>

2.13 Northington Farm to Rodley (Right Bank) and Epney to Purton (Severn Left Bank)

Linked Policy Units	Management Approach A				Management Approach B				Management Approach C				Management Approach D					
	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments		
GLO 3	NAI	NAI	NAI	<p>Timing of Defence Failure: The embankments and flood walls on the right and left bank would require significant improvement from the medium term onwards to fulfil their function, except where managed realignment occurs which would require new defences to be built. Villages, agricultural land, environmental and archaeological designations, and infrastructure including A and B roads, railway lines and power transmission lines would generally be protected.</p> <p>Shoreline Response and Climate Change: The coastline would undergo variable erosion and accretion as sediment migrates up-estuary. Where managed realignment is considered, MHWS would be located landwards.</p>	NAI	NAI	NAI	<p>Timing of Defence Failure: The embankments and flood walls on the right and left bank would fail in the short and medium term respectively. This would allow significant areas to experience regular flooding, impacting on villages, agricultural land, environmental and archaeological designations, and infrastructure including A and B roads, railway lines and power transmission lines.</p> <p>Shoreline Response and Climate Change: The coastline would undergo variable erosion and accretion as sediment migrates up-estuary, with MHWS being located at the back of the floodplain. There would be wider upper estuary changes with large floodplains and tidal islands being created, the existing large meander (The Moose) being free to evolve naturally with the potential to become an oxbow under high tides, and large scale inundation of the active floodplains potentially reducing flood risk elsewhere.</p>	HTL	HTL	HTL	<p>Timing of Defence Failure: The embankments and flood walls on the right and left bank would require significant improvement from the medium term onwards to fulfil their function. Villages, agricultural land, environmental and archaeological designations, and infrastructure including A and B roads, railway lines and power transmission lines would continue to be protected. Intertidal areas on the west back would be lost through erosion.</p> <p>Shoreline Response and Climate Change: The coastline would undergo variable erosion and accretion as sediment migrates up-estuary.</p>	NAI	NAI / HTL	NAI / HTL	<p>Timing of Defence Failure: The embankments and flood walls on the right and left bank would require significant improvement from the medium term onwards to fulfil their function, except where managed realignment occurs which would require new defences to be built. Villages, agricultural land, environmental and archaeological designations, and infrastructure including A and B roads, railway lines and power transmission lines would generally be protected. Intertidal areas on the west back could be lost through erosion if HTL rather than MR is taken forward in these areas – SHAR7.</p> <p>Shoreline Response and Climate Change: The coastline would undergo variable erosion and accretion as sediment migrates up-estuary. Where managed realignment is considered, MHWS would be located landwards.</p>		
GLO 4	HTL	HTL	HTL		NAI	NAI	NAI		HTL	HTL	HTL		HTL	HTL	HTL		HTL	HTL
GLO 5	HTL	HTL	HTL		NAI	NAI	NAI		HTL	HTL	HTL		HTL	HTL / NAI	HTL / NAI / MR		HTL / NAI / MR	
SHAR 3	HTL	HTL	HTL		NAI	NAI	NAI		HTL	HTL	HTL		HTL	HTL	HTL / MR		HTL / MR	
SHAR 4	NAI	MR	MR		NAI	NAI	NAI		HTL	HTL	HTL		HTL	HTL	HTL		HTL	
SHAR 5	NAI	NAI	NAI		NAI	NAI	NAI		NAI	NAI	NAI		NAI	NAI	NAI		NAI	
SHAR 6	HTL	HTL	HTL		NAI	NAI	NAI		HTL	HTL	HTL		HTL	HTL	HTL / MR		HTL / MR	
SHAR 7	NAI	MR	MR	NAI	NAI	NAI	HTL	HTL	HTL	HTL	HTL / MR	HTL / MR	HTL / MR					

2.14 Rodley to West Minsterworth (Severn Right Bank) and Elmore to Longney (Severn Left Bank)

Linked Policy Units	Management Approach A				Management Approach B				Management Approach C				Management Approach D			
	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments
SHAR 1	NAI	MR	MR	<p>Timing of Defence Failure: The embankments would require significant improvement from the medium term onwards to fulfil their function, except where managed realignment occurs which would require new defences to be built. Villages, agricultural land, environmental and archaeological designations, and infrastructure including A and B roads, railway lines and power transmission lines would generally be protected.</p> <p>Shoreline Response and Climate Change: The coastline would undergo variable erosion and accretion as sediment migrates up-estuary. Where managed realignment is considered, MHWS would be located landwards creating new intertidal habitat.</p>	NAI	NAI	NAI	<p>Timing of Defence Failure: The embankments would fail in the medium term. This would allow significant areas to experience regular flooding, impacting on villages, agricultural land, environmental and archaeological designations, and infrastructure including A and B roads, railway lines and power transmission lines.</p> <p>Shoreline Response and Climate Change: The coastline would undergo variable erosion and accretion as sediment migrates up-estuary, with MHWS being located at the back of the floodplain forming small tidal islands, and large scale inundation of the active floodplains potentially reducing flood risk elsewhere. New intertidal habitat would be created</p>	HTL	HTL	HTL	<p>Timing of Defence Failure: The embankments would require significant improvement from the medium term onwards to fulfil their function. Villages, agricultural land, environmental and archaeological designations, and infrastructure including A and B roads, railway lines and power transmission lines would continue to be protected.</p> <p>Shoreline Response and Climate Change: The coastline would undergo variable erosion and accretion as sediment migrates up-estuary.</p>	HTL	HTL	HTL / MR	<p>Timing of Defence Failure: The embankments would require significant improvement from the medium term onwards to fulfil their function, except where managed realignment occurs which would require new defences to be built. Villages, agricultural land, environmental and archaeological designations, and infrastructure including A and B roads, railway lines and power transmission lines would generally be protected.</p> <p>Shoreline Response and Climate Change: The coastline would undergo variable erosion and accretion as sediment migrates up-estuary. Where managed realignment is considered, MHWS would be located landwards creating new intertidal habitat.</p>
SHAR 2	NAI	MR	MR		NAI	NAI	NAI		HTL	HTL	HTL		HTL	HTL / MR	MR	
GLO 6	NAI	NAI	NAI		NAI	NAI	NAI		NAI	NAI	NAI		NAI	NAI	NAI	
GLO 7	HTL	HTL	HTL		NAI	NAI	NAI		HTL	HTL	HTL		HTL	HTL	HTL / MR	
GLO 8	HTL	HTL	HTL		NAI	NAI	NAI		HTL	HTL	HTL		HTL	HTL	HTL	

2.15 Minsterworth and Stonebench to Haw Bridge (Both Banks, Upper Severn Estuary)

Linked Policy Units	Management Approach A				Management Approach B				Management Approach C				Management Approach D			
	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments
MAI 1	NAI	MR	MR	<p>Timing of Defence Failure: The embankments and flood walls on the right and left bank would fail in the short term, except where Hold the Line is the policy. This would allow significant areas to experience regular flooding, impacting on villages, agricultural land, environmental and archaeological designations, and infrastructure including A and B roads, railway lines and power transmission lines.</p> <p>Shoreline Response and Climate Change: The coastline would undergo variable erosion and accretion as sediment migrates up-estuary, with MHWS being located at the back of the floodplain. Large scale inundation of the active floodplains could potentially reduce flood risk elsewhere and create new intertidal habitat.</p>	MR	MR	MR	<p>Timing of Defence Failure: The embankments and flood walls on the right and left bank would fail in the short term. This would allow significant areas to experience regular flooding, impacting on villages, agricultural land, environmental and archaeological designations, and infrastructure including A and B roads, railway lines and power transmission lines.</p> <p>Shoreline Response and Climate Change: The coastline would undergo variable erosion and accretion as sediment migrates up-estuary, with MHWS being located at the back of the floodplain. Large scale inundation of the active floodplains could potentially reduce flood risk elsewhere and create new intertidal habitat.</p>	HTL	HTL	HTL	<p>Timing of Defence Failure: The embankments and flood walls on the right and left bank would require significant improvement from the medium term onwards to fulfil their function. Villages, agricultural land, environmental and archaeological designations, and infrastructure including A and B roads, railway lines and power transmission lines would continue to be protected.</p> <p>Shoreline Response and Climate Change: The coastline would undergo variable erosion and accretion as sediment migrates up-estuary.</p>	HTL	HTL / MR	HTL / MR	<p>Timing of Defence Failure: The embankments and flood walls on the right and left bank would fail in the short term, except where Hold the Line is the policy. This would allow significant areas to experience regular flooding, impacting on villages, agricultural land, environmental and archaeological designations, and infrastructure including A and B roads, railway lines and power transmission lines.</p> <p>Shoreline Response and Climate Change: The coastline would undergo variable erosion and accretion as sediment migrates up-estuary, with MHWS being located at the back of the floodplain. Large scale inundation of the active floodplains could potentially reduce flood risk elsewhere and create new intertidal habitat.</p>
MAI 2	HTL	HTL	HTL		NAI	NAI	NAI		HTL	HTL	HTL		CFMP Policy: Reduce existing flood risk management actions			
MAI 3	NAI	NAI	NAI		NAI	NAI	NAI		HTL	HTL	HTL					
MAI 4	HTL	HTL	HTL		HTL	HTL	HTL		HTL	HTL	HTL					
MAI 5	HTL	HTL	HTL		NAI	NAI	NAI		HTL	HTL	HTL					
MAI 6	HTL	HTL	HTL		NAI	NAI	NAI		HTL	HTL	HTL			HTL / NAI	HTL / NAI	

2.16 Tites Point, to and including Sharpness Docks (Severn Left Bank)

Linked Policy Units	Management Approach A				Management Approach B				Management Approach C				Management Approach D			
	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments
SHA 8	HTL	HTL	HTL	<p>Timing of Defence Failure: No defences are present due to high ground.</p> <p>Shoreline Response and Climate Change: The historically stable cliffs will continue to remain stable.</p>	NAI	NAI	NAI	The same as Management Approach A.	HTL	HTL	HTL	The same as Management Approach A.	HTL	HTL	HTL / MR	The same as Management Approach A.

2.17 South Sharpness Docks to Aust Cliff (Severn Left Bank)

Linked Policy Units	Management Approach A				Management Approach B				Management Approach C				Management Approach D			
	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments
SEV 1	HTL	HTL	HTL	<p>Timing of Defence Failure: The embankments would require significant improvement with foreshore management during the medium term to fulfil their function. Potential managed realignment on the long term would require new defences to be built. Villages, agricultural land, environmental and archaeological designations, and infrastructure including A and B roads, power transmission lines and the Oldbury and Berkeley power stations (or new builds in these locations) would continue to be protected behind defences. Intertidal areas in front of defences would erode and be lost. .</p> <p>Shoreline Response and</p>	NAI	NAI	NAI	<p>Timing of Defence Failure: The embankments would fail in the medium term. This would allow significant areas to experience regular flooding, impacting on villages, agricultural land, environmental and archaeological designations, and infrastructure including A and B roads, power transmission lines and Oldbury and Berkeley power stations (or new builds in these locations).</p> <p>Shoreline Response and Climate Change: The coastline would undergo increasing erosion, with MHWs being located at the back of the floodplain. This would result in Oldbury and Berkeley power stations becoming tidal islands with</p>	HTL	HTL	HTL	<p>Timing of Defence Failure: The embankments would require significant improvement with foreshore management from the medium term onwards to fulfil their function. Villages, agricultural land, environmental and archaeological designations, and infrastructure including A and B roads, power transmission lines and the Oldbury and Berkeley power stations (or new builds in these locations) would continue to be protected behind defences. Intertidal areas in front of defences would erode and be lost.</p> <p>Shoreline Response and Climate Change: The coastline would undergo increasing erosion with the</p>	HTL / NAI	HTL / NAI	HTL / NAI / MR	<p>Timing of Defence Failure: The embankments would require significant improvement with foreshore management during the medium term to fulfil their function. Potential managed realignment on the long term would require new defences to be built. Villages, agricultural land, environmental and archaeological designations, and infrastructure including A and B roads, power transmission lines and the Oldbury and Berkeley power stations (or new builds in these locations) would continue to be protected behind defences, unless in the long term managed realignment occurs. Under HTL, intertidal areas in front of defences would erode and</p>
SEV 2	HTL	HTL	HTL		HTL	HTL	HTL		HTL	HTL	HTL		HTL	HTL	HTL / MR	
SEV 3	HTL	HTL	HTL		NAI	NAI	NAI		HTL	HTL	HTL		HTL	HTL	HTL / MR	
SEV 4	HTL	HTL	HTL		HTL	HTL	HTL		HTL	HTL	HTL		HTL	HTL	HTL / MR	
SEV 5	HTL	HTL	HTL		NAI	NAI	NAI		HTL	HTL	HTL		HTL	HTL	HTL / MR	

SEV 6	NAI	NAI	NAI	<p>Climate Change: The coastline would undergo increasing erosion with the saltmarsh being maintained in the long term if managed realignment occurs.</p>	NAI	NAI	NAI	<p>access/egress severely affected.</p>	NAI	NAI	HTL	<p>saltmarsh losing its coherency in the medium term.</p>	NAI / HTL	NAI / HTL	NAI / HTL	<p>be lost. MR would enable new intertidal habitat to be created.</p> <p>Shoreline Response and Climate Change: The coastline would undergo increasing erosion with the saltmarsh being maintained in the long term if managed realignment occurs.</p>
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2.18 Aust Warth to Avonmouth (Severn Left Bank), and the River Avon

Linked Policy Units	Management Approach A				Management Approach B				Management Approach C				Management Approach D			
	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments
BRIS 1	HTL	HTL	HTL	<p>Timing of Defence Failure: The embankments, revetments and flood walls would require significant improvement and foreshore management in the short to medium term to fulfil their function. The city of Bristol and smaller conurbations, environmental and archaeological designations, and infrastructure including the docks, industrial processes, motorways, Seabank Power Station and power transmission lines would be protected behind defences. Intertidal areas in front of defences would erode and be lost.</p> <p>Shoreline Response and Climate Change: The coastline would undergo increasing erosion, with the foreshore lowering and saltmarsh losing its coherency in the medium term.</p>	NAI	NAI	NAI	<p>Timing of Defence Failure: The non-maintained embankments would fail in the medium term. This would allow significant areas to experience regular flooding, impacting on the city of Bristol and smaller conurbations, environmental and archaeological designations, and infrastructure including the docks, industrial processes, motorways, Seabank Power Station and power transmission lines.</p> <p>Shoreline Response and Climate Change: The coastline would undergo increasing erosion, with MHWS being located at the back of the floodplain.</p>	HTL	HTL	HTL	<p>Timing of Defence Failure: The embankments, revetments and flood walls would require significant improvement and foreshore management in the short to medium term to fulfil their function. The city of Bristol and smaller conurbations, environmental and archaeological designations, and infrastructure including the docks, industrial processes, motorways, Seabank Power Station and power transmission lines would be protected. Current plans for a deep water expansion at Avonmouth Docks would occur. Intertidal habitat would be lost in ATL areas.</p> <p>Shoreline Response and Climate Change: The coastline would undergo increasing erosion, with the foreshore lowering and saltmarsh losing its coherency in the medium term.</p>	HTL	HTL	HTL / MR	<p>Timing of Defence Failure: The embankments, revetments and flood walls would require significant improvement and foreshore management in the short to medium term to fulfil their function. Potential managed realignment in the long term would require new, more sustainable, defences to be built. The city of Bristol and smaller conurbations, environmental and archaeological designations, and infrastructure including the docks, industrial processes, motorways, Seabank Power Station and power transmission lines would be protected behind defences, unless managed realignment occurs in the long term. Under HTL, intertidal areas in front of defences would erode and be lost. MR would enable new intertidal habitat to be created.</p> <p>Shoreline Response and Climate Change: The coastline would undergo increasing erosion, with the foreshore lowering and saltmarsh moving landward as managed realignment occurs.</p>
BRIS 2	HTL	HTL	HTL		HTL	HTL	HTL		HTL	HTL	HTL		HTL	HTL / MR		
BRIS 3	HTL	HTL	HTL		HTL	HTL	HTL		ATL	ATL	ATL		ATL	HTL / MR		
BRIS 4	HTL	HTL	HTL		HTL	HTL	HTL		HTL	HTL	HTL		HTL	HTL		
BRIS 5	HTL	HTL	HTL		NAI	NAI	NAI		HTL	HTL	HTL		HTL	HTL / NAI	HTL / NAI	

2.19 M4 (Avon Left Bank) to Portishead Pier

Linked Policy Units	Management Approach A				Management Approach B				Management Approach C				Management Approach D			
	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments
BRI 6	HTL	HTL	HTL	<p>Timing of Defence Failure: The embankments would require significant improvement and foreshore management in the medium term to fulfil their function. The town of Portishead and smaller conurbations, environmental and archaeological designations, and infrastructure including the docks would be protected behind defences. Intertidal areas in front of defences would erode and be lost.</p> <p>Shoreline Response and Climate Change: The coastline would undergo increasing erosion, with the foreshore lowering and saltmarsh losing its coherency in the medium term.</p>	HTL	HTL	HTL	The same as Management Approach A.	HTL	HTL	HTL	The same as Management Approach A.	HTL / MR	HTL / MR	HTL / MR	The same as Management Approach A.

2.20 Portishead Pier to Battery Point

Linked Policy Units	Management Approach A				Management Approach B				Management Approach C				Management Approach D			
	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments
PORT1	NAI	NAI	NAI	<p>Timing of Defence Failure: No defences are present due to high ground.</p> <p>Shoreline Response and Climate Change: The historically stable cliffs will continue to remain stable.</p>	NAI	NAI	NAI	The same as Management Approach A.	NAI	NAI	HTL	<p>Timing of Defence Failure: No defences are present due to high ground.</p> <p>Shoreline Response and Climate Change: The historically stable cliffs will continue to remain stable. If erosion accelerates in the long term cliff base protection may be required.</p>	NAI	NAI	NAI / MR	The same as Management Approach A.

2.21 Woodhill Bay at Portishead to Wains Hill at Clevedon

Linked Policy Units	Management Approach A				Management Approach B				Management Approach C				Management Approach D					
	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments		
PORT2	NAI	NAI	NAI	<p>Timing of Defence Failure: The promenade at Woodhill Bay would fail completely in the medium to long term allowing constrained regular flooding to the coastal road and park. The seawalls at Clevedon would be maintained through to the long term.</p> <p>Shoreline Response and Climate Change: The coastline would remain relatively stable, although dependent on long term erosion rates the cliffs may need protection.</p>	NAI	NAI	NAI	<p>Timing of Defence Failure: The wall and promenade at Woodhill Bay and Clevedon would fail completely in the medium to long term allowing constrained regular flooding.</p> <p>Shoreline Response and Climate Change: The coastline would remain relatively stable, with MHWS being located at the back of the floodplain at Woodhill Bay.</p>	HTL	HTL	HTL	<p>Timing of Defence Failure: The promenade at Woodhill Bay would require significant maintenance in the medium term, whilst the seawalls at Clevedon would be maintained through to the long term.</p> <p>Shoreline Response and Climate Change: The coastline would remain relatively stable, although dependent on long term erosion rates the cliffs may need protection.</p>	HTL	HTL	HTL	<p>Timing of Defence Failure: The promenade at Woodhill Bay would require significant maintenance in the medium term, whilst the seawalls at Clevedon would be maintained through to the long term.</p> <p>Shoreline Response and Climate Change: The coastline would remain relatively stable.</p>		
PORT3	NAI	NAI	NAI		NAI	NAI	NAI		NAI	HTL	NAI		NAI	HTL	NAI / MR		NAI / MR	NAI / MR
PORT4	NAI	NAI	NAI		NAI	NAI	NAI		NAI	HTL	HTL		HTL	HTL / NAI / MR	HTL / NAI / MR		HTL / NAI / MR	

2.22 Kingston Seymour Bay and Sand Bay to and including Birnbeck Island

Linked Policy Units	Management Approach A				Management Approach B				Management Approach C				Management Approach D			
	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments
KIN 1	NAI	MR	MR	<p>Timing of Defence Failure: The embankments and sand dunes would require significant improvement and foreshore management in the medium term to fulfil their function. The town of Weston-Super-Mare and smaller conurbations, environmental and archaeological designations, and infrastructure including motorways would be protected. Managed realignment in the longer term would allow more sustainable defences to be built.</p> <p>Shoreline Response and Climate Change: The coastline would undergo increasing erosion, with the sand dunes eroding, foreshore lowering and saltmarsh losing its coherency in the medium term. To maintain the sand dunes under HTL would require significant management actions. MR in the long term would allow intertidal habitat to be created / roll back.</p>	MR	MR	MR	<p>Timing of Defence Failure: The existing embankments would be maintained where necessary, with progressively larger realignment in the short to medium term requiring new, more sustainable, defences to be built. The town of Weston-Super-Mare and smaller conurbations, environmental and archaeological designations, and infrastructure including the motorway would be protected, whilst agricultural land would convert to saltmarsh over time.</p> <p>Shoreline Response and Climate Change: The coastline would undergo increasing erosion and be allowed to evolve landward naturally. Sand dunes could be lost as the shoreline rolls back.</p>	HTL	HTL	HTL	<p>Timing of Defence Failure: The embankments and sand dunes would require significant improvement and foreshore management in the medium term to fulfil their function. The town of Weston-Super-Mare and smaller conurbations, environmental and archaeological designations, and infrastructure including motorways would be protected.</p> <p>Shoreline Response and Climate Change: The coastline would undergo increasing erosion, with the sand dunes eroding, foreshore lowering and saltmarsh losing its coherency in the medium term.</p>	HTL	HTL	HTL / MR	<p>Timing of Defence Failure: The embankments and sand dunes would require significant improvement and foreshore management in the medium term to fulfil their function. The town of Weston-Super-Mare and smaller conurbations, environmental and archaeological designations, and infrastructure including motorways would be protected. Whilst managed realignment in the longer term would allow more sustainable defences to be built.</p> <p>Shoreline Response and Climate Change: The coastline would undergo increasing erosion, with the sand dunes eroding, foreshore lowering and saltmarsh losing its coherency in the medium term. Sand dunes could be lost as the shoreline rolls back.</p>
KIN 3	HTL	HTL	HTL		MR	MR	MR		HTL	HTL	HTL		NAI	NAI	NAI	
KIN 4	NAI	NAI	NAI		NAI	NAI	NAI		HTL	HTL	HTL		NAI / HTL	NAI / HTL	NAI	

2.23 Middle Hope

Linked Policy Units	Management Approach A				Management Approach B				Management Approach C				Management Approach D			
	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments
KIN 2	NAI	NAI	NAI	<p>Timing of Defence Failure: No defences are present due to high ground.</p> <p>Shoreline Response and Climate Change: The historically stable cliffs will continue to remain stable.</p>	NAI	NAI	NAI	The same as Management Approach A.	NAI	NAI	NAI	The same as Management Approach A.	NAI	NAI	NAI	The same as Management Approach A.

2.24 Flat Holm

Linked Policy Units	Management Approach A				Management Approach B				Management Approach C				Management Approach D			
	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments
HOL1	NAI	NAI	NAI	<p>Timing of Defence Failure: No defences are present due to high ground.</p> <p>Shoreline Response and Climate Change: The historically stable cliffs will continue to remain stable.</p>	NAI	NAI	NAI	The same as Management Approach A.	NAI	NAI	NAI	The same as Management Approach A.	NAI	NAI	NAI	The same as Management Approach A.

2.25 Steep Holm

Linked Policy Units	Management Approach A				Management Approach B				Management Approach C				Management Approach D			
	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments	0-20	20-50	50-100	Comments
HOL 2	NAI	NAI	NAI	<p>Timing of Defence Failure: No defences are present due to high ground.</p> <p>Shoreline Response and Climate Change: The historically stable cliffs will continue to remain stable.</p>	NAI	NAI	NAI	The same as Management Approach A.	NAI	NAI	NAI	The same as Management Approach A.	NAI	NAI	NAI	The same as Management Approach A.