

Stolford to Combwich
Coastal Defence Strategy Study
VOLUME I

(CONSULTATION DRAFT)



STRATEGY PLAN SUMMARY

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PREFACE

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The Steart peninsula has flooded many times during the last millennium. The most severe recent floods occurred in 1981. The flood defences were repaired and upgraded after that event and for a while all seemed secure.

By 1997, a combination of coastal erosion, sealevel rise and wave action had made some of the defences distinctly fragile and at risk from failure. The policy since then has been patch and repair to try to reduce the risk of a major flood. Today that policy is becoming unsustainable, both practically and economically, without multi million pound investment to extensively upgrade and improve the existing defences. It may be that we could get through the next twenty years without a major flood, but for me the risks to life and property are too high to just ignore. My discussion so far with local residents and farmers suggests that they are getting very worried as well.

If the sea were to break through in an unmanaged way, leading to extensive damage it would be particularly difficult to justify a new defence scheme on national economic criteria, which work on the basis of valuing damage avoided. Therefore, if we are to do anything serious, it is essential we have a scheme in place before another major flood event occurs.

Coastal marshes are disappearing rapidly all around the UK. There could be an opportunity here to provide new areas for nature conservation to replace some of these losses, whilst investing in new sea defences for domestic property and some of the farmland. We could choose a fresh line, inland of the failing defences, which will be sustainable in the long term. This concept is called “managed realignment”.

This document is part of a comprehensive consultation process with local communities and stakeholders about the future of the area and discusses a wide range of coastal defence options including a series of managed realignment options.

The Somerset Local Flood Defence Committee (SLFDC)* will take the key decisions about the way forward in early December of this year. Please respond to the consultation and let us know what you think, so that we can take your views into account when we make our decisions.

Humphrey Temperley, (Chair of the Somerset Local Flood Defence Committee)



* The SLFDC is an executive committee appointed by DEFRA, Somerset County Council and North Somerset Council. It oversees the flood defence functions of the Environment Agency in our area and raises the necessary budget by levies on the local councils, paid through the Council Tax and can be grant aided by DEFRA, which pays up to 75% of the cost of approved capital works from central government funds.

FOREWORD

The Stolford to Combrich Coastal Strategy Study has been developed by Babtie Brown & Root for the Environment Agency.

The strategy has been developed based on information from previous studies, and from information gathered and analysed as part of additional studies that have been undertaken specifically for the needs of this Coastal Strategy.

The Coastal Strategy Study comprises three volumes, which together, form the **Consultation Draft** of the Strategy Report, as follows:

- Volume I Strategy Plan Summary
- Volume II Baseline Information and Technical Analysis
- Volume III Strategy Plan

Volume I presents a brief, non-technical summary of the strategy. This is based on the more detailed work in Volume II that has advised the main Strategy Plan presented in Volume III. The key issues are highlighted in Volume I, including those related to the formulation and implementation of the strategy, and uncertainties that need to be resolved. The intended audience for Volume I is a wide range of stakeholders, including both statutory and non-statutory consultees.

Volume II presents the main body of information that has been collected and analysed for the Strategy. The baseline information and investigations, and the assumptions made, are presented in a summary form. The technical information includes a wide range of environmental, engineering, and economic data, covering the relevant national policy and its application for each of the options considered. The intended audience for Volume II is technical and other specialists, with a particular interest or knowledge of the information and analytical methods used.

Volume III is the Strategy Plan. The strategy presented combines Flood and Coastal Defence needs with wider opportunities for the Steart Peninsula. The implementation of the strategy, and issues surrounding the further development of the strategy are also addressed. The intended audience for Volume III are the main statutory and non-statutory consultees, to give them a clear understanding of the proposed Strategic Plan.

INTRODUCTION

Background

The Environment Agency (Southwest Region) commissioned Babtie Brown & Root to prepare a Coastal Defence Strategy for the coastline between Stolford and Combwich in Somerset, known as the Steart Peninsula.

Adopting a strategic approach to the management of the flood defences between Stolford and Combwich is essential to ensure sustainability in economic, environmental and social terms. The strategy considers matters from the short term (5 years) to the long-term (50 years) and aims to integrate these issues into a coherent plan for the future. The consultation involved in the strategic process helps to resolve complex issues prior to the implementation of the strategy.

The Consultation Draft of the Strategy Study Report (of which this Volume forms a part) is intended to inform, and invite comments on the proposed Strategy Plan.

Aims and Objectives

The key aim of the Stolford to Combwich Coastal Defence Strategy is to develop sustainable coastal defence in line with the Government's Flood and Coastal Defence Policy:

'To reduce risks to people and the developed and natural environment from flooding and coastal erosion by encouraging the provision of technically, environmentally and economically sound and sustainable defence measures'

This high level aim has been developed into a series of more specific objectives that have been used to assess a range of Strategic Options. These evaluation criteria fall into the following categories:

- Flood Management
- Natural Environment
- Socio-economic and Cultural Environment

The Flooding Problem

Most of the land between Stolford and Combwich, to the rear of the existing defences, lies below the annual flood level i.e. below the highest tide of the year. Land and property are at risk from flooding in the event of a failure of the defences or extreme flooding events; the Study Area and the area at risk of flooding are shown on Figure 1. There have been flood events in recent years, most notably in 1981, 1990, and 1997. The most severe

event in 1981 led to the flooding of a significant area of farmland, many properties and the drowning of livestock.

As well as natural defences present around the peninsula, many different types of coastal defence measures have been constructed over the years. Together, these defences provide a degree of protection to the Steart Peninsula against tidal flooding.. The standard of flood defence varies, so that at different locations, there is between a 1 in 10 and 1 in 100 chance of flooding in any given year. This is below the Department for Environment, Food and Rural Affairs (DEFRA) indicative standard of flood protection identified for the area.

The coastline in the study area is, in general, eroding, putting the defences at a greater risk of failure. With sea levels rising, and increased storminess as a result of climate change, the defences are coming under increased attack. This is projected to get worse, in the future, making the defences even more vulnerable. This means an increasing risk of failure of the defence and thus risk to peoples lives and to their property.

These factors make it essential that a long term, strategic approach is taken to addressing the flooding problems on the Steart Peninsula, to ensure that a sustainable solution is identified.

Integration with Other Strategies and Plans

In developing a range of Strategic Options, consideration has been given to generic national, regional and local planning policy, as well as specific strategies in the local area. Local strategies and plans that have been considered include the Stockland Water Level Management Plan, the Local Environment Agency Plan, and the Parrett Catchment Project. The Parrett Tidal Sluice has also been considered. Whilst this has not been a detailed part of this Strategy Study, it is emphasised that none of the Strategic Options that are proposed would compromise the development of a tidal sluice in the future.

DEVELOPMENT AND EVALUATION OF THE STRATEGIC OPTIONS

Technical Information and Analysis

A wide range of technical information is required to ensure that there is a solid basis for developing the Strategic Options. Studies undertaken as part of this study include practical consideration of engineering approaches, assessment of environmental impacts and opportunities, and economic analysis of the costs of implementation and the assets involved. This information forms the basis of all the options that have been developed and follow established methodologies.

Development of the Strategic Options

The following Options have been developed and assessed as part of this strategy study:

Do Nothing

This means that there would be no Flood and Coastal Defence investment. This option must be considered, as it provides a base line against which all other options are compared and is, in itself, a legitimate option to apply for flood and coastal defence.

Do Minimum

This option would involve significant maintenance of the existing defences along the coast, and along the banks of the Parrett Estuary. This option does not meet the minimum indicative standard of protection.

Advance the Line

This would involve moving the current coastline seaward. This option has only been briefly addressed in the Strategy, as it is not considered to be sustainable.

Hold the Line

This option keeps the current line of defences, and would require upgrading of existing defences in places, and construction of new defences in other locations.

Managed Realignment

Three Managed Realignment Scenarios have been developed. These involve a realignment of the defences so that varying areas of land on the Steart Peninsula would no longer be protected from flooding. These Managed Realignment scenarios are shown on Figures 2, 3 and 4. It should be recognised that all lines shown are indicative and also that a myriad of alternative realignment possibilities exist

Evaluation of the Strategic Options

A preliminary analysis of all of the above options indicated that the Do Nothing and the Advance the Line options should be rejected as Coastal Defence Strategies. This is for a

range of engineering, environmental and economic, reasons that mean they are not sustainable options.

An important aspect of the analysis from a flood and coastal defence perspective is the economic assessment of the options. This has been done following DEFRA guidelines

Whilst the Do Minimum option has the highest benefit-cost ratio, this option does not meet the minimum indicative standard of protection and would thus increase the risks to people and property should flooding occur. This, therefore, is not considered as an acceptable flood and coastal defence strategy.

For those options that do meet the indicative standard of protection the highest benefit to cost ratio is achieved for Managed Realignment Scenario 3. For Managed Realignment Scenarios 1 and 2, there are significant property and land purchase costs that are not included in this analysis as such costs may not be met by Flood and Coastal Defence funding for the Steart Peninsula. For all Managed Realignment Scenarios, costs are included to purchase 164 ha of land that is required for flood defence needs (to meet legal requirements for the natural environment). Thus, for Managed Realignment scenarios 1 and 2 (or any other Managed Realignment scenario that requires more than 164 ha of land) additional funding would be needed for additional costs and the purchase of additional land and properties. This is estimated to be in the region of £10M for Scenario 1 and £8M for Scenario 2.

In addition to the economic analysis, the main options have been evaluated against a wide range of criteria that consider the natural environment, flood defence, and socio-economics and cultural heritage. The evaluation indicates that the most appropriate strategy would be some form of Managed Realignment.

Developing the Managed Realignment Scenarios

The Minimum Managed Realignment Scenario

An important part of developing this Coastal Defence Strategy is to identify a Strategic Option that meets Flood and Coastal Defence needs. From a flood and coastal defence perspective alone, the most appropriate option, is Managed Realignment Scenario 3. However, this scenario should be considered as the minimum Managed Realignment option. The extent of realignment has been defined to compensate for the loss of existing habitats under the Habitats Directive. The Habitats Directive is embodied in English Law and thus this is a legal requirement.

Opportunities for Increased Managed Realignment

The development of a Coastal Defence Strategy for the Steart Peninsula presents an opportunity to look beyond the needs of only local flood and coastal defence. Managed Realignment Scenarios 1 and 2 would result in the creation of large areas of new habitat (820 ha and 780 ha respectively), significantly greater than the 164 ha created as compensatory habitat under Managed Realignment Scenario 3.

Managed Realignment Scenarios 1 and 2 (or other scenarios creating in excess of 164 ha habitat) have considerable potential for environmental enhancement. This is important to a wide range of stakeholders, who have a significant interest in the creation of new habitats for nature conservation or other purposes.

A wide range of funding opportunities for habitat creation exist, including governmental, non-governmental and charitable organisations, such as English Nature, RSPB, Wildlife Trusts, World Wide Fund for Nature, and the National Trust. Government schemes such as the Habitat Scheme and the Countryside Stewardship Scheme also present opportunities outside of the conventional DEFRA Flood and Coastal Defence funding. There is also the possibility of funding from the European Union.

The scale of the final Managed Realignment option that may be implemented will clearly be dependent, in part, on the level of funding that can be secured. It is therefore essential that alternative funding partnerships be pursued.

Whilst the funding issues are an important aspect in developing the final form of the Managed Realignment, the needs of all the stakeholders must be considered. Consultations to date indicate that some form of Managed Realignment may be acceptable to many stakeholders. A further issue relates to the technical viability of any Managed Realignment scenario, which will need to be confirmed through additional design studies following the completion of this Strategy Study.

THE STRATEGY PLAN

The investigations in the Strategy Study have made considerable progress in understanding the Study Area and developing a clear course of action for the future of the peninsula. To realise the potential opportunities for additional funding and habitat gain, it is essential to adopt a flexible approach to the development of the Final Strategy Plan.

The proposed Strategy Plan, shown in Figure 5, is a flexible strategy capable of adapting to changes that may be required through its development and implementation. The Strategy Plan identifies the processes and time scales required to deliver the Final Strategy, including the need for further detailed investigations prior to any engineering works.

Implementation of the Do Minimum Option in the Short Term

It is proposed the Do Minimum option be adopted for the first five years of the Strategy. During this period, investigations will be undertaken to establish the availability of additional funding, and negotiations carried out to set up outline agreements with landowners. Additional studies required to implement the final Managed Realignment option will also be undertaken during this period.

The Do Minimum option is not considered to be a viable solution for the 50 year duration of the Strategy. However, it is considered appropriate to adopt this approach in the short term, until the long-term strategic solution is finalised. This may involve a higher degree of maintenance than that presently applied to the defences.

Implementation of the Do Minimum option provides a standard of defence equivalent to that afforded at the present time and does not compromise the ability to progress any of the Strategic Options under consideration.

Future Studies and Activities

The implementation of the Do Minimum option, over a five year period, provides sufficient time to undertake a wide range of detailed studies and activities that are required to implement the final Managed Realignment. These are as follows:

- Monitoring the coastal and river frontage defences.
- Coastal and estuary process studies.
- Archaeology studies.
- Habitat and ecology studies.
- Socio-economic studies.
- Identification of funds for habitat creation.

- Undertake Environmental Impact Assessment.
- Design of scheme option.

Summary of the Strategy Plan

The main activities required for the proposed Strategy Plan are summarised below, and are shown in Figure 5.

- Adopt the ‘Do Minimum’ approach on the existing defences for the next five years whilst detailed investigations proceed.
- Set in motion and complete further studies within the five-year period to enable final decisions on the approach and design of defences, to be made (and hence for engineering works to commence).
- Seek ‘purchase agreements’ with landowners to purchase required land for managed realignment. Agreements can be established prior to the need to actually purchase the land. These should be in place by the end of year 2.
- Investigate funding for additional managed realignment within two years, including achieving commitments of funding (in principle). Finalise funding amounts by year 3.
- If no funding can be attracted for additional managed realignment (beyond Managed Realignment Scenario 3), detailed work for implementation of Managed Realignment Scenario 3 should commence in year 3.
- If additional funding for managed realignment is confirmed by year 3 (beyond Managed Realignment Scenario 3), the advance in understanding of coastal process should be reviewed. Over years 4 and 5 the best location(s), and design, for managed realignment on the peninsula will be identified.
- The necessary planning consents, including undertaking an Environmental Impact Assessment and an Appropriate Assessment where required, will be undertaken in parallel with design.
- All land necessary for the final Managed Realignment option will be purchased by year 5.
- Engineering works to implement the final Managed Realignment option will commence in year 6.
- The performance of the implemented option will be monitored to ensure that it remains sustainable on a five-year cycle, commencing in year 7.

CONCLUSIONS

A range of Coastal Defence Strategies have been developed and evaluated. Comments are invited in relation to any of these Strategic Options.

Through the work carried out to date it is considered that the most appropriate “high level” Strategic option, in the long term, is some form of Managed Realignment. The extent of the Managed Realignment will depend on a range of factors including:

- Stakeholder views on Managed Realignment.
- Availability of funding for land purchase for habitat creation.
- Technical viability of Managed Realignment.

The Strategy Plan that has been developed, meets DEFRA requirements for flood and coastal defence. The minimum Managed Realignment of 164ha also meets these requirements, however it is essential that flexibility is built into the plan to allow for an extension of the Managed Realignment area beyond this minimum area.

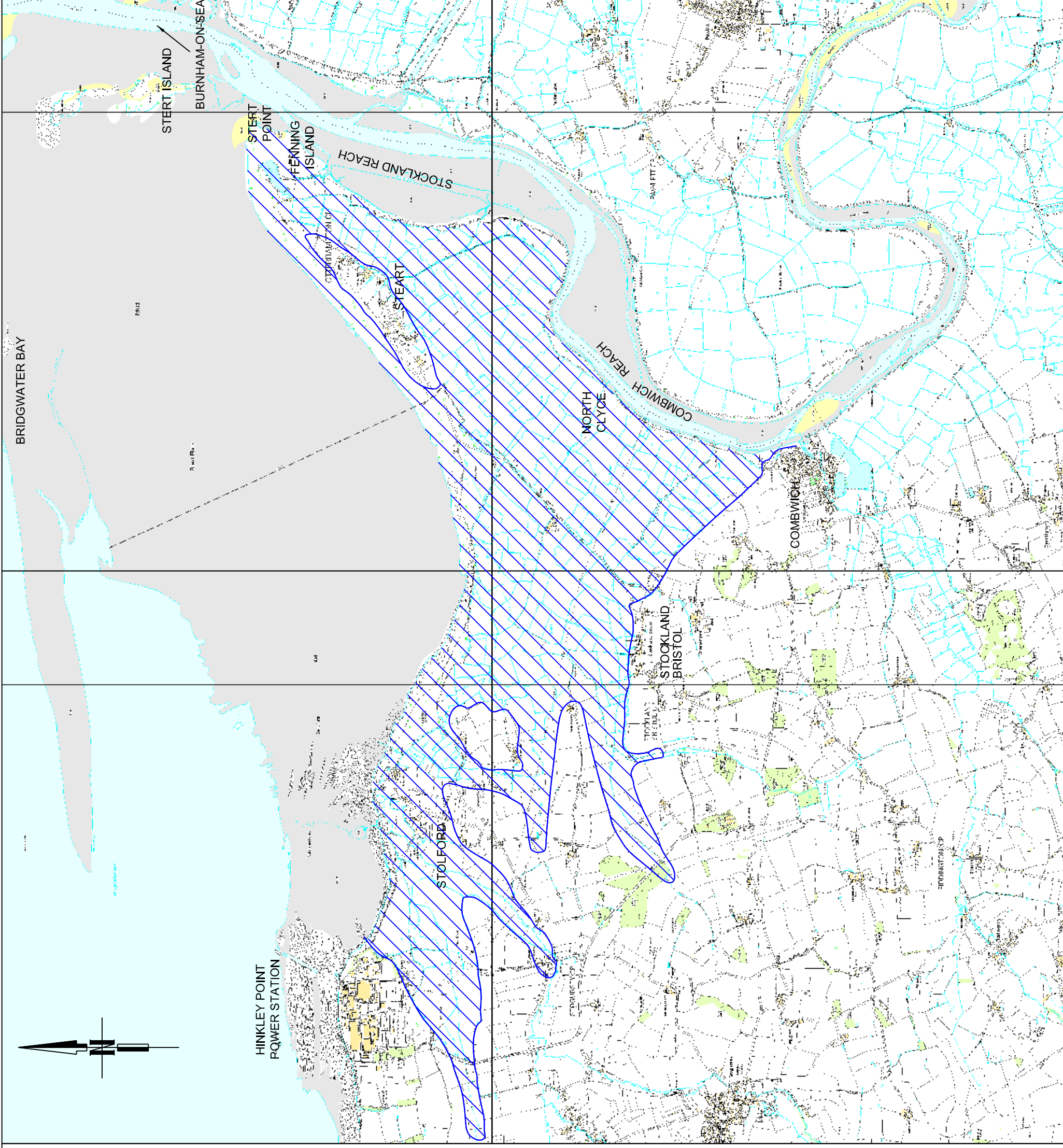
There is the potential within the plan for any larger Managed Realignment scenario to be implemented up to 820 ha, i.e. the total undeveloped land area on the Peninsula. To maximise the potential for Managed Realignment on the Steart Peninsula, identification of alternative sources of funding is essential. This includes non-governmental and charitable organisations, the European Union, and a range of UK Government initiatives.

It is proposed the Do Minimum option should be implemented in the short term, for the first 5 years. During this period the technical issues and the level of funding that can be obtained for Managed Realignment will be addressed. Thus the form of the final strategic option, to be implemented for the long term (50 year time frame), will be developed over this period.

A series of studies and activities have been proposed as part of the Strategy Plan, in order to ensure that a sustainable Strategy is implemented. These actions should enable the potential for Managed Realignment to be maximised without compromising economic or social issues for property and land owners on the Steart Peninsula.

APPENDIX 1

Figures



KEY

1 IN 200 YEAR CHANCE FLOOD



Babtie Brown & Root

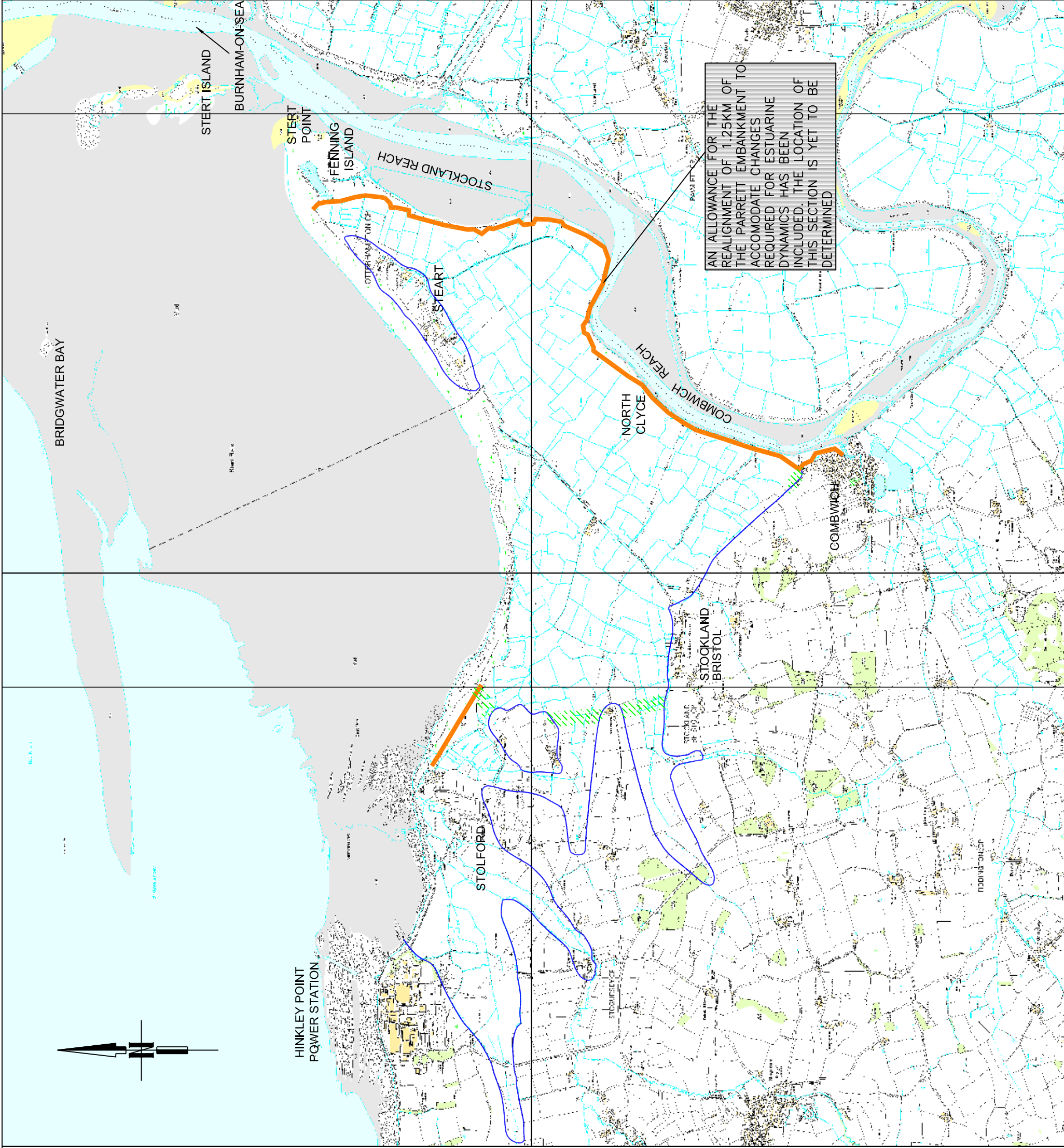
Figure Number

Figure 1

Title

Indicative Flood Risk Area

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KEY

- INDICATIVE LINE OF NEW EARTH EMBANKMENT
- EXISTING EMBANKMENT RAISED & STRENGTHENED



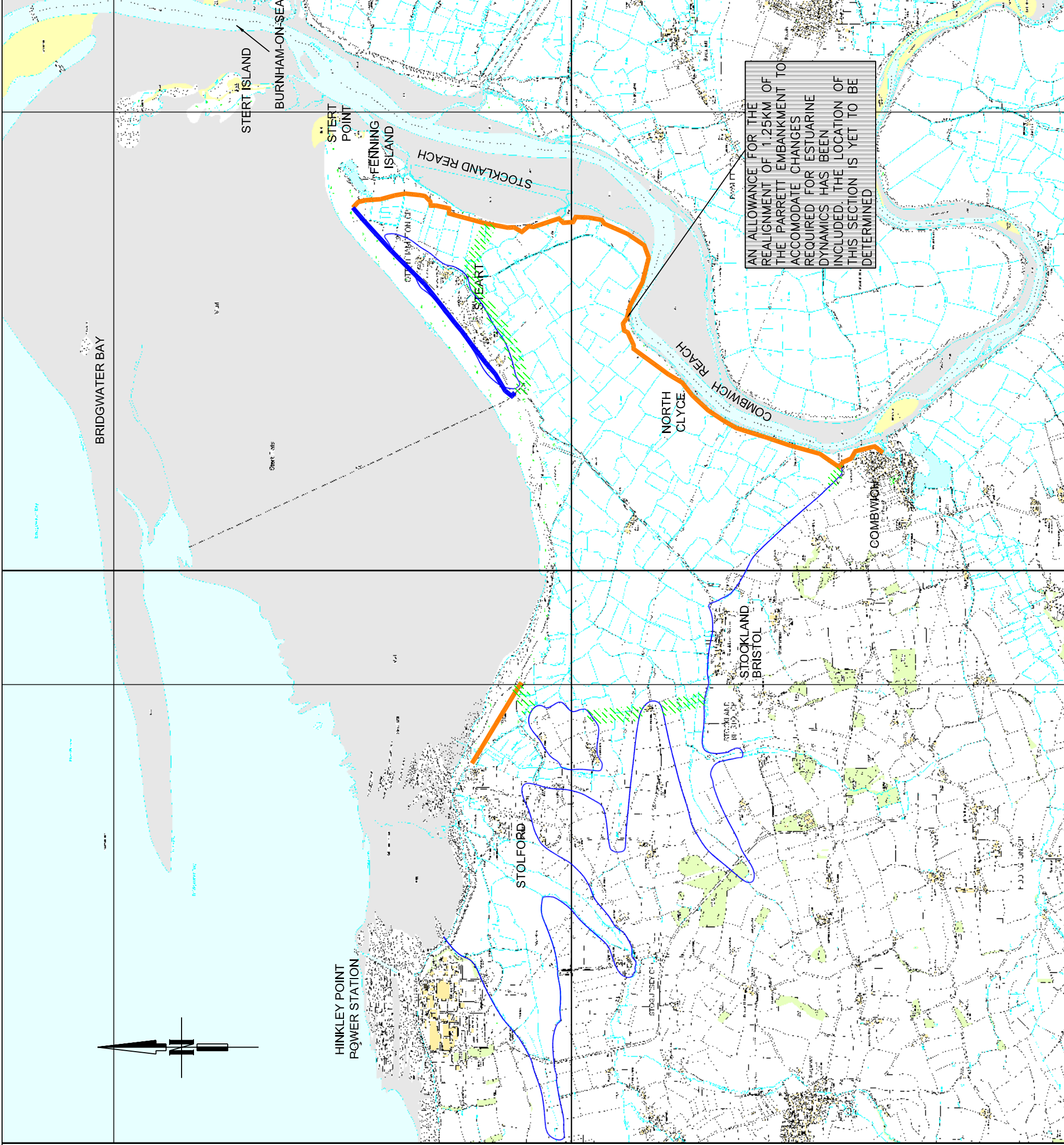
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Figure Number

Figure 2

Title
Managed Realignment Scenario 1

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KEY

- INDICATIVE LINE OF NEW EARTH EMBANKMENT
- EXISTING EMBANKMENT RAISED & STRENGTHENED
- NEW ROCK REVETMENT



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Figure Number

Figure 3

Title
Managed Realignment Scenario 2

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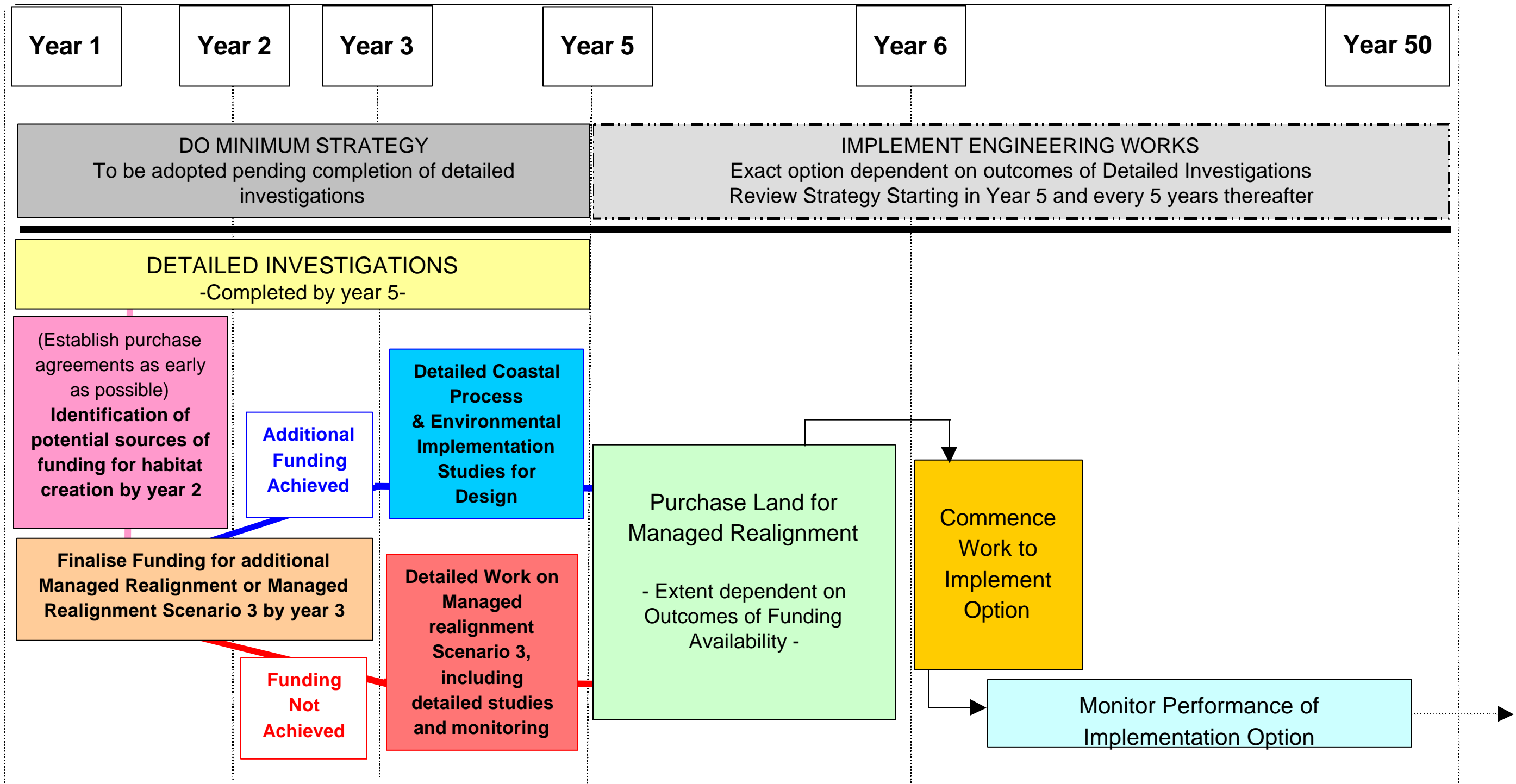


Figure 5. Proposed Strategy Plan

DOCUMENT HISTORY RECORD

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A01	11-09-02	Consultation Draft – Issue to Environment Agency and SLFDC	IMB	DJL	IMB
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