

# Robin Hood's Bay Coastal Strategy Study

## **Strategic Environmental Assessment**

### Environmental Report

25<sup>th</sup> October 2010

*Produced for*  
Scarborough Borough Council

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# Non Technical Summary

## Introduction and Background

Scarborough Borough Council is preparing a Coastal Strategy Study for the coastline between Whitby and Cloughton, North Yorkshire. The strategy seeks to provide protection from coastal erosion for the next 100 years. The study aims to reinforce the understanding of the coastal management issues on the frontage including; socio-economics, environmental constraints, coastal processes and erosion.

Coastal Strategies are not subject to a legal requirement for Strategic Environmental Assessment (SEA) under the European SEA Directive. Nevertheless SEA is encouraged by Department for Environment, Food and Rural Affairs (Defra) as a valuable planning tool and has therefore been applied to this Strategy.

The purpose of this Environmental Report is to identify the potential environmental impacts of the proposed strategy options on the environment and to propose measures for mitigation.

The Report will be published alongside the Coastal Strategy Study Report and will be available to individuals and organisations involved in consultation on the Preferred Options.

Options taken forward from this Strategy may be subject to Environmental Impact Assessment (EIA) in accordance to the EIA Regulations in due course.

## SEA Objectives

A series of SEA objectives have been developed at the scoping stage using existing plans and programmes, including; Yorkshire and Humber Regional Spatial Strategy, Scarborough Core Strategy and the North Yorkshire Moors Core Strategy. As a result there are twenty one objectives which have been used to assess the impacts of the proposed strategy options.

A suite of indicators and targets have been developed which provide the basis for the assessment and also future monitoring of the impacts following implementation of the strategy.

## Shoreline Management Options

The shoreline between Whitby and Cloughton is divided up into Management Areas in accordance with the overarching River Tyne to Flamborough Head Shoreline Management Plan 2.

The study area includes two Management Areas; MA24 and MA25 (which is divided into Policy Units MA24.1, MA25.1 and MA25.2). MA24.1 extends from Abbey Cliff in the north approximately 1.2 km south to Saltwick Nab. MA25.2 extends from Saltwick Nab approximately 23 km south to Hundale Point, but excludes Robin Hoods Bay. MA25.1

covers a small length of coast at the village of Robin Hoods Bay and extends for approximately 0.5 km.

The following proposed strategy options have been considered for each Policy Unit:

- **No Active Intervention (Do nothing):** Let nature take its course – no work will be carried out to maintain or repair defences, leaving them to deteriorate over time.
- **Active Intervention Maintain (Hold the Line):** Defences are maintained as they are, but as sea levels rise, flood and erosion risks increase over time.
- **Active Intervention Sustain (Hold the Line):** Defences are raised and strengthened keeping the levels of flood and erosion risks the same as now.
- **Active Intervention Improve (Hold the Line):** Defences are improved to increase the standard of protection over time, beyond the requirements of rising sea levels.
- **Managed Realignment (Retreat the Line):** Improve coastal stability by moving coastal defences to a more sustainable location further inland, allowing controlled flooding to occur.
- **Adaptive Management:** Managing complex areas by monitoring changes and acting on them in a planned but flexible way, increasing our understanding over time.

The SEA has considered each of these options for each of the Policy Unit as far as they are technically feasible. The CSS has then decided on a preferred option taking into account all of the environmental and socio-economic constraints.

For both MA24.1 and MA25.1 the preferred option is Adaptive management. This option would allow the coastline to naturally erode back. It includes a property roll back scheme within which some residential and commercial properties would be abandoned with planning provision for replacement buildings on either the property owners land or land possibly made available by the North York Moors National Park Authority.

For MA25.2 the preferred option is Adaptive Management/Active Intervention Maintain. This option includes a property roll back scheme, within which, some residential and commercial properties would be abandoned, with planning provision for replacement buildings on either the property owners land or land possibly made available by the North York Moors National Park Authority. The option also includes maintenance to existing defences in the southern village.

### **Habitats Regulations Assessment**

The assessment has been supported by a Habitats Regulations Assessment screening exercise as the first step of the process which aims to identify any significant impacts on

any nature conservation sites of European importance (Natura 2000 and Ramsar sites) that could potentially arise as a result of the policies included in the Plan.

Based on the information from the Habitats Regulation Assessment and subject to future consultation with Natural England and other stakeholders, it is considered that there will be no impact on any of the European designated sites and therefore no requirement for an Appropriate Assessment.

### **Monitoring and Implementation**

The environmental report includes recommendations on monitoring for the purposes of identifying unforeseen adverse effects following implementation.

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## Abbreviations

BAP	Biodiversity Action Plan
CSS	Coastal Strategy Study
EA	Environment Agency
EH	English Heritage
EIA	Environmental Impact Assessment
GCR	Geological Conservation Review
H&S	Health & Safety
HDA	Habitats Directive Assessment
MA	Management Area
NAI	No Active Intervention
NE	Natural England
ODPM	Office of the Deputy Prime Minister
SAC	Special Area of Conservation
SEA	Strategic Environmental Assessment
SMP	Shoreline Management Plan
SMP2	Shoreline Management Plan 2
SPA	Special Protected Area
SSSI	Site of Special Scientific Interest

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# 1 Introduction

Scarborough Borough Council is preparing a Coastal Strategy Study for the coastline between Whitby and Cloughton, North Yorkshire. The strategy aims to set policy, over the next 100 years, for the management of the coast, taking into account the environmental, social and economic conditions of the area.

This Environmental Report identifies the potential impacts of the proposed policies on the environment, proposes mitigation and enhancement measures to support the policy decision making process.

## 1.1 SEA and the Regulations

Under 'European Directive 2001/42/EC', the 'Strategic Environmental Assessment (SEA) Directive' SEA is required for certain types of new plans. The SEA Directive is transposed in England through the 'Environmental Assessment of Plans and Programmes Regulations 2004' (SI 2004 No. 1633). National guidelines for preparing a SEA have been issued by the former Office of the Deputy Prime Minister<sup>ii</sup> (ODPM) and by the consultation bodies: Environment Agency, Natural England and English Heritage.

Whilst there is no legal requirement to apply the SEA Directive to CSS, the use of SEA as a planning tool is strongly encouraged by Defra<sup>iii</sup>. An SEA is therefore being undertaken for this CSS using methodologies consistent with national guidance and the requirements of the SEA Directive.

## 1.2 SEA Directive Compatibility

The SEA Directive states that an Environmental Report shall be prepared in which *"the likely significant effects on the environment of implementing the plan or programme, and reasonable alternatives taking into account the objectives and the geographical scope of the plan or programme, are identified, described and evaluated"* (Article 5.1).

It also states that the Environmental Report shall include *"information that may reasonably be required taking into account current knowledge and methods of assessment, the contents and level of detail in the plan or programme, [and] its stage in the decision-making process"* (Article 5.2).

## 1.3 Habitats Regulation Assessment

The assessment has been supported by a Habitats Regulations Assessment screening exercise as the first step of the process which aims to identify any significant impacts on any nature conservation sites of European importance (Natura 2000 and Ramsar sites) that could potentially arise as a result of the policies included in the Plan.

There are four stages to the HRA process set out in the commonly adopted guidance; *'Appropriate Assessment of Plans'*<sup>iv</sup>. *'Directive 92/43/EEC on the Conservation of Natural Habitats and Wild Fauna and Flora'*, the 'Habitats Directive', provides legal protection for habitats and species of European importance. Article 6(3) of the Habitats Directive relates to Stages 1 to 3 and Article 6(4) to Stage 4. The requirement to undertake a HRA is set out within this Directive.

Based on the information from the Habitats Regulation Assessment and subject to future consultation with Natural England and other stakeholders, it is considered that there will be no impact on any of the European designated sites and therefore no requirement for an Appropriate Assessment.

## 2 Methodology

### 2.1 SEA Process and Stages Completed to Date

SEA is a process that ensures the environmental impacts of plans and programmes are considered from the earliest stage, and that significant negative impacts are identified, assessed, mitigated, communicated to decision makers and monitored.

The stated objectives of the SEA Directive are to:

- Provide for a high level of protection of the environment; and
- Contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes with a view to promote sustainable development.

The SEA process can be divided into five stages which are outlined in Table 2.1.

Information on Stages A and B was included in the SEA Scoping Report<sup>v</sup>, which considered the environmental baseline and problems, alternative coastal management strategies and possible 'significant' impacts in the form of Key Issues.

The main output of the SEA process is an 'Environmental Report' in which the likely significant environmental impacts resulting from implementation of the CSS are described and assessed, and mitigation and monitoring are recommended.

Table 2.1 - The SEA Process

SEA Stage	What is Involved	Status
<b>STAGE A</b>	<b>A1:</b> Identifying other relevant policies, plans and programmes, and sustainability objectives.	Completed in the SEA Scoping Report and updated in <b>Appendix A</b> .
	<b>A2:</b> Collecting baseline information.	Completed in the SEA Scoping Report and updated in <b>Appendix B</b> .
	<b>A3:</b> Identifying environmental problems.	Completed as Key Issues in the SEA Scoping Report and updated in <b>Appendix C</b> .
	<b>A4:</b> Developing the SEA objectives.	Completed in the Scoping Report and updated in <b>Appendix D</b> .

SEA Stage	What is Involved	Status
	<b>A5:</b> Consulting on the scope of the SEA.	SEA Scoping Report was submitted to a number of consultees. Their comments are listed in <b>Appendix F</b> .
<b>STAGE B</b>	<b>B1:</b> Testing the plan or programme objectives against the SEA objectives.	Completed in the SEA Scoping Report and updated in <b>Section 4</b> .
	<b>B2:</b> Developing strategic alternatives.	Completed in the SEA Scoping Report and updated in <b>Section 5</b> .
	<b>B3:</b> Predicting the effects of the draft plan or programme including alternatives.	Included in <b>Section 6</b> of this SEA Environmental Report.
	<b>B4:</b> Evaluating the effects of the draft plan or programme including alternatives.	Included in <b>Section 6</b> of this SEA Environmental Report.
	<b>B5:</b> Considering ways of mitigating adverse effects.	Included in <b>Section 7</b> of this SEA Environmental Report.
	<b>B6:</b> Proposing measures to monitor the environmental effects of implementing the plan or programme.	Included in <b>Section 8</b> of this SEA Environmental Report.
<b>STAGE C</b>	<b>C1:</b> Preparing the Environmental Report.	This is the Environmental Report.
<b>STAGE D</b>	<b>D1:</b> Consulting on the draft plan and the Environmental Report.	The SEA Environmental Report will be submitted for consultation with the draft CSS in early 2010.
	<b>D2(i):</b> Assessing significant changes.	An Environmental Statement will be prepared after the consultation. This will assess the preferred options including any significant changes arising from the consultation process.

SEA Stage	What is Involved	Status
	<b>D2(ii):</b> Appraising significant changes resulting from representations.	This will be addressed in the in the Environmental Statement.
	<b>D3:</b> Making decisions and providing information.	This will addressed be in the Environmental Statement
<b>STAGE E</b>	<b>E1:</b> Developing aims and methods for monitoring.	Once the CSS is adopted a strategy for monitoring will be completed.
	<b>E2:</b> Responding to adverse effects.	The strategy will include provision for monitoring to identify and facilitate a response to adverse effects as they happen following implementation

## 2.2 Scoping

The first stage in the SEA process involves assembling information on the existing environmental, social and economic baseline to provide a starting point for appraising the effects of implementing the CSS. This information was reported in the form of the SEA Scoping Report. To provide a sound basis for analysis, the SEA Scoping Report also identified relevant plans and programmes, key environmental issues and problems and detailed a SEA Framework through which the appraisal could take place.

Views on the content of the SEA Scoping Report, including the proposed approach to the SEA, were taken into account through a formal period of consultation with statutory and non-statutory consultees. Comments received at this stage allowed for further refinement of the proposed SEA Framework thereby ensuring that all relevant environmental, social and economic aspects would be captured through the appraisal.

## 2.3 Assessment of Aims and Objectives

The aims and objectives of the SEA are appraised in Section 6 of this report.

## 2.4 Reporting

This Report is designed to fulfil the requirements of 'EC Directive 2001/42/EC' in respect of the SEA "Environmental Report". This report will be published alongside the CSS and will be available to individuals and organisations involved in consultation on the Preferred Options.

## 2.5 Monitoring

'EC Directive 2001/42/EC' requires that significant environmental effects of implementing the plan or programme to be monitored "in order to identify unforeseen adverse effects and to be able to undertake remedial action" (Article 10(1)). This guidance uses the term 'SEA monitoring' to cover the overall monitoring of environmental effects. This report includes draft monitoring recommendations and these will be updated following the consultation period.

## 2.6 The Environmental Report and its Aims

The SEA Directive requires that the report should contain the following information:

- (a) How environmental considerations have been integrated into the plan or programme;
- (b) How the Environmental Report has been taken into account;
- (c) How opinions expressed in response to (i) the invitation referred to in regulation 13(2)(d) and (ii) action taken by the responsible authority in accordance with regulation 13(4), have been taken into account;
- (d) How the results of any consultations entered into under regulation 14(4) have been taken into account;
- (e) The reasons for choosing the plan or programme as adopted, in the light of the other reasonable alternatives dealt with; and
- (f) The measures that are to be taken to monitor the significant environmental effects of the implementation of the plan or programme.

Table 2.2 identifies where the environmental report has met the SEA Directive requirements.

Table 2.2 - The SEA Directives Requirements

Requirements / Where covered in Guide	Section of Environmental Report
Preparation of an environmental report in which the likely significant effects on the environment of implementing the plan or programme, and reasonable alternatives taking into account the objectives and geographical scope of the plan or programme, are identified, described and evaluated. The information to be given is (Art. 5 and Annex I):	Section 4, Section 5 and Appendix D.
a) An outline of the contents, main objectives of the plan or programme, and relationship with other relevant plans and programmes;	Section 3.
b) The relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan or programme;	Section 4.

Requirements / Where covered in Guide	Section of Environmental Report
c) The environmental characteristics of areas likely to be significantly affected;	Section 4.
d) Any existing environmental problems which are relevant to the plan programme including, in particular, those relating to any areas of a particular environmental importance, such as areas designated pursuant to 'Directive 79/409/EEC' and 'Directive 92/43/EEC';	Section 4.
e) The environmental protection objectives, established at international, Community or national level, which are relevant to the plan or programme and the way those objectives and any environmental considerations have been taken into account during its preparation;	Section 4.
f) The likely significant effects on the environment, including on issues such as biodiversity, population, human health, fauna, flora, soil, water, air, climatic factors, material assets, cultural heritage including architectural and archaeological heritage, landscape and the interrelationship between the above factors. (Footnote: These effects should include secondary, cumulative, synergistic, short, medium and long-term permanent and temporary, positive and negative effects);	Section 6.
g) The measures envisaged to prevent, reduce and as fully as possible offset any B significant adverse effects on the environment of implementing the plan or programme;	Section 8.
h) An outline of the reasons for selecting the alternatives dealt with, and a description of how the assessment was undertaken including any difficulties (such as technical deficiencies or lack of know-how) encountered in compiling the required information;	Section 6.
i) A description of measures envisaged concerning monitoring in accordance with Article 10;	Section 9.
The report shall include the information that may reasonably be required taking into account current knowledge and methods of assessment, the contents and level of detail in the plan or programme, its stage in the decision-making process and the extent to which certain matters are more appropriately assessed at different levels in that process to avoid duplication of the assessment (Art. 5.2).	Section 9.
Consultation: Authorities with environmental responsibility, when deciding on the scope and level of detail of the information to be included in the environmental report (Art. 5.4).	Section 2 and Section 9.
Authorities with environmental responsibility and the public shall be given an early and effective opportunity within appropriate time frames to	Section 2 and Appendix E.

Requirements / Where covered in Guide	Section of Environmental Report
express their opinion on the draft plan or programme and the accompanying environmental report before the adoption of the plan or programme (Art. 6.1, 6.2).	
Taking the environmental report and the results of the consultations into account in decision-making (Art. 8).	Table E.2 and E.3.
Provision of information on the decision: When the plan or programme is adopted, the public and any countries consulted shall be informed and the following made available to those so informed: <ul style="list-style-type: none"> <li>• The plan or programme as adopted;</li> <li>• A statement summarising how environmental considerations have been integrated into the plan or programme and how the environmental report pursuant to Article 5, the opinions expressed pursuant to Article 6 and the results of consultations entered into pursuant to Article 7 have been taken into account in accordance with Article 8, and the reasons for choosing the plan or programme as adopted, in the light of the other reasonable alternatives dealt with; and</li> <li>• The measures decided concerning monitoring (Art. 9 and 10).</li> </ul>	Section 6 and Section 9.
Monitoring of the significant environmental effects of the plan's or programme's implementation (Art. 10).	Section 9.2.

## 2.7 Consultation

The SEA Directive requires that 'authorities with environmental responsibility' must be consulted during the SEA process. The government has designated three agencies as consultation bodies in this regard. These are Natural England (NE), English Heritage (EH) and the Environment Agency (EA). Scarborough Borough Council has also identified a list of organisations that may have an interest in the CSS for the purposes of consultation. The full list of consultees is shown in Table E.1 of Appendix E.

Consultation will be undertaken within the SEA process for the CSS as follows:

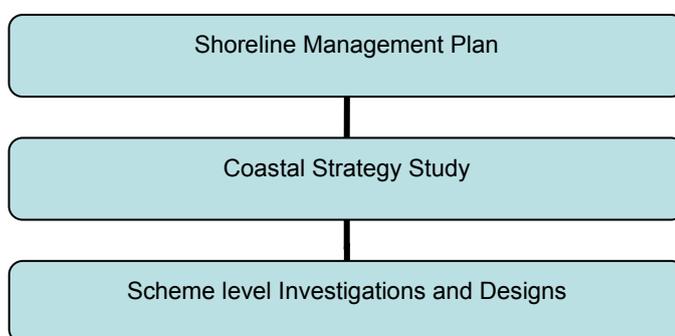
1. Scoping: When deciding on the scope and level of detail of information which must be included in the Environmental Report. This has already been completed and the consultation responses to the SEA Scoping Report are listed in Table E.2 of Appendix E.
2. Reporting: Following preparation of the draft Environmental Report. This consultation takes place concurrently with public consultation on the CSS.

3. Decision to adopt: Information must be made available on the plan adopted, consultations, decisions made and monitoring measures.

## 3 The Coastal Strategy Study

The purpose of the CSS is to provide strategic recommendations on the management of the coastline. The strategy provides a framework of preferred policies for the coastal management of the study area over the next 100 years, up to 2110.

Several types of plan exist for the management of flood defence and erosion at the coast. These include large scale plans such as Shoreline Management Plans (SMP), more detailed CSS and scheme or project level investigations and designs. The following figure shows the hierarchy of plans for this area of the coastline.



The North East SMP2 covers the coastline from the River Tyne to Flamborough Head. The recommendations in the SMP2 are being used to inform the CSS although additional detailed investigations have been completed to validate these options in line with Defra guidance<sup>vi</sup>.

The CSS is not limited to capital works (i.e. construction of defences) but can include any programme of management or action, for example flood warning strategy, flood forecasting or adaptive measures.

### 3.1 Development of Options

The CSS policy options were developed with regard for an appraisal of socio-economic, environmental and coastal erosion constraints within each policy unit. The appraisal considered a range of strategic coastal defence options identified in the SMP Guidance. These are listed in Table 3.1.

Only those options which were considered technically feasible are addressed in this report. The assessments of the preferred options are discussed in section 6 of this report.

Table 3.1 - Policy Options

Policy Option		Definition
No Active Intervention (Do Nothing)		Let nature take its course – no work will be carried out to maintain or repair defences, leaving them to deteriorate over time.
Active Intervention (Hold the Line)	Maintain	Defences are maintained as they are, but as sea levels rise, flood and erosion risks increase over time.
	Sustain	Defences are raised and strengthened keeping the levels of flood and erosion risk the same as now.
	Improve	Defences are improved to increase the standard of protection over time, beyond the requirements of rising sea levels.
Managed Realignment (Retreat the Line)		Improve coastal stability by moving coastal defences to a more sustainable location further inland, allowing controlled flooding/erosion to occur.
Adaptive Management		Managing complex areas by monitoring changes and acting on them in a planned but flexible way, increasing our understanding over time.

### 3.2 Outline of the Coastal Strategy Study

The primary objective of the strategy is the protection of people, their assets and property from coastal erosion and flooding. The CSS seeks to achieve this through the development and implementation of a sustainable coastal strategy which is compatible with natural processes, environmentally acceptable, economically and technically viable. The CSS also needs to be compatible with preferred management strategies at adjacent frontages and with the higher level SMP2 covering the study area.

The strategy aims to:

- Develop strategic coastal management policy options that work technically, are affordable, and do not damage the environment:
  - provide an appropriate level of coastal and flood defence to prevent coastal erosion and flooding of properties and the low-lying hinterland;

- provide sustainable defences which utilise natural defence mechanisms wherever possible;
- enhance the natural environment and biodiversity and increase the potential for recreation and tourism.
- Develop a five-year programme of works which addresses priorities and urgencies;
- To set out procedures for monitoring the effectiveness of the CSS policies.

The objectives of the strategy are:

1. To provide an appropriate level of coastal and flood defence.
2. To provide sustainable defences, which utilise natural defence mechanisms wherever possible.
3. To enhance the natural environment and to increase the potential for recreation and tourism.
4. To provide a blueprint for future monitoring and programming of maintenance works.
5. To increase the understanding of the shoreline and to focus consultations in a strategic manner.
6. To aid co-ordination and to consolidate information gathered within higher level plans.

## 4 State of the Environment

### 4.1 The Study Area

The study area covers 24.2 km of coastline, from Abbey Cliff, to the south of Whitby, to Hundale Point, just north of Scalby. It extends inland for 100 m from the top of the eroding cliff edge. The shoreline between Whitby and Cloughton is divided up into Management Areas in accordance to the overarching River Tyne to Flamborough Head SMP2. The Management Areas within this study are MA24 and MA25. The Management Areas were then divided into Policy Units; MA24.1, MA25.1 and MA25.2. The study area can be seen in Figure 1.1.

Figure 4.1 – The Study Area Including Management Areas and Policy Units.



4.1.1 *MA24.1*

MA24.1 extends from Abbey Cliff in the north approximately 1.2 km south to Saltwick Nab. To the east of Whitby East Pier are the high, near vertical Abbey cliffs with a wide rock platform at the toe. A rock revetment has been placed to the toe of the cliff by the east Pier and extends some 200 m. The steep cliffs extend along the coast all the way to Saltwick Nab where a large rock platform extends at the foot of the cliff.

4.1.2 *MA25.1*

MA25.1 extends from Saltwick Nab approximately 23 km south to Hundale Point but excludes the Village of Robin Hoods Bay.

The cliffs at the northern end of Robin Hood's Bay are steep; scree covered and extends to a rock platform. At the abrupt northern corner of the bay the cliffs are near vertical and reduce in height to the south where they are overlain by glacial till. The till slopes have regressed to form a series of vegetated terraces with the road to Robin Hood's Bay village close to the crest and a rock revetment at the toe of the cliffs. The steep till slopes continue to the south with the basal vertical cliff re-emerging at Boggle Hole. Here the Mill Beck cuts a gorge through the till and the underlying rock to emerge as a steep-sided heavily wooded valley at the coast. The near vertical toe cliff with the upper sloped till deposits continue along the face of the bay to the headland at Ravenscar.

The coast to the south of Ravenscar is typified by a lower rock cliff with a wide slumped, terraced and vegetated slope to the higher cliff (possibly glacial till) behind. The toe cliff increases in height at Hayburn Wyke and extends along the coast to the southern limit of the study area at Hundale Point. Over this section there is a narrow rock strewn foreshore.

The majority of the coastline including Robin Hood's Bay is designated as a Site of Special Scientific Interest (SSSI). The section from just south of Robin Hood's village to just north of Hundale Point is designated as a Special Area of Conservation (SAC). The entire MA is designated as Heritage Coast and there are seven Geological Conservation Review (GCR) sites along this part of the coast. Much of the land behind the coast in this MA is owned by the National Trust.

4.1.3 *MA25.2*

MA25.2 covers the small length of coastal frontage in the middle of MA25.1 at the village of Robin Hoods Bay and extends for approximately 0.5 km.

The upper part of Robin Hood's Bay Village sits on the till slopes with a near vertical toe cliff which reduces in height to the south. The road to the lower village runs close to the crest of the regressing till slope.

The densely developed lower village is built on shoulders of land either side of the Kings Beck valley. The easterly, seaward facing, shoulder is protected at the coast by a 14 m high concrete sea wall (built in 1975) anchored into the cliffs and extending from Ground Wyke Hole to the slipway at the end of the village. The

westerly, inland, part of the lower village is constructed on the till slopes with inland higher cliffs to the rear. The southern-most "nose" of the village is known as the Quarterdeck. Here the till has been stabilised by a recently constructed rock.

## 4.2 Review of Other Plans and Programmes

The scoping study identified a range of policies and plans which could affect, or be affected by, the CSS. These policies, plus updates from other policies and plans identified during consultation, are listed below with more details provided in Appendix C.

- EC Directive on the Conservation of Wild Birds 79/409/EEC (1979)<sup>vii</sup>
- EC Directive on the Conservation of Natural Habitats of Wild Fauna and Flora 92/43/EEC (1992)<sup>viii</sup>
- The Convention on Biological Diversity. Rio de Janeiro (1992)
- Environmental Assessment of Plans and Programmes Regulations (2004)<sup>ix</sup>
- Coast Protection (Notices) (England) Regulations (2002)
- Wildlife and Countryside Act (1981) (as amended)
- The Conservation Regulations (1994) (Habitats Regulation)
- The Countryside Rights of Way Act (2000)
- UK Biodiversity Action Plan
- Environment Act (1995)
- Natural Environment and Rural Communities Act (2006)<sup>x</sup>
- Marine and Coastal Access Bill<sup>xi</sup>
- Circular 06/05: Biodiversity and Geological Conservation – Statutory Obligation Circular 14/97: Planning and the Historic Environment -Notification and Directions by the Secretary of State (1997)s and Their Impact Within the Planning System (2005)<sup>xii</sup>
- Circular 02/93 - Public Rights of Way (1993)
- PPS9 Biodiversity and Geological Conservation ODPM (2005)<sup>xiii</sup>
- PPG15 Historic Environment (2006)<sup>xiv</sup>
- PPG 16 Archaeology and Planning ODPM (2001)<sup>xv</sup>

- PPS 25 Development and Flood Risk (2010)<sup>xvi</sup>
- The Yorkshire and Humber Plan: Regional Spatial Strategy to 2026 (2008)<sup>xvii</sup>
- Good practice guide on Planning for Tourism (2006)<sup>xviii</sup>
- North York Moors National Park Authority Local Development Framework (2008)<sup>xix</sup>
- Scarborough Borough Local Plan (1999)<sup>xx</sup>
- Scarborough Borough Local Development Framework (2006)<sup>xxi</sup>
- Sustainability Report: Sustainability Appraisal of the Draft Core Strategy (Preferred Options) for Scarborough Borough Council (2006)<sup>xxii</sup>
- River Tyne to Flamborough Head SMP2: Non Technical Summary for Scarborough Area (2007)<sup>xxiii</sup>
- Rapid Coastal Zone Assessment Survey (RCZA) Yorkshire and Lincolnshire: Whitby to Reighton, English Heritage (2008)
- Historic Environment Strategy for Yorkshire and the Humber Region 2009-2013, Yorkshire and the Humber Historic Environment Forum (2008)
- Heritage at Risk: Yorkshire and the Humber, English Heritage (2008)
- North York Moors National Park: Coastal & Marine Biodiversity Action Plan (2006)<sup>xxiv</sup>
- North Yorkshire and Cleveland Heritage Coast Management Plan, 3<sup>rd</sup> Review, 2008-2013, Heritage Coast.

### 4.3 The Environmental Baseline

SEA guidance requires that baseline information is set out to establish the current state of the plan area, and to identify trends in baseline data. This baseline information is then used to assess current sustainability issues that are evident in the plan area. The baseline information provides the basis for predicting and monitoring effects. It also helps to identify sustainability problems and alternative ways of dealing with them. For each set of information collected the guidance recommends that the data enable the following questions to be answered.

- How good or bad is the current situation?
- Do trends show that the situation is getting better or worse?
- How far is the current situation from any established thresholds or targets?

- Are particularly sensitive or important elements of the economy, physical environment or community affected?
- Are the problems reversible or irreversible, permanent or temporary?
- How difficult would it be to offset or remedy any damage?
- Have there been significant cumulative or synergistic effects over time?
- Are there expected to be such effects in the future?

A comprehensive review of the baseline environment was provided in the SEA Scoping Report 2009. This has been updated in light of the comments from statutory and non-statutory consultees which is located in appendix D. Consistent with the SEA Directive the environmental baseline covers the following topics:

- Population;
- human health;
- natural environment (including geology);
- soil & contamination;
- water;
- air;
- climatic factors;
- material assets;
- historic environment (Including architectural and archaeological); and
- landscape.

## 5 Task B1: Testing the Policy Options against the SEA Options

### 5.1 SEA Framework

The SEA Framework provides a method for describing, analysing and comparing the sustainability effects of plans and policies.

A series of SEA objectives were developed at the scoping stage, taking into account the relationship between the CSS and the objectives of other plans and programmes including the Yorkshire and Humber Regional Spatial Strategy the Scarborough Core Strategy and the North Yorkshire Moors Core Strategy. During the scoping stage the SEA objectives were assessed against each other in a compatibility matrix, the results of which found the objectives to be mainly beneficial.

Consultation comments have also influenced the development of the objectives. These objectives have formed the basis for the SEA Framework within which the evaluation of different CSS options and Policies has been carried out.

Table D.1 in Appendix D; sets out the justification for the chosen SEA objectives. From this baseline information 21 SEA objectives were identified for the purpose of the SEA of the CSS. These are set out in Table 5.2.

A range of indicators have been defined for each of the selected objectives to measure the environmental performance of the CSS throughout its lifespan. These indicators, the information that is currently available, targets, trends and constraints of the data are detailed in Table D.2 of Appendix D.

### 5.2 Environmental Problems and Opportunities

Environmental opportunities and potential issues were initially identified as key issues in the SEA Scoping Report and have subsequently been extended as a result of consultation on the SEA scoping report.

These key issues have formed the basis for identifying the objectives against which each of the potential management options will be assessed. They include:

- The populated area of Robin Hood's Bay which is an important centre for tourism and local business. The frontage is at immediate risk from erosion which could impact several properties;
- The Cleveland Way is a strategic coastal footpath which is heavily used and is important for access, tourism and recreation. Erosion of this footpath could lead to it being closed and sever the connectivity along the coast.
- The ecology within the study area is heavily protected with European and nationally important designations. In total there is one SAC, four SSSIs and four areas of ancient woodland. These areas are at risk from active

management which will potentially impact the ability for them to naturally evolve;

- The geology of the study area is nationally important and is an important factor in the designation of the four SSSIs. These areas are at risk from active management which will potentially impact the ability for them to naturally evolve; and
- The entire coastline is designated as a Heritage Coast due to its significant archaeological and heritage value. There are 6 SAMs and 172 listed buildings within the study area including the Grade I buildings surrounding Whitby Abbey. These heritage features are at risk from coastal erosion if no management is proposed.

### 5.3 Testing the Compatibility of the SEA Objectives

The CSS objectives are outlined in Table 5.1 below.

Table 5.1 – CSS Objectives

CSS Objectives
1. To provide an appropriate level of coastal and flood defence.
2. To provide sustainable defences, which utilise natural defence mechanisms wherever possible.
3. To enhance the natural environment and to increase the potential for recreation and tourism.
4. To provide a blueprint for future monitoring and programming of maintenance works.
5. To increase the understanding of the shoreline and to focus consultations in a strategic manner.
6. To aid co-ordination and to consolidate information gathered within higher level plans.

The SEA Objectives have been outlined in Table 5.2 below.

Table 5.2 - SEA Objectives

SEA Objectives
1. To provide conditions for business success, economic growth and investment with specific reference to the fishing and farming industries.
2. To support the tourism industry through the provision of access to facilities and attractions.
3. Maintain vibrant local communities

SEA Objectives
4. Where practicable ensure the safety and security of people and property.
5. To maintain the transport network, encouraging the use of cycling, walking, minimising traffic and promoting access to the countryside.
6. Maintain access to local facilities and services whilst minimising environmental impacts.
7. Ensure local needs are met locally.
8. To support creativity, innovation and the appropriate use of technology.
9. To promote good health through the provision of access to leisure facilities including access to the network of footpaths.
10. Minimise negative impacts to human health (including pollution and stress) and safeguard positive impacts.
11. To conserve and seek to enhance the terrestrial biological and geological environment, particularly designated sites and protected species.
12. To conserve and seek to enhance the coastal and marine biological and geological environment, particularly designated sites and protected species.
13. Maintain and safeguard opportunities for all to access and understand the ecological and geological environment.
14. Minimise pollution to levels which do not damage the biological or geological environment.
15. Minimise pollution to levels which do not damage soil.
16. Minimise pollution to levels which do not damage the water environment including surface water and ground water.
17. To ensure any potential works do not increase the risk of flooding.
18. Manage natural resources in a way which sustain their environmental qualities as well as their productive (or economic) potential.
19. To maintain and safeguard opportunities for all to access and understand local heritage.
20. Where practicable preserve and enhance all aspects of the historic environment.
21. Maintain and, where possible, enhance the special landscape, local distinctiveness and settlement character.

In order to ensure that the SEA objectives are compatible with those for the CSS compatibility assessment has been completed; the results are illustrated as a matrix in Table 5.3. The matrix highlights whether the objectives have a negative, beneficial or unknown compatibility with each other.

A negative compatibility indicates that the objectives of the CSS and the SEA may conflict. A beneficial compatibility indicates that they are consistent. Unknown / Not Relevant is used only where the objectives have no relevance to one another or the impacts of the objectives are unknown, therefore their compatibility can't be assessed.

Table 5.3 - Objective Compatibility Matrix

		CSS Objectives					
		1	2	3	4	5	6
SEA Objectives	1	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible
	2	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible
	3	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible
	4	Compatible	Compatible	Unknown / Not Relevant	Compatible	Compatible	Compatible
	5	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible
	6	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible
	7	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible
	8	Unknown / Not Relevant	Compatible	Compatible	Compatible	Compatible	Compatible
	9	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible
	10	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible
	11	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible

Compatible	Compatible
Unknown / Not Relevant	Unknown / Not Relevant
Negative	Negative

		CSS Objectives					
		1	2	3	4	5	6
	12	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible
	13	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible
	14	Unknown / Not Relevant	Compatible	Compatible	Compatible	Compatible	Compatible
	15	Unknown / Not Relevant	Compatible	Compatible	Compatible	Compatible	Compatible
	16	Unknown / Not Relevant	Compatible	Compatible	Compatible	Compatible	Compatible
	17	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible
	18	Unknown / Not Relevant	Compatible	Compatible	Compatible	Compatible	Compatible
	19	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible
	20	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible
	21	Compatible	Compatible	Compatible	Compatible	Compatible	Compatible

Compatible	Compatible
Unknown / Not Relevant	Unknown / Not Relevant
Negative	Negative

Table 5.1 shows that the majority of the objectives of the CSS and the SEA are compatible. There is no real link between a few of the objectives defined for the CSS and those for the SEA. None of the SEA objectives conflict with those for the CSS.

## 6 Task B2: Strategic Alternatives

A range of strategic coastal options have been considered for the Policy Units with reference to the SMP Guidance; Volume 1, Section 2.3. Table 3.1 outlines the policy options which have been considered.

There are various practical solutions to implement each of these policy options. For example an Active Intervention Maintain policy could be implemented through the construction of a concrete sea wall or the planting of salt marsh. Both can be used to actively reduce erosion.

The SEA guidance stresses that the consideration of alternatives should be limited to those which are realistic, and which have a chance of delivering the policy objectives of the plan. Some alternatives may not be available or desirable due to the balance of costs and benefits. Others may run counter to national, regional or local policy, guidance and sustainability objectives.

### 6.1 Development of Options

For each Policy Unit specific options for coastal erosion management have been proposed in order to implement one of the proposed options above. The proposed options would achieve a maximum standard protection of 1 in 100 years for the life of the strategy or until 2110, or a minimum standard protection of 1 in 33 years or until 2035. The proposed standard of protection accounts for the existing environmental conditions and predicted coastal erosion rates.

The proposed options within the CSS were developed with the information from the SEA Scoping Report, responses from consultation, an economic assessment using 'Flood and Coastal Project Appraisal Guidance 3 – Economic Appraisal (MAFF/DEFRA, 1999)', the results of an HRA Screening Report, a condition assessment and a feasibility report.

As each option was discussed and the generic benefits and impacts were concluded, a number of the options were discounted as it was clear that it would not be feasible to take them forward and include them in the strategy.

The preferred options were selected for each Policy Unit.

### 6.2 Options

#### 6.2.1 Policy Unit MA24.1

The following options have been considered for MA24.1 based on socio-economic, environmental and coastal erosion data. The options are presented in Table 6.1;

Table 6.1 - Policy Unit MA24.1 Coastal Strategy Options

Option Number	Option	Description
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Option Number	Option	Description
1a	No Active Intervention	Do Nothing; leave the coast to naturally retreat.
1b	No Active Intervention (Health and Safety (H&S))	Do Nothing; leave the coast to naturally retreat. Includes strategically positioned signage to inform local people of the dangers of the retreating coastline.
2	Adaptive Management	Property Roll Back Scheme. Abandonment of residential and commercial properties with planning for replacement buildings on either the property owners land or further land which can be released by the North York Moors National Park Authority.
3	Active Intervention Improve	Rock armour at the toe of the cliff at places where individual property requires protecting, namely Abbey Farm storage buildings.

It is a requirement of the SEA Regulations to assess the impacts of each of the options against the objectives set in the SEA objectives.

Table 6.2 presents the impacts of each option on each objective, highlighting whether it will have a negative, neutral or beneficial impact.

	Beneficial
	Unknown / Neutral
	Negative

Table 6.2 - Policy Unit MA24.1 Options Appraisal

SEA Objective	Option			
	1a	1b	2	3
To provide conditions for business success, economic growth and investment with specific reference to the fishing and farming industries.				
To support the tourism industry through the provision of access to facilities and attractions.				

SEA Objective	Option			
	1a	1b	2	3
Maintain vibrant local communities	Red	Red	Green	Green
Where practicable ensure the safety and security of people and property.	Red	Yellow	Yellow	Green
To maintain the transport network, encouraging the use of cycling, walking, minimising traffic and promoting access to the countryside.	Red	Red	Red	Red
Maintain access to local facilities and services whilst minimising environmental impacts.	Red	Red	Red	Red
Ensure local needs are met locally.	Green	Green	Green	Green
To support creativity, innovation and the appropriate use of technology.	Yellow	Yellow	Yellow	Yellow
To promote good health through the provision of access to leisure facilities including access to the network of footpaths.	Red	Red	Red	Red
Minimise negative impacts to human health (including pollution and stress) and safeguard positive impacts.	Red	Green	Green	Green
To conserve and seek to enhance the terrestrial biological and geological environment, particularly designated sites and protected species.	Yellow	Yellow	Yellow	Yellow
To conserve and seek to enhance the coastal and marine biological and geological environment, particularly designated sites and protected species.	Yellow	Yellow	Yellow	Yellow
Maintain and safeguard opportunities for all to access and understand the ecological and geological environment.	Red	Red	Red	Red
Minimise pollution to levels which do not damage the biological or geological environment.	Green	Green	Green	Yellow
Minimise pollution to levels which do not damage	Green	Green	Green	Yellow

SEA Objective	Option			
	1a	1b	2	3
soil.	Green	Green	Green	Yellow
Minimise pollution to levels which do not damage the water environment including surface water and ground water.	Green	Green	Green	Yellow
To ensure any potential works do not increase the risk of flooding.	Yellow	Yellow	Yellow	Yellow
Manage natural resources in a way which sustain their environmental qualities as well as their productive (or economic) potential.	Red	Red	Red	Green
To maintain and safeguard opportunities for all to access and understand local heritage.	Red	Red	Red	Green
Where practicable preserve and enhance all aspects of the historic environment.	Yellow	Yellow	Yellow	Green
Maintain and, where possible, enhance the special landscape, local distinctiveness and settlement character.	Green	Green	Green	Red

Option 1a (Do Nothing scenario) has a negative impact on a number of the SEA objectives. Option 1 will let the coast naturally erode and as a result there will be a loss of local business and economic growth as Abbey Farm Storage House and the caravan park are at risk. This will ultimately impact upon the integrity of the local community and local tourism industry. The local economy and local agricultural business will also be impacted upon as the retreating coastline will claim approximately 5 ha of agricultural land. Local access roads and the Cleveland way coastal footpath are also at risk. Option 1b will alter slightly from 1a as there will be a certain level of protection to human health as the people will be warned of the eroding coastline through signage, strategically placed along the frontage.

Option 2 has been identified by the CSS as being the preferred option. This option allows the coastline to naturally erode and includes a property roll back scheme. The property roll back scheme will provide planning provision for properties lost to the eroding coastline. This has a positive impact on a number of the SEA objectives and would save the integrity of the local community, local business and tourism as a result of moving Abbey Farm Storage House and Abbey Caravan Park inland.

Option 3 introduces the option of coastal defence through the construction of rock armour strategically placed at the toe of the eroding cliff. The defence would be solely used to prevent the coastline eroding around individual properties and will not stretch the length of the MA. Because the defence will protect Abbey Farm storage buildings it will help to maintain the integrity of the local community and provide conditions for business success. There is however a number of negative and unknown impacts, including pollution from the construction of such coastal defences and the impacts on marine ecosystems.

### 6.2.2 Policy Unit MA25.1

The following options have been considered for MA 25.1 based on socio-economic, environmental and coastal erosion data. The options are presented in Table 6.3.

Table 6.3 - Policy Unit MA25.1 Coastal Strategy Options

Option Number	Option	Description
1a	No Active Intervention	Do Nothing; leave the coast to naturally retreat.
1b	No Active Intervention (H&S)	Do Nothing; leave the coast to naturally retreat. . Includes strategically positioned signage to inform local people to the dangers of the retreating coastline. Removal of damaged property would be required.
2	Adaptive Management	Property Roll Back Scheme. Abandonment of residential and commercial properties with planning for replacement buildings on either the property owners land or further land which can be released by the North York Moors National Park Authority.
3	Active Intervention Improve	Rock armour at the toe of the cliff at places where property requires protecting, particularly at the Whitby Light House and Coast Guard area.

Table 6.4 presents the impacts of each option on each objective, highlighting whether it will have a negative, neutral or beneficial impact.

	Beneficial
	Unknown / Neutral
	Negative

Table 6.4 - Policy Unit MA25.1 - Options Appraisal

Objective	Option			
	1a	1b	2	3
To provide conditions for business success, economic growth and investment with specific reference to the fishing and farming industries.	Red	Red	Green	Green
To support the tourism industry through the provision of access to facilities and attractions.	Red	Red	Red	Red
Maintain vibrant local communities	Red	Red	Green	Green
Where practicable ensure the safety and security of people and property.	Red	Yellow	Yellow	Green
To maintain the transport network, encouraging the use of cycling, walking, minimising traffic and promoting access to the countryside.	Red	Red	Red	Red
Maintain access to local facilities and services whilst minimising environmental impacts.	Red	Red	Red	Red
Ensure local needs are met locally.	Green	Green	Green	Green
To support creativity, innovation and the appropriate use of technology.	Yellow	Yellow	Yellow	Yellow
To promote good health through the provision of access to leisure facilities including access to the network of footpaths.	Red	Red	Red	Red
Minimise negative impacts to human health (including pollution and stress) and safeguard positive impacts.	Red	Green	Green	Yellow
To conserve and seek to enhance the terrestrial biological and geological environment, particularly designated sites and protected species.	Yellow	Yellow	Yellow	Yellow
To conserve and seek to enhance the coastal and marine biological and geological environment, particularly designated sites and protected species.	Yellow	Yellow	Yellow	Yellow

Objective	Option			
	1a	1b	2	3
Maintain and safeguard opportunities for all to access and understand the ecological and geological environment.	Red	Red	Red	Red
Minimise pollution to levels which do not damage the biological or geological environment.	Green	Green	Green	Yellow
Minimise pollution to levels which do not damage soil.	Green	Green	Green	Yellow
Minimise pollution to levels which do not damage the water environment including surface water and ground water.	Green	Green	Green	Yellow
To ensure any potential works do not increase the risk of flooding.	Yellow	Yellow	Yellow	Yellow
Manage natural resources in a way which sustain their environmental qualities as well as their productive (or economic) potential.	Red	Red	Red	Red
To maintain and safeguard opportunities for all to access and understand local heritage.	Red	Red	Red	Red
Where practicable preserve and enhance all aspects of the historic environment.	Yellow	Yellow	Yellow	Yellow
Maintain and, where possible, enhance the special landscape, local distinctiveness and settlement character.	Green	Green	Green	Green

Option 1a (Do nothing) will have a number of negative impacts on the local community. If the coastline is allowed to retreat at its current rate, the loss of 189ha of agricultural land will impact the local economy and local business. As a result local produce will be impacted upon and local needs may not be met locally. This will also impact on the integrity of the local community. 14 properties will be lost to coastal erosion which will conflict with objectives to protect people, properties and their livelihoods. Option 1b will have the same impact as option 1a; however the option will protect people through strategically placing informative information of the eroding coastline along the frontage to warn of the dangers.

Option 2 has been identified by the CSS as being the preferred option. The option negates the need for capital works and allows the coast to naturally erode, which will be beneficial to the local biodiversity. It will include a property roll back scheme. The roll back scheme will allow provision to relocate residential and commercial properties. This will protect the local economy. However there will be a loss of 189ha of agricultural land. The agricultural land is important for the local economy and the objective of meeting local needs with local produce and therefore its loss will have a negative impact on the community. The loss of the coastline will sever coastal footpaths and access routes and impact on listed buildings and a scheduled ancient monument the Alum Quarry.

Option 3 offers coastal protection for important properties along the coastline. The defence will provide the construction of rock armour at the toe of the cliff to reduce coastal erosion. The option will offer protection to Whitby Light House and the Coast Guard area and the caravan park. This will have a positive impact on a number of SEA objectives. The defence will help to maintain the character of the landscape and local area, as well as maintaining the integrity of the local area. There is however a number of negative and unknown impacts, including pollution from the construction of such coastal defences and the impacts on marine ecosystems.

### 6.2.3 Policy Unit MA25.2

The following options have been recommended for MA 25.2 based on socio-economic, environmental and coastal erosion data. The options are presented in Table 6.5.

Table 6.5 – Policy Unit MA25.2 Coastal Strategy Options

Option Number	Option	Description
1a	No Active Intervention	Do Nothing; leave the coast to naturally retreat.
1b	No Active Intervention (H&S)	Do Nothing; leave the coast to naturally retreat. Includes strategically positioned signage to inform local people to the dangers of the retreating coastline.
2	Adaptive Management/Active Intervention Maintain	Property Roll Back Scheme. Abandonment of residential and commercial properties with planning provision for replacement buildings on either the property owners land or further land which can be released by the North York Moors National Park Authority. Maintenance to existing defences in the southern village. A feasibility study is required for the adaptive management.
3	Active Intervention Maintain	Upper village drainage Investigation and remedial works with deep rooted vegetation slope stabilising. Capital improvement to coastal defence assets in the southern village.

Option Number	Option	Description
4	Active Intervention Maintain	Capital improvement works to provide concrete patching and facing work to the current manmade coastal defence assets in the southern section of the village.
5	Active Intervention improve	Installation of a grid of soil nails on the coastal slope would increase the stability of the slope. Capital improvement works to provide concrete patching and facing work to the current manmade coastal defence assets in the southern section of the village.
6	Active Intervention Improve	Contiguous bored pile wall with a capital improvement scheme to existing defence assets within the southern village.

Table 6.6 presents the impacts of each option on each objective, highlighting whether it will have a negative, neutral or beneficial impact.

	Beneficial
	Unknown / Neutral
	Negative

Table 6.6 – Policy Unit MA25.2 Options Appraisal

Objective	Option						
	1a	1b	2	3	4	5	6
To provide conditions for business success, economic growth and investment with specific reference to the fishing and farming industries.							
To support the tourism industry through the provision of access to facilities and attractions.							
Maintain vibrant local communities							
Where practicable ensure the safety and security of people and property.							

Objective	Option						
	1a	1b	2	3	4	5	6
To maintain the transport network, encouraging the use of cycling, walking, minimising traffic and promoting access to the countryside.	Red	Red	Red	Green	Yellow	Green	Yellow
Maintain access to local facilities and services whilst minimising environmental impacts.	Red	Red	Green	Green	Yellow	Green	Yellow
Ensure local needs are met locally.	Red	Red	Green	Green	Yellow	Green	Yellow
To support creativity, innovation and the appropriate use of technology.	Yellow	Yellow	Yellow	Green	Yellow	Yellow	Yellow
To promote good health through the provision of access to leisure facilities including access to the network of footpaths.	Red	Red	Green	Green	Yellow	Green	Yellow
Minimise negative impacts to human health (including pollution and stress) and safeguard positive impacts.	Red	Green	Green	Green	Yellow	Green	Yellow
To conserve and seek to enhance the terrestrial biological and geological environment, particularly designated sites and protected species.	Yellow	Yellow	Yellow	Green	Yellow	Green	Yellow
To conserve and seek to enhance the coastal and marine biological and geological environment, particularly designated sites and protected species.	Yellow	Yellow	Yellow	Green	Yellow	Green	Yellow
Maintain and safeguard opportunities for all to access and understand the ecological and geological environment.	Red	Red	Red	Green	Green	Green	Green
Minimise pollution to levels which do not damage the biological or geological environment.	Green	Green	Green	Yellow	Green	Yellow	Green
Minimise pollution to levels which do not damage soil.	Green	Green	Green	Yellow	Green	Yellow	Green
Minimise pollution to levels which do not damage the water environment including surface water	Green	Green	Green	Yellow	Green	Yellow	Green

Objective	Option						
	1a	1b	2	3	4	5	6
and ground water.	Green	Green	Green	Yellow	Green	Yellow	Green
To ensure any potential works do not increase the risk of flooding.	Yellow	Yellow	Yellow	Green	Green	Green	Green
Manage natural resources in a way which sustain their environmental qualities as well as their productive (or economic) potential.	Yellow	Yellow	Yellow	Green	Yellow	Yellow	Yellow
To maintain and safeguard opportunities for all to access and understand local heritage.	Red	Red	Green	Yellow	Green	Yellow	Green
Where practicable preserve and enhance all aspects of the historic environment.	Red	Red	Green	Yellow	Green	Yellow	Green
Maintain and, where possible, enhance the special landscape, local distinctiveness and settlement character.	Red	Red	Green	Yellow	Green	Yellow	Green

Option 1a will have a negative impact upon the upper village at Robin Hoods Bay because there will be no sea defence to stop wave erosion. In addition there will be no redirection of the underground water flow which is the main cause of the cliffs instability and erosion. For the lower part of Robin Hoods Bay there will be no alteration to the existing conditions and therefore the town will remain as it is for as long as the sea defences hold (roughly 20 years). Option 1b will have the same impact as option 1a; however it will protect human health through strategically placing informative information of the eroding coastline along the frontage to warn of the dangers.

Option 2 has been identified by the CSS as being the preferred option. The option will provide a property roll back scheme with provision to replace residential and commercial buildings lost to the eroding coast line. This will have a beneficial impact on local businesses, tourism and the local economy and on the integrity of the local community. However, footpaths or access roads will be severed which will negatively impact on a number of the objectives.

Option 3 has a number of positive impacts on the SEA objectives. This option will extensively drain the run off water from the upper village and significantly reduce the coastal erosion rate. This option will protect local business, tourism and the local economy. The reduced rate of coastal erosion will protect the existing houses and listed buildings and heritage features within the landscape. Deep rooted vegetation

will add creativity, innovation and appropriate use of technology to the village and will increase and improve the local biodiversity by adding more species for soil stability. This type of development will also significantly reduce pollution during construction.

Option 4 will protect the lower part of the village but not the upper part. As a result there will be an unknown impact on a number of SEA objectives reflecting a combination of positive impacts to the lower village and the negative impacts to the upper village on each objective. There will be a negative impact to the upper village for local economy, tourism and local business. This would contrast from the lower village where businesses and tourism will be protected. There will be beneficial impact on the natural environment as there will be no additional coastal protection works, just renovation of the existing infrastructure. Heritage has an unknown impact as there will be a loss of certain buildings on the upper village but the protection of a number of listed buildings within the lower village.

Option 5 offers protection to the upper and lower part of Robin Hoods Bay. Because of the level of protection that the option is offering there will be several beneficial impacts on the SEA objectives and no negative impacts. This option will protect local business, tourism and the local economy. The reduced rate of coastal erosion will protect the existing houses and listed buildings and heritage features within the landscape. However the nature of the construction works may have harmful impacts on the pollution of the local area, this is however currently unknown.

Option 6 will offer defence to the northern and southern part of Robin Hoods Bay. This will evidently have a good impact on the SEA objectives. This option would provide protection for residents, business and local tourism for the village. It would also help Robin Hoods Bay to maintain its local integrity. Due to the nature of the works it may result in pollution to the area however this has been classed as unknown due to the limited information about the nature of the works. The construction may compromise the local biodiversity.

### 6.3 Policy Options

Following the evaluation of alternatives the preferred policy options have been identified by the CSS having regard for the socio-economic, coastal erosion and environmental constraints. The preferred options for each of the Management Areas has been summarised in Table 6.7.

Table 6.7 – Selected Policy Options for the Study Area

Policy Unit	Short Term 2010-2030	Medium Term 2030-2060	Long Term 2060-2110	Justification

<b>Policy Unit</b>	<b>Short Term 2010-2030</b>	<b>Medium Term 2030-2060</b>	<b>Long Term 2060-2110</b>	<b>Justification</b>
MA 24.1	Option 2 – Adaptive Management	Option 2 – Adaptive Management	Option 2 – Adaptive Management	There is no major settlement that will be affected by the retreating coastline. The few households that are left will be provided by under the roll back scheme.
MA 25.1	Option 2 – Adaptive Management	Option 2 – Adaptive Management	Option 2 – Adaptive Management	There is no major settlement that will be affected by the retreating coastline. The few households that are left will be provided for under the roll back scheme.
MA 25.2	Option 2 – Adaptive Management/ Active Intervention Maintain	Option 2 – Adaptive Management/ Active Intervention Maintain	Option 2 – Adaptive Management/ Active Intervention Maintain	This will help to protect the existing village of Robin Hoods Bay. The remaining properties will be aided by the role back scheme.

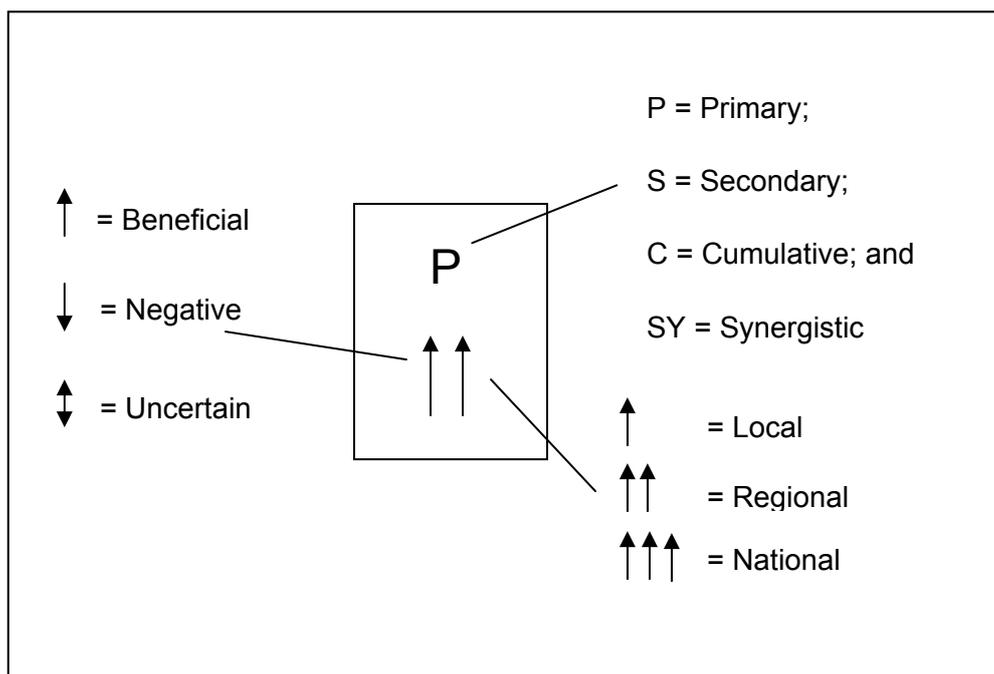
## 7 Task B3 & B4: Predicting and Evaluating the Preferred Options

### 7.1 Methodology

The SEA Regulations require that the significant environmental effects of a plan or programme are identified, described and evaluated. The likely significant effects on the environment need to be stated in the Environmental Report, and measures need to be taken to avoid, reduce or mitigate them.

The Regulations and SEA Directive do not provide clear guidance on how criteria for determining significance can be used to provide a methodology or set of rules that can be used to judge whether or not an effect is significant. The methodology applied here has involved screening each preferred option within the CSS having direct potential impact against each SEA objective.

The results are provided in Table 7.1 for which the key is as follows:



The assessment involved judgements on whether any impacts might be expected to be positive or negative. The assessment has also identified those impacts for which results are uncertain as a result of a lack of available baseline information, insufficient knowledge of cause and effects, or because different primary impacts might result in a combination of both positive and negative effects.

Consistent with the requirements of the SEA Regulations, the assessment has identified primary, secondary, cumulative and synergistic impacts. These are labelled with a code located in the centre of each impact box.

The assessment has concentrated on those environmental issues identified as being of particular significance in the context of the study area.

## **7.2 Assessing the Preferred Options**

Table 6.1 has taken the preferred option for the MAs and assessed the impacts on the objectives of the SEA for each time epoch under consideration. A brief summary of the reasons for negative, neutral or beneficial impacts has been included with recommended mitigation for the proposed option.

Table 7.1 – Assessment of Environmental Effects for MA 24.1, Policy Option 2

Policy	Epoch	Policy	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
24.1	Short	AIM	S	P	P	P	P	S	C	C	C	C	P	P	S	S	S	S	S	C	S	P	P
			↑↑	↓	↑	↓	↓	↑	↓	↑	↓	↑	↑↑↑	↑↑↑	↓↓↓	↑	↑	↑	↑↑	↓↓	↓↓↓	↑↑↑	↑↑
	Medium	AIM	S	P	P	P	P	S	C	C	C	C	P	P	S	S	S	S	S	C	S	P	P
			↑↑	↓	↑	↓	↓	↑	↓	↑	↓	↑	↑↑↑	↑↑↑	↓↓↓	↑	↑	↑	↑↑	↓↓	↓↓↓	↑↑↑	↑↑
	Long	AIM	S	P	P	P	P	S	C	C	C	C	P	P	S	S	S	S	S	C	S	P	P
			↑↑	↓	↑	↓	↓	↑	↓	↑	↓	↑	↑↑↑	↑↑↑	↓↓↓	↑	↑	↑	↑↑	↓↓	↓↓↓	↑↑↑	↑↑
	<p><b>Summary:</b></p> <p>The loss of 5ha of grade 3 agricultural land will have a negative impact as it will impact the local economy and local business and the objective to meet local needs locally. The commercial business will be affected by the scheme; however these will be rolled back as the coastline retreats. This will be beneficial as it will help to maintain a vibrant community by keeping people and local business in the community.</p> <p>Local access routes and footpaths will be kept as the coastline retreats including the Cleveland way coastal footpath.</p> <p>A small area of National Park and a significant area of the Whitby Saltwick SSSI will be lost. This will not protect or enhance the designated sites which will conflict with the objectives of the SEA.</p>																						
	<p><b>Recommendations:</b></p> <p>The commercial business, where possible, should be relocated within Whitby.</p> <p>The Cleveland Way coastal footpath should be moved inland with the eroding coastline.</p>																						

Table 7.2 - Assessment of Environmental Effects for MA 25.1, Policy Option 2

Policy Unit	Epoch	Policy	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
25.1	Short	AIM	S	P	P	P	P	S	C	C	C	C	P	P	S	S	S	S	S	C	S	P	P
			↑↑	↓	↑	↓	↓	↑	↓	↑	↓	↑	↑↑↑	↑↑↑	↓↓↓	↑	↑	↑	↑↑	↓↓	↓↓↓	↑↑↑	↑↑
	Medium	AIM	S	P	P	P	P	S	C	C	C	C	P	P	S	S	S	S	S	C	S	P	P
			↑↑	↓	↑	↓	↓	↑	↓	↑	↓	↑	↑↑↑	↑↑↑	↓↓↓	↑	↑	↑	↑↑	↓↓	↓↓↓	↑↑↑	↑↑
	Long	AIM	S	P	P	P	P	S	C	C	C	C	P	P	S	S	S	S	S	C	S	P	P
			↑↑	↓	↑	↓	↓	↑	↓	↑	↓	↑	↑↑↑	↑↑↑	↓↓↓	↑	↑	↑	↑↑	↓↓	↓↓↓	↑↑↑	↑↑
<b>Summary:</b>																							
The loss of 189ha of grade 3 agricultural land. Residential, tourist and agricultural buildings will be affected by the scheme; however these will also be rolled back as the coastline retreats. This will be beneficial as it will help to maintain a vibrant community by keeping people and local business in the community.																							
The option will impact on and cause the loss of 3 scheduled ancient monuments, Stoupe Brown Alum Works, Peak Alum Works and Saltwick Nab Alum Quarry and one listed building.																							
There will be a loss of land within Maw Wyke and Beast Cliff SSSI and Beast Wyke to Whitby SAC.																							
There will be a loss of North York Moors National Park and National Trust land. Stoupe Beck ancient woodland will be lost.																							
The Cleveland Way coastal footpath will be lost.																							

	<p><b>Recommendations:</b></p> <p>The residential, tourist and agricultural buildings, where possible, should be relocated within the local area.</p> <p>The Cleveland Way coastal footpath should be moved inland with the eroding coastline.</p>
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Table 7.3 - Assessment of Environmental Effects for MA 25.2, Policy Option 2

Policy Unit	Epoch	Policy	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
25.2	Short	AIM	S	C	P	P	P	S	C	C	C	C	P	P	S	S	S	S	S	C	S	P	P
			↑↑	↓	↑	↓	↓	↑	↑	↓	↑	↑	↓↓↓	↓↓↓	↓	↑	↑	↑	↓↓	↓↓	↑↑↑	↑↑↑	↑↑
	Medium	AIM	S	C	P	P	P	S	C	C	C	C	P	P	S	S	S	S	S	C	S	P	P
			↑↑	↓	↑	↓	↓	↑	↑	↓	↑	↑	↓↓↓	↓↓↓	↓	↑	↑	↑	↓↓	↓↓	↑↑↑	↑↑↑	↑↑
	Long	AIM	S	C	P	P	P	S	C	C	C	C	P	P	S	S	S	S	S	C	S	P	P
			↑↑	↓	↑	↓	↓	↑	↑	↓	↑	↑	↓↓↓	↓↓↓	↓	↑	↑	↑	↓↓	↓↓	↑↑↑	↑↑↑	↑↑
<p><b>Summary:</b> The scheme will not affect Maw Wyke and Beast Cliff SSSI,</p> <p>72 Listed buildings will be protected across all epochs.</p> <p>The Cleveland Way coastal footpath will not be protected against coastal erosion in the north of Robin Hoods Bay.</p> <p>18 Properties will be lost to coastal erosion; however these will be rolled back. This will be beneficial as it will help to maintain a vibrant community by keeping people and local business in the community.</p> <p>The North York Moors National Park will also be protected from coastal erosion.</p>																							

**Recommendations:**

The local residents, where possible, should be relocated to the defended areas of Robin Hoods Bay.

The Cleveland Way coastal footpath should be moved inland with the eroding coastline.

## 8 Task B5: Mitigation Adverse Effects

### 8.1 Introduction

Mitigation is one of the key outputs of the SEA and appraisal process. The SEA Regulations require that “*the measures envisaged to prevent, reduce and as fully as possible offset any significant adverse effects on the environment of implementing the plan or programme*” must be documented in the Environmental Report.

Mitigation measures may themselves have adverse environmental effects which should be recognised.

Measures proposed in order to avoid, reduce or mitigate these impacts are presented in the table below.

### 8.2 Proposed Mitigation Measures

Table 8.1 – Proposed Mitigation

Policy Units	Proposed Mitigation	Epoch	Responsibility
MA24.1	The commercial business, where possible, should be relocated within Whitby.	All	Land owner and local companies
	The Cleveland Way coastal footpath should be moved inland with the eroding coastline.	All	Natural England in liaison with National Park Authority
MA25.1	The residential, tourist and agricultural buildings, where possible, should be relocated within the local area.	All	Land owner and local companies
	The Cleveland Way coastal footpath should be moved inland with the eroding coastline.	All	Natural England in liaison with National Park Authority
MA25.2	The local residents, where possible, should be relocated to the defended areas of Robin Hoods Bay.	All	Land owner and local companies
	The Cleveland Way coastal footpath should be moved inland with the eroding coastline.	All	Natural England in liaison with National Park Authority

### 8.3 Environmental Enhancement

Table 8.2 – Potential Environmental Enhancement

Management Unit	Requirements for Enhancement
MA 24.1	No potential enhancement has been identified.
MA 25.1	No potential enhancement has been identified.
MA 25.2	No potential enhancement has been identified.

## 9 Task B6: Monitoring Requirements

The SEA Directive requires that “Member States shall monitor the significant environmental effects of the implementation of plans and programmes in order, *inter alia*, to identify at an early stage unforeseen adverse effects, and to be able to undertake appropriate remedial action” (Article 10.1).”

The CSS is required to be monitored throughout its life to determine if it is meeting the environmental objectives outlined in this report.

Forty Six indicators have been identified to determine if the CSS is meeting its environmental objectives. These include a number for which data are already being collected. Some of the indicators are not currently monitored and Scarborough Borough Council will be required to collect this information to facilitate future strategy reviews.

Table 9.1 identifies the indicators and the organisational responsibilities for monitoring.

Table 9.1 – Monitoring Requirements and Responsibilities

Objective	Indicators	Monitoring Responsibility	Currently Collecting Data	New Requirement to Collect Data
To provide conditions for business success, economic growth and investment with specific reference to the fishing and farming industries.	Potting effort in Robin Hoods Bay and Whitby	North Eastern Sea Fisheries Committee	North Eastern Sea Fisheries Committee	No new data required
	Number of farm diversification schemes approved	Scarborough Borough Council	Scarborough Borough Council	No new data required
	Number of people employed in the agriculture, hunting and forestry sector	Office of National Statistics	Office of National Statistics	No new data required
	Number of people employed in the fishing sector	Office of National Statistics	Office of National Statistics	No new data required
To support the tourism industry through the	Number of holiday cottages/hostels/hotels granted planning permission	North York Moors National Park Authority	North York Moors National Park Authority	No new data required

Objective	Indicators	Monitoring Responsibility	Currently Collecting Data	New Requirement to Collect Data
provision of access to facilities and attractions.	Number of new visitor/recreation facilities granted planning permission	North York Moors National Park Authority	North York Moors National Park Authority	No new data required
	Number of people employed in the hotels and restaurants sector	Office of National Statistics	Office of National Statistics	No new data required
Maintain vibrant local communities	Population of wards within the study area	Office of National Statistics	Office of National Statistics	No new data required
	% of people who believe they belong to their neighbourhood.	Scarborough Borough Council	Scarborough Borough Council	No new data required
	Number of people with good, fairly good and not good health in the study area	Office of National Statistics	Office of National Statistics	No new data required
Where practicable ensure the safety and security of people and property.	Number of households at risk in wards within the study area	Office of National Statistics	Office of National Statistics	No new data required
To maintain the transport network, encouraging the use of cycling, walking, minimising traffic and promoting access to the countryside.	Length of Public Rights of Way within the study area	Ordnance survey	Ordnance survey	No new data required
	Length of cycle way within the study area.	Sustrans	Sustrans	No new data required

Objective	Indicators	Monitoring Responsibility	Currently Collecting Data	New Requirement to Collect Data
Maintain access to local facilities and services whilst minimising environmental impacts.	Number of indoor leisure visits/admissions	Scarborough Borough Council	Scarborough Borough Council	No new data required
	Area of road within the wards in the study area.	Office of National Statistics	Office of National Statistics	No new data required
Ensure local needs are met locally.	Number of people working from home.	Office of National Statistics	Office of National Statistics	No new data required
	Distance people travel to work.	Office of National Statistics	Office of National Statistics	No new data required
Creativity, innovation and the appropriate use of technology.	Use of technology and innovation to combat coastal erosion.	Scarborough Borough Council	None	Data on the technology used for the coastal defence will need to be collected by Scarborough Borough Council.
To promote good health through the provision of access to leisure facilities including access to the network of footpaths.	Number of open space, sport and recreational facilities.	Scarborough Borough Council	Scarborough Borough Council	No new data required
	Number of people with good, fairly good and not good health in the study area	Office of National Statistics	Office of National Statistics	No new data required
	Length of Public Rights of Way within the study area	Ordnance survey	Ordnance survey	No new data required
Minimise negative impacts to human health	Number of people with good, fairly good and not good health in the study area	Office of National Statistics	Office of National Statistics	No new data required

Objective	Indicators	Monitoring Responsibility	Currently Collecting Data	New Requirement to Collect Data
(including pollution and stress) and safeguard positive impacts.	Number of people with a limiting, long term illness	Office of National Statistics	Office of National Statistics	No new data required
To conserve and seek to enhance the terrestrial and marine biological and geological environment, particularly designated sites and protected species.	Condition of Whitby – Saltwick SSSI (designated for geological features)	Natural England	Natural England	No new data required
	Condition of Robin Hood's Bay: Maw Wyke to Beast Cliff SSSI (designated for geological and biological features)	Natural England	Natural England	No new data required
	Condition of Hayburn Wyke SSSI (designated for biological features)	Natural England	Natural England	No new data required
	Condition of Iron Scar & Hundale Point to Scalby Ness SSSI (designated for geological features)	Natural England	Natural England	No new data required
	Maintain the Vegetated sea cliffs of the Atlantic and Baltic Coasts habitat at Robin Hood's Bay – Maw Wyke to Beast Cliff SAC	Natural England	Natural England	No new data required

Objective	Indicators	Monitoring Responsibility	Currently Collecting Data	New Requirement to Collect Data
	Maintain the vegetation mosaic of the Maritime Cliff and Slope at Robin Hood's Bay – Maw Wyke to Beast Cliff SAC (baseline data from Natural England)	Natural England	Natural England	No new data required
	Maintain the Broadleaved, Mixed and Yew Woodland at Robin Hood's Bay – Maw Wyke to Beast Cliff SAC (baseline data from Natural England).	Natural England	Natural England	No new data required
To conserve and seek to enhance the coastal and marine biological and geological environment, particularly designated sites and protected species.	Maintain the Littoral Rock Woodland at Robin Hood's Bay – Maw Wyke to Beast Cliff SAC (baseline data from Natural England).	Natural England	Natural England	No new data required
	Maintain the Coastal Cliff and Foreshore, Inland Outcrops and Active Process Morphology at Robin Hood's Bay – Maw Wyke to Beast Cliff SAC (baseline data from Natural England).	Natural England	Natural England	No new data required

Objective	Indicators	Monitoring Responsibility	Currently Collecting Data	New Requirement to Collect Data
Maintain and safeguard opportunities for all to access and understand the ecological and geological environment.	Visitor numbers to ecological and geological designated sites.	Natural England/National Trust	None	The number of people visiting the designated ecological and geological sites per annum will need to be collected by Natural England/National Trust
Minimise pollution to levels which do not damage the biological or geological environment.	Areas of identified contaminated land and potential sources of pollution.	Scarborough Borough Council	Scarborough Borough Council	No new data required.
Minimise pollution to levels which do not damage soil.	Areas of identified contaminated land and potential sources of pollution.	Scarborough Borough Council	Scarborough Borough Council	No new data required.
Minimise pollution to levels which do not damage the water environment including surface water and ground water.	Number of beaches with recognised awards.	Scarborough Borough Council	Scarborough Borough Council	No new data required

Objective	Indicators	Monitoring Responsibility	Currently Collecting Data	New Requirement to Collect Data
To ensure any potential works do not increase the risk of flooding.	Number of planning permission granted contrary to the advice of the Environment Agency on either flood defence grounds or water quality.	North York Moors National Park Authority	North York Moors National Park Authority	No new data required
Manage natural resources in a way which sustain their environmental qualities as well as their productive (or economic) potential.	Potting effort in RHB and Whitby	Eastern Sea Fisheries Committee	Eastern Sea Fisheries Committee	No new data required
	Number of farm diversification schemes approved.	North York Moors National Park Authority & Scarborough Borough Council	North York Moors National Park Authority & Scarborough Borough Council	No new data required
To maintain and safeguard opportunities for all to access and understand local heritage	Numbers of monuments open to the public in the study area.	English Heritage	None	English Heritage will need to count the number of monuments open to the public per annum.
Where practicable preserve and enhance all aspects of the historic environment.	Number of SAMs within the study area.	English Heritage	English Heritage	No new data required
	Number of listed buildings within the study area	English Heritage	English Heritage	No new data required
	Number of monuments/buildings 'at risk' within the study area	English Heritage	English Heritage	No new data required

Objective	Indicators	Monitoring Responsibility	Currently Collecting Data	New Requirement to Collect Data
Maintain and, where possible. Enhance the special landscape, local distinctiveness and settlement character.	Number of conservation area appraisals carried out.	North York Moors National Park Authority & Scarborough Borough Council	North York Moors National Park Authority & Scarborough Borough Council	No new data required
	Number of applications refused due to adverse impact on trees, woodland, hedgerows and walls.	North York Moors National Park Authority	North York Moors National Park Authority	No new data required
To comply with the objectives of the North Yorkshire and Cleveland Heritage Coast Management Plan	National targets for Heritage Coasts relating to Landscape Conservation, Recreation and Beach & Water Quality.	North York Moors National Park Authority	North York Moors National Park Authority	No new data required

## Appendix A – Task A1 Identifying Relevant Plans and Programmes

Table A.1 - Updated List of Policies and Plans

Name of document	Relevant policies/objectives of the plan or programme	How considered in the SEA
International		
EC Directive on the Conservation of Wild Birds 79/409/EEC (1979) <sup>xxv</sup>	Member States have a duty to sustain populations of naturally occurring wild birds by sustaining areas of habitat in order to maintain populations at ecologically and scientifically sound levels. This applies to birds, their eggs, nests and habitats	The SEA will consider the impacts of the CSS on European Birds.
EC Directive on the Conservation of Natural Habitats of Wild Fauna and Flora 92/43/EEC (1992) <sup>xxvi</sup>	Member States are required to take legislative and administrative measures to maintain and restore natural habitats and wild species at a favourable conservation status in the community.	The SEA will take into account the conservation status of the study area and will seek to identify measures to further maintain and restore natural habitats.
The Convention on Biological Diversity. Rio de Janeiro (1992)	Article 6A requires each Contracting Party to develop national strategies, plans or programmes for the conservation and sustainable use of biological diversity.	The SEA will consider biodiversity in accordance with guidance on this issue.
Environmental Assessment of Plans and Programmes Regulations (2004) <sup>xxvii</sup>	These Regulations implement Directive 2001/42/EC of the European Parliament and Council on the assessment of the effects of certain plans and programmes on the environment as regards plans and programmes relating solely to any part of England.	The SEA is being undertaken in accordance with this European Directive.
National		

Name of document	Relevant policies/objectives of the plan or programme	How considered in the SEA
Coast Protection (Notices) (England) Regulations (2002)	An Act to amend the law relating to the protection of the coast of Great Britain against erosion and encroachment by the sea.	The SEA will consider the law in relation to the protection of the coast line.
Wildlife and Countryside Act (1981) (as amended)	Addresses species protection and habitat loss by setting out the protection that is afforded to wild animals and plants in Britain and gives details of protection afforded to Sites of Special Scientific Interest.	The SEA will consider the effects of the CSS on wildlife.
The Conservation Regulations (1994) (Habitats Regulation)	Transpose the requirements of the Habitats Directive building on existing legislation for the protection of species and habitats listed in the Directive.	The SEA will seek to identify measures to further maintain and restore natural habitats.
The Countryside Rights of Way Act (2000)	The Act places a duty on Government Departments to make a definitive map of rights of way and to subsequently ensure their accessibility. It also requires improved access to open land and consideration if the affects of recreational users on nature conservation.	The SEA will consider the effects of the CSS on rights of way and access to the coast.
UK Biodiversity Action Plan	Conserve and enhance biological diversity within the UK and increase priority habitats. Contribute to the conservation of biodiversity through all appropriate mechanisms.	The SEA will consider biodiversity, will identify BAP habitat and, where practical, identify measures for meeting BAP targets.
Environment Act (1995)	Established the environment Agency, and transferred to it powers over the control of pollution and the conservation and enhancement of natural resources and the environment.	Not necessary, this Act transfers power but does not guide Regulations.

Name of document	Relevant policies/objectives of the plan or programme	How considered in the SEA
Natural Environment and Rural Communities Act (2006) <sup>xxviii</sup>	The Act is primarily intended to implement key aspects of the government's rural strategy. It also addresses a wider range of issues relating broadly to the natural environment. The Act establishes an independent body – Natural England – responsible for conserving, enhancing and managing England's natural environment for the benefit of current and future generations.	Not necessary, this Act transfers power but does not guide Regulations.
Marine and Coastal Access Bill <sup>xxix</sup>	to make provision for and in connection with the establishment of an English coastal walking route and of rights of access to land near the English coast;	The SEA will identify the impact of the CSS on coastal footpaths and access to the coast.
<b>Circulars</b>		
Circular 06/05: Biodiversity and Geological Conservation – Statutory Obligations and Their Impact Within the Planning System (2005) <sup>xxx</sup>	Sets out planning policies on protection of biodiversity and geological conservation through the planning system.	The SEA includes an objective to protect biodiversity and geological conservation.
Circular 14/97: Planning and the Historic Environment - Notification and Directions by the Secretary of State (1997)	The circular sets out requirements to notify and consult in reference to planning applications affecting the fabric or setting of listed buildings, conservation areas and historic parks and gardens.	The SEA will consider guidance on heritage and the historic environment.

Name of document	Relevant policies/objectives of the plan or programme	How considered in the SEA
Circular 02/93 - Public Rights of Way (1993)	This circular consolidates advice on recording, maintaining, protecting and modifying the rights of way network. It also outlines the powers which local authorities acquired under the Transport and Works Act 1992 to stop up or divert a footpath or bridleway in their area when it crosses a railway, otherwise than by a tunnel or bridge, where this is considered to be in the interests of public safety.	The SEA will consider guidance on Public Rights of Way.
<b>Planning Policy</b>		
PPS9 Biodiversity and Geological Conservation ODPM (2005) <sup>xxxix</sup>	Sets out planning policies on protection of biodiversity and geological conservation through the planning system. Aims to conserve enhance and restore the diversity of England's wildlife and geology; and contribute to regeneration and renewal through enhancing biodiversity and green spaces.	The SEA will consider biodiversity and geological conservation in accordance with guidance on this issue.
PPG15 Historic Environment (2006) <sup>xxxix</sup>	The PPG deals with those aspects of conservation policy which interact most directly with the planning system. These include matters of economic prosperity, visual impact, building alterations, traffic and affect on the character of conservation areas.	The SEA includes an objective to protect heritage and the historic environment.
PPG 16 Archaeology and Planning ODPM (2001) <sup>xxxix</sup>	Sets out the Secretary of State's policy on archaeological remains on land, and how they should be preserved or recorded both in an urban setting and in the countryside.	The SEA will consider the effect of the CSS on the archaeological resource and seek to avoid damage to archaeological remains.

Name of document	Relevant policies/objectives of the plan or programme	How considered in the SEA
<p>PPS 25 Development and Flood Risk (2010)<sup>xxxiv</sup></p> <p>PPS 25 Supplement: Development and Coastal Change (2010)</p>	<p>This document, which supplements PPS25, sets out planning policies for managing development on coastal areas affected by coastal change.</p>	<p>The SEA will consider the impact of the CSS on the natural movement of material in the study area and its interaction with other uses of the resource.</p>
<b>Regional</b>		
<p>The Yorkshire and Humber Plan: Regional Spatial Strategy to 2026 (2008)<sup>xxxv</sup></p>	<p>This provides a spatial development strategy at the broad regional level within which the Council can prepare its more detailed proposals. Its approach makes crucial links between other national and regional strategies and programmes such as the Regional Economic Strategy and the Regional Housing Strategy.</p>	<p>The SEA will consider the policies within the Regional Development Framework and will identify any conflicts between this planning tool and the strategy.</p>
<b>Good Practice Guides</b>		
<p>Good practice guide on Planning for Tourism (2006)<sup>xxxvi</sup></p>	<p>Tourism, in all its forms, is of crucial importance to the economic, social and environmental well-being of the whole country. The planning system has a vital role to play in terms of facilitating the development and improvement of tourism in appropriate locations.</p>	<p>The SEA will consider the impacts of the CSS on planning and tourism.</p>
<b>Local</b>		
<p>North York Moors National Park Authority Local Development Framework (2008)<sup>xxxvii</sup></p>	<p>The Local Development Framework system provides an opportunity to bring together plans and strategies for the Park and deliver the spatial elements of these whilst balancing these interests within the context of sustainable development.</p>	<p>The SEA takes into account policies set out in the North York Moors National Park Authority Local Development Framework.</p>

Name of document	Relevant policies/objectives of the plan or programme	How considered in the SEA
Scarborough Borough Local Plan (1999) <sup>xxxviii</sup>	The strategies provide frameworks for determining planning applications, as well as for preparing both Local Development Documents and Local Transport Plans	The SEA takes into account policies set out in the Scarborough Borough Local Plan.
Scarborough Borough Local Development Framework (2006) <sup>xxxix</sup>	This report provides a draft Appropriate Assessment of the Scarborough Borough Core Strategy Preferred Options development plan document. It has been published alongside the Core Strategy Preferred Options.	The SEA takes into account policies set out in the Scarborough Borough Local Development Framework.
Sustainability Report: Sustainability Appraisal of the Draft Core Strategy (Preferred Options) for Scarborough Borough Council (2006) <sup>xl</sup>	Sets out guidelines for the future development and principal elements of the planning framework for Scarborough Borough. It will comprise a spatial vision, spatial objectives, spatial strategy, Core Policies and a monitoring and implementation framework.	SA objectives have been taken into account whilst developing the SEA objectives for the CSS.
River Tyne to Flamborough Head SMP2: Non Technical Summary for Scarborough Area (2007) <sup>xli</sup>	The Shoreline Management Plan (SMP) provides a large-scale assessment of the risks associated with coastal evolution and presents a policy framework to address these risks to people and the developed, historic and natural environment.	The SEA will consider the SMP2 policy framework and will be compatible with the SMP policies.

Name of document	Relevant policies/objectives of the plan or programme	How considered in the SEA
Rapid Coastal Zone Assessment Survey (RCZA) Yorkshire and Lincolnshire: Whitby to Reighton, English Heritage (2008)	The RCZA aims to establish a more comprehensive and reliable database and assessment of the range and scope of archaeological resource currently available. The project identified 779 records of which a large proportion are new.	The SEA has collated information from the RCZA in the assessment of cultural heritage and archaeology. Information on assets has also been used to identify possible indicators.
Historic Environment Strategy for Yorkshire and the Humber Region 2009-2013, Yorkshire and the Humber Historic Environment Forum (2008)	Prepared by a range of organisations to provide a framework for the management of historical assets providing a basis to guide regional policy and decision making.	The SEA will consider the historic environment and will use the information in the strategy for the development of indicators.
Heritage at Risk: Yorkshire and the Humber, English Heritage (2008)	Identifies the heritage at risk in Yorkshire and the Humber. Two assets are identified as at risk in Scarborough BC, one of these (The Brewhouse) has been identified as within the study area.	The SEA considers the entire heritage at risk and has used the information to identify possible indicators.
North York Moors National Park: Coastal & Marine Biodiversity Action Plan (2006) <sup>xlii</sup>	Identifies the Key ecological characteristics and features of the North York Moors coastline its importance and current conservation and action plans.	The SEA will consider the ecological conservation of the study area. Information on the Plan's actions has also been used to identify possible indicators.

Name of document	Relevant policies/objectives of the plan or programme	How considered in the SEA
<p>North Yorkshire and Cleveland Heritage Coast Management Plan, 3<sup>rd</sup> Review, 2008-2013, Heritage Coast.</p>	<p>Provides a framework for the North Yorkshire and Cleveland Heritage Coast over the next five years. Contains objectives for the area and national targets which are to be used for monitoring the success.</p>	<p>The SEA will ensure that the objectives of the CSS and the North Yorkshire and Cleveland Heritage Coast and compliant. This report recommends an objective to monitor the success of the Heritage Coast with the CSS.</p>

## Appendix B – Task A2: Updated Baseline Information

### Baseline Data

#### MA 24

##### Population

This MA lies completely within the ward of Streonshalh which, at the time of the 2001 Census had a population of 4,863. There are no residential properties within this area although there is a small street of nine addresses on the boundary of MA23, just north of MA24. Although these are outside of this MA they have still been identified as any management policy in this area will have an indirect impact on these properties.

Just to the north of this MA, in MA23, there are two buildings used by HM Coastguard Rescue. Both have large masts used for telecommunications which are located very close to the cliff edge. There is also a Youth Hostel located very close to Whitby Abbey (labelled No. 1 in the Tourism & Recreation Category on Figure 7.3.1).

##### Human Health

Information on the general health of the ward of Streonshalh was collected from the Office of National Statistics and is located in. In 2001, 68.91% of the population in this ward had 'good' general health with 21.67% having 'fairly good' health and 9.42% having 'not good' health.

The Cleveland Way strategic footpath runs through this MA at the top of the cliff edge and provides connectivity from the town of Whitby southwards to the village of Robin Hoods Bay.

##### Natural Environment (including geology)

There is one nationally important Site of Special Scientific Interest (SSSI) within this MA. Whitby –Saltwick SSSI is approximately 42.4 hectares (ha), of which 24.9 ha is within the North Yorkshire Moors National Park. The SSSI is designated for its geological interest including three main areas covering vertebrate palaeontology, palaeobotany and Toarcian exposures.

This stretch of coast is of international stratigraphic significance for its classic section in the Lower Toarcian; a critical Jurassic exposure forming the type locality for the Whitbian Substage. There are superb exposures in the highly fossiliferous Jet Rock and Alum Shale Series of *falciferum* and *bifrons* Zone age. Additionally there are excellent exposures of the unconformable contact of the here attenuated Dogger Formation with the Alum Shales.

Many of the best museum specimens of Middle Jurassic plant fossils originated in the cliffs to the south of Whitby. These came from a lens within the filled sandstone channels of the Saltwick Formation. Of the numerous species recorded, particularly noteworthy are the spectacular examples of bennettitalean reproductive organs,

such as those of *Williamsonia* and *Weltricha*. This is an outstanding site for its superlative plant material and, particularly, their bearing on bennettitalean history.

The Upper Lias of the coast east of Whitby, the richest Upper Liassic reptile site in Britain, has yielded many fine specimens of plesiosaurs, ichthyosaurs, and marine crocodiles, including type specimens of 10 species. The first fossil alligator from Whitby was reported in 1759, and discoveries since then have proved extremely valuable in studies in marine reptiles. The reptiles occur in the Main Alum Shales within the Alum Shale Formation (bifrons Zone; commune and fibulatum Subzones).

#### **Soil & Contamination**

A significant proportion of the land at the top of the cliff is used for agricultural purposes and is considered as Grade 3 agricultural land.

A historic Alum works (which is also a Scheduled Ancient Monument (SAM)) is located to the east of the site which was mined, open cast, for Alum. It is not known if this area is contaminated although it is immediately at risk from coastal erosion.

#### **Water**

There are no ponds or rivers in this MA and therefore it is reasonable that this subject could be scoped out of requiring further assessment for this MA. No flooding data are available for this area and, even if flooding did occur, there are no assets which would be detrimentally impacted.

#### **Air**

Local or regional air quality is unlikely to be impacted by the CSS. The construction of defences could potentially result in impacts during the construction phase. These will be subject to Environmental Impact Assessment (EIA) in due course to identify appropriate mitigation measures.

#### **Climatic Factors**

The mean annual temperature over the area varies from just over 9°C to around 10.5°C. The temperature shows both seasonal and diurnal variations, January and February are the coldest months with mean daily minimum temperatures across the region close to 1°C. Across the area, annual averages of sunshine are less than 1450 hours. The annual rainfall within this area is approximately 700 mm<sup>xliii</sup>.

The climate is not significantly different to the regional and national averages. It is unlikely that the CSS is going to impact significantly on the climate of the MA.

#### **Material Assets**

The natural resources within this MA are essentially related to agriculture.

#### **Historic Environment (Including Architectural and Archaeological)**

In June 2008, English Heritage commissioned a Rapid Coastal Zone Assessment (RCZA) from Whitby to Reighton. This aimed to establish a more comprehensive and reliable dataset assessment of the range and scope of the archaeological resource

that was available. An overview of the information found in MA24 is located on the Heritage Overview.

Information has also been collected from the North Yorkshire Moors National Park Authority (NYMNP) containing all of the records on the Historic Environment Register (HER). There are several locally important archaeological features within the MA including several within the intertidal range and in the agricultural fields at the top of the cliff edge.

There is one Scheduled Ancient Monument (SAM) within the study area: the Saltwick Nab Alum Quarry which straddles MA24 and MA25. The works was historically used for the open cast excavation of Alum, a material used for the fabric dyeing trade in the 18<sup>th</sup> Century. Due to the development of new technologies, the demand for Alum reduced and the quarry was abandoned.

Just outside of the study area is a second SAM. Whitby Abbey is approximately 500 m from the top of the cliff edge and is located within MA23. At the SEA workshop, which is explained in more detail in Section 4 of this report, it was decided that the management proposed in MA24 could have a significant impact on the Abbey and therefore it should be scoped into the assessment. It is a Benedictine Abbey founded in 657AD. The ruins are open to the public and are owned and managed by English Heritage. One of the buildings designated within the SAM is listed as 'at risk' by English Heritage in their 2008 Heritage at Risk Report. The Brewhouse in Whitby Abbey consists of the ruins of a 17<sup>th</sup> Century brewhouse to the west of Abbey House. The site was converted into a water tank in the 19<sup>th</sup> Century and now stands in a 'very bad' (derelict) condition.

There are no listed buildings located within the MA.

#### **Landscape**

The MA is situated within the North Yorkshire and Cleveland Heritage Coast. The Heritage Coast is a non-statutory landscape definition and is a significant historic resource.

A small section of the MA is included within the National Park. Some of the area to the east is National Trust land. A Landscape Character Assessment was commissioned by the NYMNP in 2003<sup>xliv</sup> and identifies the Coast and Coastal Hinterland as a Key Landscape Character Type. The key characteristics of the area between Whitby and Cloughton include:

- Rolling coastal and coastal hinterland area, rising to a height of 233 m on Howdale Moor, underlain by Deltaic sandstones and mudstones with soft Lias mudstones and Cleveland ironstones in deeper valleys and on more low lying parts of coast overlain by deposits of boulder clay which give rise to intensive farming. Coastal areas are designated as part of the North Yorkshire and Cleveland Heritage Coast.

- In the south the area is defined mainly by the moorland edge or the edge of Harwood Dale Forest to the east, the moorland overshadowing the area and creating pinch points to the east of Robin Hoods Bay and at Stoupe Brow, where it extends to within 500 m of the coast.
- Elevated areas allow long distance views across the area and out to sea.
- Spectacular and rugged crumbling cliffs of sandstone, shale, limestone and ironstone, towering to a maximum height of 150 m at Ravenscar, have been affected by collapses on a large scale, which in places has resulted in a broad undercliff resting on the harder rocks below.
- Wide wave cut platforms are feature of the coastline and sand or sand/shingle areas are relatively infrequent. The cliffs and foreshore at Robin Hoods Bay expose Redcar mudstone, the beds of which sweep round the bay in a broad arc. Coastal protection measures are necessary in a number of locations.
- The cliffs are of considerable botanical interest with habitats ranging from dry heath and bracken, to scrub, woodland and wet flushes. Herb rich grassland covers the open crags. The cliffs are home to variety of nesting seabirds including Fulmar, Herring Gull, Kittiwake and Cormorant and are renowned for their geological and fossiliferous exposures.
- The area is drained by a series of steeply incised and winding minor becks which flow towards the coast, or in the north towards the River Esk. Waterfalls occur along the becks and sometimes where the becks meet the sea e.g. at Hayburn Wyke. The steep valley sides are frequently lined with deciduous woodland, much of which is ancient semi natural woodland.
- Inland from the coast, mixed arable and pasture farmland (for cattle, sheep and horses) is interspersed by plantations, shelterbelts and mainly Victorian farmhouses, marked by groups of trees. Close to the character area's inland edge, a number of medium sized mixed and coniferous plantations have been established, e.g. Haxby Plantation at Sneaton and on the side of Cloughton Moor. Small areas of scrub and upland moor/bracken mosaic occur.
- Regular fields of recent enclosure are divided by a mixture of closely trimmed hedgerows, neat stone walls of regular bedded sandstone and fences, with occasional trees, often stunted and wind blown, creating a bleak and open appearance. Elsewhere, the wooded valleys and settlements are flanked by small and irregular fields and a higher proportion of mature hedgerows that lend a sense of time depth to the area. A distinctive pattern of strip fields occurs to the north of Robin Hood's Bay.

- Robin Hood's Bay is a focal point for visitors to the area; the cluster of red roofed buildings perched one above the other, with a labyrinth of passageways and steps are crowded into a breach in the cliffs. The upper parts of the village have a mixture of red brick Victorian houses and more recent development.
- At Raven Hall, the remains of an early speculative venture to promote the area as a seaside resort has resulted in a pattern of streets and a few houses which surround a square within the open cliff top location. A cliff top hotel is a prominent feature here.
- The busy A171 crosses part of the character area, frequently in an elevated and open location and has a significant intrusive effect on the area. Elsewhere a network of B roads and winding minor lanes link settlements.
- A disused railway between Scarborough and Whitby, now a cycle track, runs close to the coast and the Cleveland Way follows the cliff top. Camping and caravan sites, car parks and equestrian centres are numerous.
- Old brickworks, jet and alum quarries within the cliffs, now partly concealed by vegetation, add cultural interest to the area, including the remains of the Peak Alum Works at Ravenscar.
- Ancient remains include Bronze Age barrows and cairns, often in large clusters, and Iron Age cross ridge dykes.
- Detractors include masts south of Whitby and at Ravenscar, the traffic associated with the A171, the overhead electric line supported on pylons to the north of Sneaton, scattered modern suburban style development and prominently sited caravan sites. The loss of field boundaries has also detracted from the area.

There is a Conservation Area located within Whitby although this is outside of the study area.

#### *MA 25*

##### **Population**

The MA is located within the wards (listed from north to south following the coast) of Fylingdales, Scalby, Hackness & Stainton Dale and Lindhead. At the time of the 2001 national Census the population of these three wards was 8,305.

There are a range of isolated properties scattered within the study area which could be at risk from coastal erosion. These are mainly thought to consist of farm houses however there is a concentration of property at risk in the village of Robin Hood's Bay, which is the largest populated area within the study area and contains a number of public convenience and telephones, and a visitor's car park. This area is partly defended to the south however there are a number of properties on the

northern edge of the bay which are currently undefended and could be at risk from coastal erosion.

There are a number of bus stops within Robin Hood's Bay which is the only source of public transport. A historic railway line runs through Robin Hoods Bay, connecting Whitby in the north and Scarborough in the south. This railway line is currently disused but acts as a cycle path and is used by walkers.

A range of tourist accommodation and public houses are within the study area, most of which are located within Robin Hood's Bay. The Bay has three hotels, two public houses and a caravan site. The Victoria Hotel, to the north of the Bay is the only building immediately at risk from coastal erosion as it is by a currently undefended frontage. Another Youth Hostel is located south of Robin Hood's Bay at Boggle Hole. Further south still, in Ravenscar there is a golf course attached to the Raven Hall Hotel which is just within the study area.

There are 14 commercial buildings within the study area, the majority of which are within the defended area of Robin Hood's Bay. These include offices, exhibition centres, sweet shop, tourist shop and fish and chip shop. There are two other commercial buildings within the study area to the south of Whitby in the Whitby Holiday Park.

#### **Human Health**

Information from the Office of National Statistics on the health of the population of Fylingdales, Scalby, Hackness & Stainton Dale and Lindhead was collected and is located in Appendix D. In 2001, 68.13% of the population in the wards had 'good health', 22.86% had 'fairly good' health and 9% had 'not good' health. This is roughly consistent with the regional and national statistics.

The Cleveland Way strategic footpath runs through the MA along the entire length of the coast. It provides connectivity from Whitby in the North to Robin Hoods Bay and Ravenscar within the MA, to Scarborough and Filey further south. It also connects the coast to the North York's Moors National Park and is used extensively by walkers, cyclists and horse riders for recreation and for access.

Additionally, there are numerous other footpaths which connect to and from the Cleveland Way into the Moors and on to the beach or cliff edge. Footpaths also extend along two of the becks which move toward the coast at Oakham Beck and Hayburn Beck. The total footpath distance in the study area is 34 km.

A cycle way also follows the coast and enters the study area to the north of Robin Hood's Bay. The route, which is on the site of a disused railway extends from Scarborough up to Whitby.

#### **Natural Environment (including geology)**

There is one Special Area of Conservation (SAC) within this MA, Robin Hood's Bay - Maw Wyke to Beast Cliff. The combination of geology, topography and plant

communities found on the site are unique and it is one of the best examples of vegetated sea cliffs on the north-east coast of England. The underlying geology varies from base-rich to base-poor, and this variation is reflected in a characteristic and diverse flora across the site. Vertical hard cliffs support maritime crevice and ledge vegetation, and the more gently sloping parts of Beast Cliff itself are covered by scrub and woodland. Sandstone boulders support a luxuriant growth of mosses and ferns and pools on the cliff shelf support wetland plants and scrub. Due to the frequent land slippage occurring on the site, the woodland is constantly changing and being rejuvenated with mainly young trees forming secondary woodland. North of Beast Cliff to Ravenscar the vegetation is more open and reflects alternating strata of rich and poor base-status. Areas of calcareous clays support typical calcareous grassland and wet flush plant communities, whereas heathland species occur on more acidic sandstone outcrops. From Ravenscar north to Robin Hood's Bay the cliffs are composed either partly or entirely of soft boulder clay. This clay is continually being eroded by wave action and slippage, and supports pioneer plant communities typical of this changing habitat. The primary reason for the designation of this site as a SAC is for its habitat of vegetated sea cliffs. A list of the conservation objectives and designated features of interest is located in Appendix C.

There are four SSSI's within the MA which area designated for their geological and fossil interest including Whitby – Saltwick SSSI, Robin Hood's Bay: May Wyke to Beast Cliff SSSI, Hayburn Wyke SSSI and Iron Scar & Hundale Point to Scalby Ness SSSI. In 2009 Natural England completed a condition assessment on the sites, the results of which are outlined below:

Table B.1 - Condition of SSSIs in MA25

Condition Assessment	Whitby – Saltwick SSSI	Robin Hood's Bay: Maw Wyke to Beast Cliff SSSI	Hayburn Wyke SSSI	Iron Scar & Hundale Point to Scalby Ness SSSI
% Area Favourable	100% in August 2009	98.75% in August 2009	100% in August 2009	100% in August 2009
% Area Unfavourable	-	1.25% in August 2009	-	-

**Whitby –Saltwick SSSI** is approximately 42.4 hectares (ha), of which 24.9 ha is within the North Yorkshire Moors National Park. The SSSI is designated for its geological interest including three main areas covering vertebrate palaeontology, palaeobotany and Toarcian exposures.

This stretch of coast is of international stratigraphic significance for its classic section in the Lower Toarcian; a critical Jurassic exposure forming the type locality for the Whitbian Substage. There are superb exposures in the highly fossiliferous Jet Rock and Alum Shale Series of *falciferum* and *bifrons* Zone age. Additionally there are excellent exposures of the unconformable contact of the here attenuated Dogger Formation with the Alum Shales.

Many of the best museum specimens of Middle Jurassic plant fossils originated in the cliffs to the south of Whitby. These came from a lens within the filled sandstone channels of the Saltwick Formation. Of the numerous species recorded, particularly noteworthy are the spectacular examples of bennettitalean reproductive organs, such as those of *Williamsonia* and *Weltricha*. This is an outstanding site for its superlative plant material and, particularly, their bearing on bennettitalean history.

The Upper Lias of the coast east of Whitby, the richest Upper Liassic reptile site in Britain, has yielded many fine specimens of plesiosaurs, ichthyosaurs, and marine crocodiles, including type specimens of 10 species. The first fossil alligator from Whitby was reported in 1759, and discoveries since then have proved extremely valuable in studies in marine reptiles. The reptiles occur in the Main Alum Shales within the Alum Shale Formation (*bifrons* Zone; *commune* and *fibulatum* Subzones).

**Robin Hood's Bay: Maw Wyke to Beast Cliff SSSI** is approximately 365.25 ha and is designated for five distinct areas of geological interest, the coastal/woodland vegetation at Beast Cliff and the zonation of marine biotopes on the rocky foreshore.

The coastal cliffs and foreshore exposures around Robin Hood's Bay and Ravenscar constitute one of Britain's classic geological localities, and have been studied from at least the 1820s. The site includes an unrivalled and continuously exposed Lower Jurassic sequence dominated by mudrocks of the Lias Group, and capped by sandstones of the Ravenscar Group of early Middle Jurassic age. Throughout the succession there is excellent bio- and chronostratigraphic control based on a very detailed sequence of ammonite faunas. Many of these faunas form the basis for the formal definitions of Biohorizons, Subzone and Zones and the site is therefore of very great importance to European Jurassic chronostratigraphy. The area has also yielded the type specimens of the index species of many of these units.

The Lias Group, represented in ascending order by the Redcar Mudstone, Staithes, Cleveland Ironstone and Whitby Mudstone Formations contains stratotypes for several zones and horizons. This includes a very complete Sinemurian Pliensbachian boundary sequence within the Redcar Mudstone Formation, which may become a Global Stratotype Section and Point. Other highlights include a well preserved succession of biostratigraphical horizons within the Cleveland Ironstone and the most complete Toarcian succession in Britain represented by the Whitby Mudstone Formation.

This Lower Jurassic succession is also of great interest for its sedimentology and its fossil invertebrate faunas which both provide insights into the environmental

conditions of the time. Occasional marine reptiles (ichthyosaurs and crocodiles) have been recovered from various levels.

The base of the Middle Jurassic sequence is well exposed around Blea Wyke and includes a relatively thick Dogger Formation with a famous and fossiliferous 'Nerinea Bed' of Aalenian (Opalinum to Murchisonae Zone) age. The succeeding dominantly, non-marine Ravenscar Group is well developed including its component Saltwick, Eller Beck, Cloughton and Scarborough Formations (Aalenian to Lower Bajocian).

In the Beast Cliff area a number of plant bearing horizons occur within the Saltwick and Cloughton Formations. Many species occur which are seldom found at Yorkshire's other famous Jurassic plant localities. Many species of filicales, bennettitales, cycads and conifers are recorded from Beast Cliff; a prolific palaeobotanical locality with notable rarities.

The shores of Robin Hood's Bay between May Wyke and Beast Cliff are predominantly rocky, and moderately exposed to wave action. The varied geology along this coast plays a major role in creating an exceptionally wide range of habitats and associated communities for this part of the North Sea coast. Extensive examples of two rocky shore habitats are found here: moderately exposed flat bedrock and moderately exposed large and massive boulder fields. Slightly more exposed areas of the shore, such as at Whitehouse Hole are characterised by biotypes more typical of wave exposed shores.

Areas of gently dipping mudstones, shales and ironstones at the northern end of the site are characterised by complete zonation of rocky shore biotopes from the lichen-dominated *Verrucaria maura* biotope at the top of the shores, through fucoid biotopes characteristic of moderately exposed shores *Pelvetia canaliculata*, *Fucus spiralis*, *F. vesiculosus*, *F. serratus* into the kelp zone *Laminaria digitata* the latter which straddles the low water mark. In the Far Jetticks area, good quality, extensive areas of two nationally scarce red algal turf biotopes *Osmundea pinnatifida* and *Corallina officinalis* replace the more common fucoid-dominated biotopes and occupy much of the intertidal zone from the base of the cliff to the kelp zone. Here, the finely roughened bedding planes of mudstones belonging to the Cleveland Ironstone Formation provide surfaces for the firm attachment of holdfasts. The low shore kelp zone *Laminaria digitata* straddles the low water mark and forms the transition to highly rated subtidal kelp forest biotopes.

Robin Hood's Bay contrasts well with the Maw Wyke area as it is slightly more sheltered (but still falls within the moderately exposed selection unit). This area is particularly noteworthy for its rich and varied low shore communities, particularly the *Fucus serratus* and *Laminaria digitata* biotopes on bedrock and boulders. The presence of the relatively stable medium and large boulders provides additional habitats beneath and between the boulders for a wide variety of animal groups including sponges, anemones, bryozoans, crabs and shore fishes.

Along the southern section of the site, the shore between Blea Wyke and Beast Cliff is predominantly composed of large and massive boulders resting on a mudstone platform. The biology of this area again demonstrates the underlying effects of active geological processes. The upper shore lacks typical fucoids and is instead made up of ephemeral communities of green and red algae *Enteromorpha* sp., and *Porphyra* sp. This composition reflects the unstable nature of the friable upper shore talus beneath the cliffs. In the mid- and low-shore areas the boulders are characterised by typical biotopes of fucoids, kelps and red algal turfs. Areas of the shore lying below recent stumps, are dominated by dense turfs of the nationally uncommon *Rhodothamniella floridula* biotope which tolerates sediment scouring by binding sediment to form a cushion-like turf.

Hawsker Bottoms is also a key palaeobotanical and stratigraphical site and has the best inland exposure of the Scarborough Formation, here near the northern limit of its outcrop. It has provided one of the most varied fossil faunas from this portion of the Middle Jurassic, including the only corals so far recorded from this formation. The nearby Maw Wyke is an outstanding locality of national importance for the study of fossil ferns. A lens, within the Saltwick Formation, yielded particularly fine examples of the genera *Coniopteris*, *Cladophlebis* and *Phlebopteris* including fertile axes essential to systematic studies.

Robin Hood's Bay is an important site for coastal geomorphology for a series of welldeveloped shore platforms cut mainly across the outcrops of Lower Lias shales – siltstone rhythms. The surface morphology of the platforms reflects the arrangement of bedding within a broadly anticlinal structure which has been planed off. The cliffs near North Check and South Check include Middle Lias sandstones, relatively more resistant than the Lower Lias shales, whilst those within the Bay predominantly occur in Lias shale till and are locally affected by considerable mass movements. Robin Hood's Bay provides important contrasts with other platform sites, firstly through its location within the area affected by North Sea wave climates, and secondly in having been subject to glacial and post-glacial processes prior to sea-level reaching its present condition. The greater variety of interest, stratigraphical, palaeontological and geomorphological, make the Hawsker-Robin Hood's Bay-Ravenscar-Beast Cliff area one of the most famous and important for British Geology.

Much of Beast Cliff is covered by scrub and woodland. Ash *Fraxinus excelsior* dominates the canopy with birch *Betula* spp., hazel *Corylus avellana* and field maple *Acer campestre*, although in more acidic situations oak *Quercus aff. robur*, rowan *Sorbus aucuparia* and holly *Ilex aquifolium* are frequent. Great wood-rush *Luzula sylvatica* is abundant on the steep flushed slopes, whilst dog's mercury *Mercurialis perennis* and opposite-leaved goldensaxifrage *Chrysosplenium oppositifolium* are plentiful in the ground flora of the terrace.

Sandstone boulders support a luxuriant growth of mosses and ferns, including hart's-tongue *Phyllitis scolopendrium* and soft shield-fern *Polystichum setiferum*. Pools on the cliff shelf have been colonised by common club-rush *Schoenoplectus lacustris*

and are fringed by alder *Alnus glutinosa*, willow *Salix spp.*, and greater tussock-sedge *Carex paniculata*.

North of Beast Cliff the vegetation is more open and reflects alternating strata of rich and poor base-status. Typical of more calcareous clays are quaking-grass *Briza media*, glaucous sedge *Carex flacca*, kidney vetch *Anthyllis vulneraria* and grass-of-Parnassus *Parnassia palustris*, whereas heather *Calluna vulgaris*, bell heather *Erica cinerea*, crowberry *Empetrum nigrum*, goldenrod *Solidago virgaurea* and wavy hair-grass *Deschampsia flexuosa* characterise more acidic sandstone outcrops. Bracken *Pteridium aquilinum* and various shrub species such as gorse *Ulex europaeus*, broom *Cytisus scoparius*, goat willow *Salix caprea* and rowan *Sorbus aucuparia* are present in varying densities over much of the site.

**Hayburn Wyke SSSI** is approximately 21 ha, and is managed by the National Trust as a nature reserve. The Middle Jurassic cliffs at Hayburn Wyke are overlain by a thick deposit of boulder clay. The Hayburn Beck, which falls onto the beach in a waterfall, has carved a channel through the rocks to expose the Hayburn Wyke plant bed. The plant bed forms part of the Cloughton Formation of the Middle Jurassic and contains a rich fossil fauna, comprising sixty species, dominated by cycads. Of particular interest is *Hepaticites haiburnensis*, a marchantiaceous liverwort, known only from this locality. The geological interest of this site has not yet been fully evaluated, but it is without question an outstanding fossil plant locality.

Deciduous woodland covers the slopes above the cliff shelf and extends some way up Hayburn Wyke Beck, merging into a mixed broad leaved and conifer woodland. The canopy is dominated by oak (both *Quercus petraea* and *Q. robur*) with ash *Fraxinus excelsior*, sycamore *Acer pseudoplatanus*, birch *Betula pubescens* and elm *Ulmus glabra*. There are several standards of large-leaved lime *Tilia platyphyllos*. The understorey of shrubs includes hazel *Corylus avellana*, holly *Ilex aquifolium* and goat willow *Salix caprea*, and there is a rich ground flora with sanicle *Sanicula europaea*, opposite-leaved golden saxifrage *Chrysosplenium oppositifolium*, wood millet *Milium effusum*, male fern *Dryopteris filix-mas*, lady fern *Athyrium filix-femina* and hart's tongue fern *Phyllitis scolopendrium*. The damp conditions favour mosses and liverworts. To the north of Hayburn Wyke and to the south of Little Cliff, the wood gives way to willow scrub *S. caprea*, *S. cinerea* with a ground flora of great horsetail *Equisetum telmateia* and hemp agrimony *Eupatorium cannabinum*. Herbs of note at this site include the introduced elecampane *Inula helenium* and grass of Parnassus *Parnassia palustris*. In places the unstable clay and shale is bare of vegetation or is colonised by species such as colt's-foot *Tussilago farfara*.

Birds known to breed include chiffchaff, willow warbler, pied flycatcher, redstart and blackcap.

**Iron Scar & Hundale Point to Scalby Ness SSSI** is approximately 125 ha and encompasses a cliff with a range of intertidal reefs. The cliffs and intertidal reefs between Iron Scar and Scalby Ness provide an almost complete section through the rocks of the Lower and Middle Jurassic Aalenian, Bajocian and Bathonian Stages

and the exposures here are of national importance. In addition important fossil plant localities occur at Cloughton Wyke and Scalby Ness.

Within the Iron Scar to Hundale sector of the site, the Aalenian to Bajocian units of the Jurassic are well displayed. The best exposure of the Eller Beck Formation in Yorkshire is seen at Iron Scar and exhibits some of the most spectacularly-preserved trace fossils seen anywhere in the Yorkshire Middle Jurassic. Hundale Point is the type locality for the Scarborough Formation, the most important marine horizon to occur within the dominantly non-marine Middle Jurassic rocks of Yorkshire which yields ammonite fossils of great importance for determining the exact age of the Yorkshire Middle Jurassic sequence. At Cloughton Wyke there is one of the best exposures of the 'Millepore Bed' in Yorkshire, with an abundant marine fauna, including corals. The adjacent non-marine 'Deltaic beds' (especially the Gristhorpe Member) are of great interest for their palaeobotany and sedimentology.

At Cloughton Wyke a rich fossil plant horizon has yielded over 60 species of well-preserved plants including *Ptilophyllum*, *Otozamites* and *Coniopteris*. Of particular importance is the occurrence of both male and female reproductive elements of the plant *Nilsonia tenuinervis*, which has enabled palaeobotanists to build up reconstructions of this fossil cycad. This locality is nationally important for studies of systematic palaeobotany, especially of the gymnosperms.

The coast section between Hundale Point and Scalby Ness exposes the best and most important sections of the Scalby Formation. In the vicinity of Hundale Point the Moor Grit is well-displayed and is interpreted as the depositional product of a braided river system. Between Long Nab and Scalby Ness an exhumed meander belt is clearly seen in the cliff and foreshore exposures of the Long Nab Member. Numerous fossil dinosaur footprints occur in the Scalby Formation at Burniston Wyke. The whole section from Hundale to Scalby is of high sedimentological importance and is the subject of continuing research. As a model for aiding the interpretation of some Middle Jurassic oil reservoir formations of the northern North Sea (e.g. the Brent Sands), the section is of considerable interest to, and is frequently visited by, geologists in the oil industry.

At Scalby Ness plant beds within the Scalby Formation contain an important fossil flora, wellknown for its outstanding examples of numerous Ginkgoales. The most significant, *Ginkgo huttoni*, here at its type locality, closely resembles the only extant species, *Ginkgo biloba*.

There are four areas containing Ancient Woodland which are located in Prickly Bank, Stoupe Beck, Beast Cliff and Hayburn Wyke.

Beast Cliff ancient woodland comprises mainly of ash *Fraxinus excelsior* which dominates the canopy with birch *Betula spp.*, hazel *Corylus avellana* and field maple *Acer campestre*, although in more acidic situations oak *Quercus aff. robur*, rowan *Sorbus aucuparia* and holly *Ilex aquifolium* are frequent.

Hayburn Wyke ancient deciduous woodland covers the slopes above the cliff shelf and extends some way up Hayburn Wyke Beck, merging into a mixed broad leaved and conifer woodland. The canopy is dominated by oak (both *Quercus petraea* and *Q. robur*) with ash, sycamore *Acer pseudoplatanus*, birch *Betula pubescens* and elm *Ulmus glabra*.

Additional work has been completed in Robin Hood's Bay which identified the presence of badgers to the north of the village. It is likely that a number of protected species will be present along the coast.

#### **Soil & Contamination**

A significant proportion of the land at the top of the cliff is used for agricultural purposes and is considered as Grade 3 agricultural land.

A number of areas within the study area are currently part of an environmental stewardship scheme in which the land owners will get money for the environmental management of their fields.

There are a number of potentially contaminated areas within the study area which could be impacted by the erosion along the coast. There are a number of historic pits which were used for the excavation of Alum, some of which are no designated as SAMs. The potential contaminants within these pits are not known. There are also a range of man made sources of contamination including telecommunication masts, tanks (which are thought to be associated with water or sewage treatment), two water filtration sites and an electricity sub station.

#### **Water**

There are numerous small water courses within the study area. These generally follow valleys from the North Yorks Moors National Park or are from springs close to the cliff edge and flow into the sea. The major water courses include:

- Oakham Beck;
- Kings Beck;
- Mill Beck;
- Stoupe Beck; and
- Hayburn Beck

There is no flooding information available for the study area although coastal flooding is not thought to be an issue along this coast line due to the steep relief of the cliffs along the majority of the frontage.

#### **Air**

Local or regional air quality is unlikely to be impacted by the CSS. The construction of defences could potentially result in impacts during the construction phase. These

will subject to Environmental Impact Assessment (EIA) in due course to identify appropriate mitigation measures.

#### **Climatic Factors**

The mean annual temperature over the area varies from just over 9 °C to around 10.5°C. The temperature shows both seasonal and diurnal variations, January and February are the coldest months with mean daily minimum temperatures across the region close to 1°C. Across the area, annual averages of sunshine are less than 1450 hours. The annual rainfall within this area is approximately 700 mm<sup>xlv</sup>.

The climate is not significantly different to the regional and national averages. It is unlikely that the CSS is going to impact significantly on the climate of the MA.

#### **Material Assets**

The natural resources within this MA are essentially related to agriculture.

A small fishing population is thought to use Robin Hoods Bay and a fishery (bay fisheries) is located within Robin Hood's Bay. No information has been collected on the amount of fish collected from the study area specifically however the North East Sea Fisheries Committee regularly collect data on the fishing effort in the north East<sup>xlvi</sup> (including Robin Hood's Bay). The report for 2008 indicates that the only fishing which occurs in Robin Hood's Bay is potting and in 2008 there were 3 boats, 5 men and 540 pots. Since the last survey in 2006 there has been a reduction in boats (4 in 2006) and men (7 in 2006) but the number of pots has increased significantly (340 in 2006).

A disused mining pit is also within the study area between Robin Hood's Bay and Whitby. It is currently unknown what was excavated from this pit. Although from a recent site visit it looks to have been re colonised.

#### **Historic Environment (including Architectural and Archaeological)**

There are six recorded scheduled monuments within the MA including part of the Saltwick Nab Alum Quarry, the Stoupe Brow Alum Works, Peak Alum Works, Burnt Howe and a World War II radar station.

There is an enormous range of historic information contained within the North Yorkshire Moors and North Yorkshire County Council Historic Environment Records and additional information found by English Heritage in the Rapid Coastal Zone Assessment.

There are several listed buildings located within the study area, most of which are within the defended area of Robin Hood's Bay. Several other are more at risk along the frontage including some on the northern cliff of Robin Hood's Bay and two other farm houses, one to the north and one to the south of Robin Hood's Bay.

**Landscape**

The MA is situated within the North Yorkshire and Cleveland Heritage Coast. Heritage Coast is a non-statutory landscape definition and is a significant historic resource.

The majority of the MA is located within the North York Moors National Park and there are several areas of farmland which are dispersed along the coast.

## Appendix C – Task A3: Identifying Environmental Problems

Table C.1 - Environmental Problems and Opportunities Identified by the CSS

SEA Topic/Issue	Identified Environmental Problem	Potential Opportunities for Mitigation and Enhancement
Population	Loss of buildings	The buildings will either need to be defended or relocated to allow for natural erosion and sea encroachment.
Human health	The coastal footpath which runs at the top of the cliff is currently subject to erosion and as is at risk from being severed.	The footpath will need to be realigned as the erosion of the cliff continues. If defence is proposed in certain locations access could be incorporated into the design.
Material Assets	Loss of buildings	The buildings will either need to be defended or relocated to allow for natural erosion and sea encroachment.
Historic environment (Including architectural and archaeological)	The Alum works SAM will be lost by the eroding coastline.	The SAM will either need to be defended or relocated to allow for natural erosion and sea encroachment. Important heritage features will need to be recorded.

## Appendix D – Task A4: Developing the SEA Objectives

### Justification of SEA Objectives

Table D.1 - Justification for SEA objectives

SEA Topic	SEA Issue	Yorkshire & Humber RSS	Scarborough Core Strategy	North Yorkshire Moors Core Strategy	SEA objectives Version 1	Comments from the SEA Workshop	SEA objectives version 2
<b>Population</b>	<b>Local business</b>	Conditions for business success, economic growth and investment	To provide conditions which enable business success, economic growth and investment in both urban and rural locations		<b>To provide conditions for business success, economic growth and investment.</b>	Should include specific reference to fishing and framing	<b>To provide conditions for business success, economic growth and investment with specific reference to the fishing and farming industries.</b>

SEA Topic	SEA Issue	Yorkshire & Humber RSS	Scarborough Core Strategy	North Yorkshire Moors Core Strategy	SEA objectives Version 1	Comments from the SEA Workshop	SEA objectives version 2
	<b>Tourism</b>		To support the tourism industry through the provision of accessible tourist facilities, building on the natural and historic features of Scarborough Borough		<b>To support the tourism industry through the provision of access to facilities and attractions.</b>	No comments	<b>To support the tourism industry through the provision of access to facilities and attractions.</b>

SEA Topic	SEA Issue	Yorkshire & Humber RSS	Scarborough Core Strategy	North Yorkshire Moors Core Strategy	SEA objectives Version 1	Comments from the SEA Workshop	SEA objectives version 2
	<b>Community inclusion</b>	Vibrant inclusive communities which encourages a sustainable population profile and ensures that excluded and disconnected groups also participate in decision making		Maintain and enhance the viability and vitality of local communities.	<b>Maintain and enhance vibrant local communities.</b>	Remove enhance from the community inclusion objective	<b>Maintain vibrant local communities</b>
		Social inclusion and equity across all sectors			<b>Promote social inclusion and equity.</b>	Remove this objective.	-

SEA Topic	SEA Issue	Yorkshire & Humber RSS	Scarborough Core Strategy	North Yorkshire Moors Core Strategy	SEA objectives Version 1	Comments from the SEA Workshop	SEA objectives version 2
	<b>Safety</b>	Safety and security for people and property			Where practicable ensure the safety and security of people and property.	No comments	Where practicable ensure the safety and security of people and property.
	<b>Transport &amp; access</b>		To provide a transport network which encourages the use of public transport, cycling and walking and minimises traffic congestion		To maintain the transport network, encouraging the use of cycling, walking and minimising traffic.	Needs to be reworded to include access to the countryside	To maintain the transport network, encouraging the use of cycling, walking, minimising traffic and promoting access to the countryside.

SEA Topic	SEA Issue	Yorkshire & Humber RSS	Scarborough Core Strategy	North Yorkshire Moors Core Strategy	SEA objectives Version 1	Comments from the SEA Workshop	SEA objectives version 2
		A transport network which maximises access whilst minimising detrimental impacts	To provide good access for all local residents to key services and facilities.	Protect and enhance access to key community facilities and services, leisure and recreation opportunities and access to the countryside, by means which minimise environmental impacts on the park and its communities.	<b>Maintain access to local facilities and services whilst minimising environmental impacts.</b>	No comment	<b>Maintain access to local facilities and services whilst minimising environmental impacts.</b>

SEA Topic	SEA Issue	Yorkshire & Humber RSS	Scarborough Core Strategy	North Yorkshire Moors Core Strategy	SEA objectives Version 1	Comments from the SEA Workshop	SEA objectives version 2
	<b>Local needs</b>		local needs can be met locally	Ensure that local needs are met locally wherever possible.	<b>Ensure local needs are met locally.</b>	No comment	<b>Ensure local needs are met locally.</b>
		Geographic adoption to the needs of rural and urban communities			<b>To retain geographic adaptation of the local communities.</b>	Remove as outside of the SEA scope	-
	<b>Innovation</b>	Creativity, innovation and the appropriate use of technology			<b>Creativity, innovation and the appropriate use of technology.</b>	No comment	<b>Creativity, innovation and the appropriate use of technology.</b>

SEA Topic	SEA Issue	Yorkshire & Humber RSS	Scarborough Core Strategy	North Yorkshire Moors Core Strategy	SEA objectives Version 1	Comments from the SEA Workshop	SEA objectives version 2
Human Health	Provision of health services	Condition and services to engender good health	To promote good physical and mental health through the provision of access to adequate leisure facilities, recreational activities and health services in urban and rural locations.		To promote good health through the provision of access to leisure facilities.	Relate to access to footpaths and focus 'quality of life' as an indicator	To promote good health through the provision of access to leisure facilities including access to the network of footpaths.
	Protection and enhancement of human health			Protect and enhance human health.	Protect and enhance human health.	Remove objective as is covered in other sections	-

SEA Topic	SEA Issue	Yorkshire & Humber RSS	Scarborough Core Strategy	North Yorkshire Moors Core Strategy	SEA objectives Version 1	Comments from the SEA Workshop	SEA objectives version 2
	<b>Prevention of damage to human health</b>			Minimise pollution releases to levels that do not damage natural systems, human health and quality of life.	<b>Minimise pollution to levels which do not damage human health.</b>	Include stress in here due to potential stress of losing a home. Minimise negative impact to human health and safeguard positive impacts.	<b>Minimise negative impacts to human health (including pollution and stress) and safeguard positive impacts.</b>

SEA Topic	SEA Issue	Yorkshire & Humber RSS	Scarborough Core Strategy	North Yorkshire Moors Core Strategy	SEA objectives Version 1	Comments from the SEA Workshop	SEA objectives version 2
<b>Natural Environment (including geology)</b>	<b>Ecological environment and protected species.</b>	Bio-diverse and attractive natural environment	To conserve and enhance all aspects of the ecological environment, in particular designated sites and protected species, and provide opportunities for local residents to access and understand these.	Avoid damage to designated sites and protected species. Maintain, and enhance where appropriate, conditions for biodiversity and avoid irreversible losses.	<b>To conserve and enhance the terrestrial environment, particularly designated sites and protected species.</b>	Need to include geology in this section and its objectives. Indicators need to be split between geological and biological. Conserve and seek to enhance.	<b>To conserve and seek to enhance the terrestrial biological and geological environment, particularly designated sites and protected species.</b>

SEA Topic	SEA Issue	Yorkshire & Humber RSS	Scarborough Core Strategy	North Yorkshire Moors Core Strategy	SEA objectives Version 1	Comments from the SEA Workshop	SEA objectives version 2
			To conserve and enhance all aspects of coastal and marine environment, particularly designated sites and fisheries.		<b>To conserve and enhance the coastal and marine environment, particularly designated sites, protected species and fisheries.</b>	Need to include geology in this section and its objectives. Indicators need to be split between geological and biological. Conserve and seek to enhance. Remove fisheries as there are non in the study area.	<b>To conserve and seek to enhance the coastal and marine biological and geological environment, particularly designated sites and protected species.</b>

SEA Topic	SEA Issue	Yorkshire & Humber RSS	Scarborough Core Strategy	North Yorkshire Moors Core Strategy	SEA objectives Version 1	Comments from the SEA Workshop	SEA objectives version 2
	<b>Access to ecological environment.</b>		Provide opportunities for local residents to access and understand the ecological environment.		<b>To provide opportunities for local residents to access and understand the ecological environment.</b>	Need to include geology in this section and its objectives. Indicators need to be split between geological and biological. Maybe 'maintain and safeguard opportunities...'	<b>Maintain and safeguard opportunities for all to access and understand the ecological and geological environment.</b>

SEA Topic	SEA Issue	Yorkshire & Humber RSS	Scarborough Core Strategy	North Yorkshire Moors Core Strategy	SEA objectives Version 1	Comments from the SEA Workshop	SEA objectives version 2
	<b>Minimising pollution</b>			Minimise pollution releases to levels that do not damage natural systems, human health and quality of life.	<b>Minimise pollution to levels which do not damage the natural environment.</b>	Need to include geology in this section and its objectives. Indicators need to be split between geological and biological.	<b>Minimise pollution to levels which do not damage the biological or geological environment.</b>

SEA Topic	SEA Issue	Yorkshire & Humber RSS	Scarborough Core Strategy	North Yorkshire Moors Core Strategy	SEA objectives Version 1	Comments from the SEA Workshop	SEA objectives version 2
Soil	Minimising pollution	Minimal pollution levels if environmental impacts are a significant result of the activity consider an environmental impact assessment	To protect and enhance water, soil and air quality through reducing pollution	Minimise pollution releases to levels that do not damage natural systems, human health and quality of life.	Minimise pollution to levels which do not damage soil.	Pollution to air, soil, water and the natural environment are potential issues if the quarries have been used as landfill or are contaminated in any way so these three items should be kept in until this has been investigated. Septic tanks/private waste disposal systems are also potential sources of pollutants.	Minimise pollution to levels which do not damage soil.

SEA Topic	SEA Issue	Yorkshire & Humber RSS	Scarborough Core Strategy	North Yorkshire Moors Core Strategy	SEA objectives Version 1	Comments from the SEA Workshop	SEA objectives version 2
Water	Minimising pollution	Minimal pollution levels if environmental impacts are a significant result of the activity consider an environmental impact assessment	To protect and enhance water, soil and air quality through reducing pollution	Minimise pollution releases to levels that do not damage natural systems, human health and quality of life.	<b>Minimise pollution to levels which do not damage the water environment including surface water and ground water.</b>	Pollution to air, soil, water and the natural environment are potential issues if the quarries have been used as landfill or are contaminated in any way so these three items should be kept in until this has been investigated. Septic tanks/private waste disposal systems are also potential sources of pollutants.	<b>Minimise pollution to levels which do not damage the water environment including surface water and ground water.</b>

SEA Topic	SEA Issue	Yorkshire & Humber RSS	Scarborough Core Strategy	North Yorkshire Moors Core Strategy	SEA objectives Version 1	Comments from the SEA Workshop	SEA objectives version 2
	<b>Minimising flood risk</b>		To minimise flood risk as a result of a new development	Reduce the risk of flooding, ensuring development and land use changes are not vulnerable to flooding, or increase the risk of flooding elsewhere in a catchment / coastal zone.	<b>To reduce the risk of flooding and ensure land use changes are not vulnerable to flooding.</b>	There are flash flooding issues at certain properties 'ensure any potential works do not increase the risk of flooding'	<b>To ensure any potential works do not increase the risk of flooding.</b>
	<b>Water use</b>		To ensure prudent and efficient use of natural resources.		<b>To ensure prudent and efficient use of water.</b>	Outside of the scope of the CSS	-

SEA Topic	SEA Issue	Yorkshire & Humber RSS	Scarborough Core Strategy	North Yorkshire Moors Core Strategy	SEA objectives Version 1	Comments from the SEA Workshop	SEA objectives version 2
Air	<b>Minimising pollution</b>	Minimal pollution levels if environmental impacts are a significant result of the activity consider an environmental impact assessment	To protect and enhance water, soil and air quality through reducing pollution	Minimise pollution releases to levels that do not damage natural systems, human health and quality of life.	<b>Minimise pollution to levels which are acceptable for local air quality.</b>	Pollution to air, soil, water and the natural environment are potential issues if the quarries have been used as landfill or are contaminated in any way so these three items should be kept in until this has been investigated. Septic tanks/private waste disposal systems are also potential sources of pollutants.	<b>Minimise pollution to levels which are acceptable for local air quality.</b>

SEA Topic	SEA Issue	Yorkshire & Humber RSS	Scarborough Core Strategy	North Yorkshire Moors Core Strategy	SEA objectives Version 1	Comments from the SEA Workshop	SEA objectives version 2
<b>Climatic Factors</b>	<b>Minimise greenhouse gas emissions</b>	Minimise greenhouse gas emissions and a managed response to the effects of climate change.	To reduce greenhouse gas emissions to mitigate the rate of climate change and to ensure future development prepares for climate change		<b>To reduce greenhouse gas emissions.</b>	Items concerning minimal production of waste, energy efficiency and greenhouse gases are not really required	-
<b>Material Assets</b>	<b>Energy efficiency</b>	Prudent and efficient use of energy and natural resources	To ensure prudent and efficient use of natural resources.	Promote concepts of design that improve energy efficiency and apply sustainability principles to resource use.	<b>Ensure prudent and efficient use of natural resources.</b>	Items concerning minimal production of waste, energy efficiency and greenhouse gases are not really required	-

SEA Topic	SEA Issue	Yorkshire & Humber RSS	Scarborough Core Strategy	North Yorkshire Moors Core Strategy	SEA objectives Version 1	Comments from the SEA Workshop	SEA objectives version 2
	<b>Production of waste</b>	minimal production for waste	minimal production of waste	Encourage waste reduction, reuse, recovery and recycling.	<b>Minimal production of waste.</b>	Items concerning minimal production of waste, energy efficiency and greenhouse gases are not really required	-
	<b>Managing natural resources</b>			Manage natural resources in a way which sustains their environmental qualities as well as their productive (or economic) potential.	<b>Manage natural resources in a way which sustains their environmental qualities as well as their productive (or economic) potential.</b>	Include agriculture, soils, farmland, fisheries, quarries in the indicators for these objectives	<b>Manage natural resources in a way which sustain their environmental qualities as well as their productive (or economic) potential.</b>

SEA Topic	SEA Issue	Yorkshire & Humber RSS	Scarborough Core Strategy	North Yorkshire Moors Core Strategy	SEA objectives Version 1	Comments from the SEA Workshop	SEA objectives version 2
Historic Environment (including architectural and archaeological)	Access to heritage	Culture, heritage, leisure and recreation activities to all	To provide opportunities for all residents to access and understand the local historic environment.		To provide opportunities for all residents to access and understand the local historic environment.	Perhaps – 'Maintain and safeguard opportunities for all to access and understand local heritage'.	To maintain and safeguard opportunities for all to access and understand local heritage
	Preservation of Heritage		To preserve and enhance all aspects of the historic environment	Preserve and enhance the archaeological and historic environment.	To preserve and enhance all aspects of the historic environment.	Some prioritisation required. 'where practicable preserve (and enhance) all aspects of the historic environment'	Where practicable preserve and enhance all aspects of the historic environment.

SEA Topic	SEA Issue	Yorkshire & Humber RSS	Scarborough Core Strategy	North Yorkshire Moors Core Strategy	SEA objectives Version 1	Comments from the SEA Workshop	SEA objectives version 2
Landscape	Built environment	A quality built environment and efficient land use patterns, that make good use of derelict sites, minimise travel and promote balanced development	To provide a good quality built environment including green spaces and green infrastructure corridors, and ensure high standards of sustainable design and construction, including energy and water conservation, waste recycling facilities and use of sustainable materials.	Promote concepts of design that improve energy efficiency and apply sustainability principles to resource use.	<b>Promote concepts of design that improve energy efficiency and apply sustainability principles.</b>	Not required as National Park has control of planning permissions.	-

SEA Topic	SEA Issue	Yorkshire & Humber RSS	Scarborough Core Strategy	North Yorkshire Moors Core Strategy	SEA objectives Version 1	Comments from the SEA Workshop	SEA objectives version 2
	<b>Local distinctiveness</b>	Bio-diverse and attractive natural environment	To conserve and enhance all aspects of the landscape, in particular designated sites, and local distinctiveness	Maintain and enhance the special landscape, local distinctiveness and settlement character.	<b>Maintain and enhance the special landscape, local distinctiveness and settlement character.</b>	Maintain and (where possible seek to) enhance the landscape.	<b>Maintain and where possible. Enhance the special landscape, local distinctiveness and settlement character.</b>
<b>Consultation</b>	<b>Local consultation</b>	A partnership and participative approach			<b>A partnership and participative approach to consultation.</b>	Not required in the objectives list as is a statutory requirement.	-

## Updated List of Objectives

Table D.2 - Updated List of Objectives, Indicators and Targets

Objective	Indicators	Available Information	Targets	Trends	Problems / Constraints	Source of Information
1. To provide conditions for business success, economic growth and investment with specific reference to the fishing and farming industries.	A. Potting effort in RHB and Whitby	2008: 3 boats, 5 men, 540 pots.	Maintain/Increase fishing activity in the area	Reduction in boats and men, increase in number of pots.	Availability of fish stocks, potential introduction of no take zones.	Summary of Fishing Effort 2008, North Eastern Sea Fisheries Committee (2008)
	B. Number of farm diversification schemes approved	8 approved in 07/08 by NYMNP; 10 approved in 07/08 by SBC	Maintain/increase agricultural productivity in the area.	Slight increase in the North York Moors from 6 in 06/07 to 8 in 07/08.	Baseline data may not be completely inside the study area as data from NYMNP and SBC are for their respective total areas.	Annual Monitoring Report 2008, North York Moors National Park Authority (2008) & Annual Monitoring Report 2008, Scarborough Borough Council (2008).

Objective	Indicators	Available Information	Targets	Trends	Problems / Constraints	Source of Information
	C. Number of people employed in the agriculture, hunting and forestry sector	257 in wards of Streonshalh, Fylingdales, Scalby, Hackness & Stainton Dale and Lindhead.	Maintain/increase agricultural productivity in the area.	4.6% of working people in study area compared with 3.2% in Scarborough Borough and 1.6% in Yorkshire and The Humber.	None	Information from the Office of National Statistics 2001 census
	D. Number of people employed in the fishing sector	39 people in wards of Streonshalh and Fylingdales. No people in the fishing industry in Scalby, Hackness & Stainton Dale and Lindhead.	Maintain/Increase fishing activity in the area	0.7% of working people in study area compared with 0.3% in Scarborough Borough and 0.04% in Yorkshire and The Humber.	Availability of fish stocks, potential introduction of no take zones.	Information from the Office of National Statistics 2001 census

Objective	Indicators	Available Information	Targets	Trends	Problems / Constraints	Source of Information
2. To support the tourism industry through the provision of access to facilities and attractions.	E. Number of holiday cottages/hostels/hotels granted planning permission	In 07/08 84 self catering accommodation units were approved in NYMNPAs	Increase sustainably	Difficult to compare, in 06/07 50 new holiday cottages and 5 additional hotel bedrooms.	Baseline data may not be completely inside the study area as data from NYMNPAs entire area.	Annual Monitoring Report 2008, North York Moors National Park Authority (2008)
	F. Number of new visitor/recreation facilities granted planning permission	1 approved in 07/08	Increase sustainably	Approval in 06/07 was the same as 07/08.	Baseline data may not be completely inside the study area as data from NYMNPAs entire area.	Annual Monitoring Report 2008, North York Moors National Park Authority (2008)
	G. Number of people employed in the hotels and restaurants sector	608 people in wards of Streonshalh, Fylingdales, Scalby, Hackness & Stainton Dale and Lindhead	Maintain/increase employment in tourist industry	10% of working people in study area compared with 10.4% in Scarborough Borough and 5% in Yorkshire and The Humber.	Many factors affecting tourism in the area.	Information from the Office of National Statistics 2001 census

Objective	Indicators	Available Information	Targets	Trends	Problems / Constraints	Source of Information
3. Maintain vibrant local communities	H. Population of wards within the study area	13,168 people in wards of Streonshalh, Fylingdales, Scalby, Hackness & Stainton Dale and Lindhead	Maintain population at a sustainable level.	Previous census data for the ward unknown	Population data only available every 10 years.	Information from the Office of National Statistics 2001 census
	I. % of people who believe they belong to their neighbourhood.	No information for the study area but Scarborough to establish as part of their National Performance Indicators.	Unknown	Unknown	None	National Performance Indicators Quarter 3 2008/09, Scarborough Borough Council.
	J. Number of people with good, fairly good and not good health in the study area	68.33% of people in good health, 22.57% in fairly good health, 9.42% not good health in wards of Streonshalh, Fylingdales, Scalby, Hackness & Stainton Dale and Lindhead	Reduce the number of people not in good health.	Unknown	Population health data only available every 10 years.	Information from the Office of National Statistics 2001 census

Objective	Indicators	Available Information	Targets	Trends	Problems / Constraints	Source of Information
4. Where practicable ensure the safety and security of people and property.	K. Number of households at risk in wards within the study area	5,599 households within wards of Streonshalh, Fylingdales, Scalby, Hackness & Stainton Dale and Lindhead although no information regarding the property at risk.	Increase the dwelling as guided by RSS (Scarborough to increase dwellings by 560 a year)	Increasing number regionally although unknown how many new builds in the study area.	Unlikely to obtain planning permission for new properties within 100 m of the eroding cliff.	Information from the Office of National Statistics 2001 census
5. To maintain the transport network, encouraging the use of cycling, walking, minimising traffic and promoting access to the countryside.	L. Length of Public Rights of Way within the study area	Total length of PROW within the study area is 34 km.	To maintain and improve the total network of PROW	Unknown	Erosion is expected to sever several footpaths including the Cleveland Way.	Ordnance survey data 2006.
	M. Length of cycle way within the study area.	Total length of cycle way within the study area is 550 m. This is mostly to the north of Robin Hood's Bay.	To maintain and improve the network.	Proposed new cycle route will increase the designated cycle routes.	Erosion is expected to sever several cycle ways.	Information obtained from Sustrans 2009

Objective	Indicators	Available Information	Targets	Trends	Problems / Constraints	Source of Information
6. Maintain access to local facilities and services whilst minimising environmental impacts.	N. Number of indoor leisure visits/admissions	339,563 in Q3 of 08/09 in Scarborough Borough Council.	529,000 per quarter in Scarborough Borough Council	Unknown	Data are for entire Borough not just study area.	National Performance Indicators Quarter 3 2008/09, Scarborough Borough Council.
	O. Area of road within the wards in the study area.	Total area of highway in wards of Streonshalh, Fylingdales, Scalby, Hackness & Stainton Dale and Lindhead is 186.35 m <sup>2</sup> .	Maintain where practicable	Unknown	Areas of roads is not directly related to access	Information from the Office of National Statistics 2005 Enhanced Basemap
7. Ensure local needs are met locally.	P. Number of people working from home.	1,055 people mainly work from home in wards of Streonshalh, Fylingdales, Scalby, Hackness & Stainton Dale and Lindhead	No targets set in national or local policy.	26.6% of employed people work from home compared to 17.3% in Scarborough Borough and 12% in Yorkshire and The Humber.	Many factors influencing people's ability to work from home.	Information from the Office of National Statistics 2001 census

Objective	Indicators	Available Information	Targets	Trends	Problems / Constraints	Source of Information
	Q. Distance people travel to work.	1,226 travel less than 2 km; 689 between 2 km and 5 km; 387 between 5 km and 10 km; 248 between 10 km and 20 km; 202 between 20 km and 30 km and 206 over 30 km in wards of Streonshalh, Fylingdales, Scalby, Hackness & Stainton Dale and Lindhead	No targets set in national or local policy.	Unknown locally although information suggests that people in the study area work closer to home than the regional average.	Not a direct indicator of local needs.	Information from the Office of National Statistics 2001 census
8. Creativity, innovation and the appropriate use of technology.	R. Use of technology and innovation to combat coastal erosion.	None	To increase the amount of innovation in dealing with coastal erosion.	Unknown	Difficult to objective to measure	No baseline information.

Objective	Indicators	Available Information	Targets	Trends	Problems / Constraints	Source of Information
9. To promote good health through the provision of access to leisure facilities including access to the network of footpaths.	S. Number of open space, sport and recreational facilities.	SBC completed an audit of existing facilities in May 2006.	Increase	Unknown	Other factors may affect the provision of leisure facilities.	Scarborough Borough Council, data collected in May 2006
	T. Number of people with good, fairly good and not good health in the study area	68.33% of people in good health, 22.57% in fairly good health, 9.42% not good health in wards of Streonshalh, Fylingdales, Scalby, Hackness & Stainton Dale and Lindhead	Reduce the number of people not in good health.	Unknown	Population health data only available every 10 years.	Information from the Office of National Statistics 2001 census
	U. Length of Public Rights of Way within the study area	Total length of PROW within the study area is 34 km.	To maintain and improve the total network of PROW	Unknown	Erosion is expected to sever several footpaths including the Cleveland Way.	Ordnance survey data 2006.

Objective	Indicators	Available Information	Targets	Trends	Problems / Constraints	Source of Information
10. Minimise negative impacts to human health (including pollution and stress) and safeguard positive impacts.	V. Number of people with good, fairly good and not good health in the study area	68.33% of people in good health, 22.57% in fairly good health, 9.42% not good health in wards of Streonshalh, Fylingdales, Scalby, Hackness & Stainton Dale and Lindhead	Reduce the number of people not in good health.	Unknown	Population health data only available every 10 years.	Information from the Office of National Statistics 2001 census
	W. Number of people with a limiting, long term illness	19.10% of people have a limiting long term illness in wards of Streonshalh, Fylingdales, Scalby, Hackness & Stainton Dale and Lindhead	Reduce the number of people with long term illness	Lower than local or regional: 21.59% in Scarborough Borough Council & 19.48% in Yorkshire and The Humber	Data set is old and is only reviewed every 10 years.	Information from the Office of National Statistics 2001 census

Objective	Indicators	Available Information	Targets	Trends	Problems / Constraints	Source of Information
11. To conserve and seek to enhance the terrestrial and marine biological and geological environment, particularly designated sites and protected species.	X. Condition of Whitby – Saltwick SSSI (designated for geological features)	Condition assessment completed in 01/08/09. Site is currently 100% favourable	Maintain the condition of the SSSI	Stable. No change since last condition assessment.	Coastal protection works could result in restricting the natural coastal processes.	Natural England condition assessment, August 2009.
	Y. Condition of Robin Hood's Bay: Maw Wyke to Beast Cliff SSSI (designated for geological and biological features)	Condition assessment completed in 01/08/09. Site is 98.75% favourable condition. The unfavourable area is due to coastal defence works preventing natural coastal processes.	Maintain and improve the condition of the SSSI	Stable. No change since last condition assessment in 2001.	Coastal protection works could result in restricting the natural coastal processes.	Natural England condition assessment, August 2009.
	Z. Condition of Hayburn Wyke SSSI (designated for biological features)	Condition assessment completed in 01/08/09. Site is currently 100% favourable	Maintain the condition of the SSSI	Stable. No change since last condition assessment.	Coastal protection works could result in restricting the natural coastal processes.	Natural England condition assessment, August 2009.

Objective	Indicators	Available Information	Targets	Trends	Problems / Constraints	Source of Information
	AA. Condition of Iron Scar & Hundale Point to Scalby Ness SSSI (designated for geological features)	Condition assessment completed in 01/08/09. Site is currently 100% favourable	Maintain the condition of the SSSI	Stable. No change since last condition assessment.	Coastal protection works could result in restricting the natural coastal processes. Erosion could damage existing features (dinosaur footprints)	Natural England condition assessment, August 2009.
	BB. Maintain the vegetation mosaic of the Maritime Cliff and Slope at Robin Hood's Bay – Maw Wyke to Beast Cliff SAC (baseline data from Natural England)	Condition assessment completed by Natural England in 2009. Covers 83 hectares	Maintain existing features and areas	Unknown	Some habitats are heavily interlinked and difficult to determine extent. Coastal erosion has risk of impacting habitat.	Conservation objective and definitions of favourable conditions for designated features of interest, Natural England, March 2009 (Appendix C)

Objective	Indicators	Available Information	Targets	Trends	Problems / Constraints	Source of Information
	CC. Maintain the Broadleaved, Mixed and Yew Woodland at Robin Hood's Bay – Maw Wyke to Beast Cliff SAC (baseline data from Natural England).	Condition assessment completed by Natural England in 2009. Covers 49 hectares	Maintain existing features and areas	Unknown	Some habitats are heavily interlinked and difficult to determine extent. Coastal erosion has risk of impacting habitat.	Conservation objective and definitions of favourable conditions for designated features of interest, Natural England, March 2009 (Appendix C)
12. To conserve and seek to enhance the coastal and marine biological and geological environment , particularly	DD. Maintain the Littoral Rock Woodland at Robin Hood's Bay – Maw Wyke to Beast Cliff SAC (baseline data from Natural England).	Condition assessment completed by Natural England in 2009. Covers 233 hectares.	Maintain existing features and areas.	Unknown	Some habitats are heavily interlinked and difficult to determine extent. Coastal erosion has risk of impacting habitat.	Conservation objective and definitions of favourable conditions for designated features of interest, Natural England, March 2009 (Appendix C)

Objective	Indicators	Available Information	Targets	Trends	Problems / Constraints	Source of Information
designated sites and protected species.	EE. Maintain the Coastal Cliff and Foreshore, Inland Outcrops and Active Process Morphology at Robin Hood's Bay – Maw Wyke to Beast Cliff SAC (baseline data from Natural England).	Condition assessment completed by Natural England in 2009.	Maintain existing features and areas.	Unknown	Some habitats are heavily interlinked and difficult to determine extent. Coastal erosion has risk of impacting habitat.	Conservation objective and definitions of favourable conditions for designated features of interest, Natural England, March 2009 (Appendix C)

Objective	Indicators	Available Information	Targets	Trends	Problems / Constraints	Source of Information
13. Maintain and safeguard opportunities for all to access and understand the ecological and geological environment	FF. Visitor numbers to ecological and geological designated sites.	No information available	Sustainable increase the numbers of people who access suitable designated sites.	Unknown	Information not available	None presently available
14. Minimise pollution to levels which do not damage the biological or geological environment	GG. Areas of identified contaminated land and potential sources of pollution.	Unknown	Reduce the potential for contaminated sites to pollute the natural environment.	Unknown	Data on contaminated land may not be complete.	None presently available

Objective	Indicators	Available Information	Targets	Trends	Problems / Constraints	Source of Information
15. Minimise pollution to levels which do not damage soil.	HH.Areas of identified contaminated land and potential sources of pollution.	Unkonwn	Reduce the potential for contaminated sites to pollute the natural environment.	Unknown	Data on contaminated land may not be complete.	None presently available
16. Minimise pollution to levels which do not damage the water environment including surface water and ground water.	II. Number of beaches with recognised awards.	RHB has Excellent Bathing Water Quality, Rural Beach Award and Quality Coast Aware: 'Away from it all'.	Maintain the current number or awards and increase where practicable.	Unknown	Many external factors in determining awards; could not be dependent on CSS.	Annual Monitoring Report 2008, Scarborough Borough Council (2008)

Objective	Indicators	Available Information	Targets	Trends	Problems / Constraints	Source of Information
17. To ensure any potential works do not increase the risk of flooding.	JJ. Number of planning permission granted contrary to the advice of the Environment Agency on either flood defence grounds or water quality.	None, although NYMNPA are waiting for information from the EA.	Decrease	Unknown	Baseline data may not be completely inside the study area as data from NYMNPA's entire area.	Annual Monitoring Report 2008, North York Moors National Park Authority (2008)
18. Manage natural resources in a way which sustain their environmental qualities	KK. Potting effort in RHB and Whitby.	2008: 3 boats, 5 men, 540 pots.	Maintain/Increase fishing activity in the area in a sustainable manner.	Reduction in boats and men, increase in number of pots.	Availability of fish stocks, potential introduction of no take zones.	Summary of Fishing Effort 2008, North Eastern Sea Fisheries Committee (2008)

Objective	Indicators	Available Information	Targets	Trends	Problems / Constraints	Source of Information
as well as their productive (or economic) potential.	LL. Number of farm diversification schemes approved.	8 approved in 07/08 by NYMNPA; 10 approved in 07/08 by SBC.	Maintain/increase agricultural productivity in the area in a sustainable manner.	Slight increase in the North York Moors from 6 in 06/07 to 8 in 07/08.	Baseline data may not be completely inside the study area as data from NYMNPA and SBC total area.	Annual Monitoring Report 2008, North York Moors National Park Authority (2008) & Annual Monitoring Report 2008, Scarborough Borough Council (2008).
19. To maintain and safeguard opportunities for all to access and understand local heritage	MM. Numbers of monuments open to the public in the study area.	No information available on monuments open to the public.	Have more monuments open to the public and with public information facilities.	Unknown	Some of the monuments are very close to the edge of the cliff and will be eroded in the near future.	No baseline data

Objective	Indicators	Available Information	Targets	Trends	Problems / Constraints	Source of Information
20. Where practicable preserve and enhance all aspects of the historic environment	NN. Number of SAMs within the study area.	7 scheduled monuments are located within the study area.	Preserve all SAMs.	Unknown	Several are very close to the existing cliff edge and are at threat.	Downloaded from English Heritage May 2009
	OO. Number of listed buildings within the study area	172 listed buildings within the study area.	Preserve all listed buildings where practical.	Unknown	Several are very close to the existing cliff edge and are at threat.	Downloaded from English Heritage May 2009
	PP. Number of monuments/buildings 'at risk' within the study area	One Scheduled Ancient Monument at risk in study area: the Brewhouse, Whitby Abbey	Reduce the number of monuments/buildings at risk.	Trend in NYMNPA is slight decrease from 224 in 06/07 to 222 in 07/08.	None	Heritage at Risk, Yorkshire and the Humber, English Heritage (2008)

Objective	Indicators	Available Information	Targets	Trends	Problems / Constraints	Source of Information
21. Maintain and, where possible. Enhance the special landscape, local distinctiveness and settlement character.	QQ. Number of conservation area appraisals carried out.	No appraisals currently been completed on Conservation Areas within the study area	Complete conservation area appraisals borough wide a year	Increasing by two a year.	There are twenty five conservation areas within the study area.	Annual Monitoring Report 2008, North York Moors National Park Authority (2008) & Annual Monitoring Report 2008, Scarborough Borough Council (2008).
	RR. Number of applications refused due to adverse impact on trees, woodland, hedgerows and walls.	4 refusals in 07/08 (27% of applications assessed against policy).	No Target	Number increasing, 3 in 06/07, 4 in 07/08.	Baseline data may not be completely inside the study area as data from NYMNPA's entire area.	Annual Monitoring Report 2008, North York Moors National Park Authority (2008)

## Appendix E – Task A5: Consultation

The following organisations were consulted for information during the development of the SEA scoping report:

*Table E.1 - List of Consultees*

Local Councillors

Scarborough Borough Council

Natural England

National Trust

The National Park

English Heritage

Environment Agency

Cleveland Way Project

NE Yorkshire Geology Trust

Yorkshire Wildlife Trust

Royal Society for the Protection of Birds

Woodland Trust – Yorkshire

Scarborough Tourism Bureau

Scarborough & District Chamber of Commerce

Government Office for Yorkshire and the Humber

North Yorkshire Farming and Wildlife Advisory Group

Robin Hoods Bay Tourism Association

Coast and Moors Voluntary Action

North Yorkshire Coast Community Partnership

Table E.2 - Comments from SEA Workshop

Comments on Baseline Data	Response
Consideration of properties which have access solely from the Cleveland Way	All properties within the study area have been identified.
Consideration of properties with access only from the old railway line	All properties within the study area have been identified.
Consider moor to sea cycle network not just coastal.	The additional east-west cycle way and the proposed cycle way to Whitby have been considered.
Include Environmental Stewardship agreements (agri-environment schemes)	Environmental stewardship agreements have been identified on the constraints mapping and are considered in the baseline data.
Ensure the NYCC minerals & waste core strategy is reviewed.	The NYCC mineral and waste strategy has been reviewed and is in the list of reviewed policy documents.
Ensure the Heritage coast intertidal survey is considered.	Rapid Coastal Zone Assessment from English Heritage is included in the baseline data.
Need to include information from the sea fisheries committee.	Information has been collected on fishing volume and type within the study area for 2006 and 2008.
The full network of public rights of way needs to be considered not just strategic ones. Also need to consider how they work as a collective.	The full network of PROW within the study area has been collated and has been mapped.
There should be no boundary on the seaward side of the Heritage Coast.	This has been extended.
Conservation areas should be included in the data.	There are no Conservation Areas within the study area. The Conservation Areas of Whitby and Fylingthorpe are outside of this.
Fylingthorpe is a separate area to Robin Hood's Bay and should be labelled separately.	Fylingthorpe has been identified on the Figures.
Information showing the grades of building and identifying any listed buildings at risk.	This has been identified on the heritage Figures.

Table E.3 - Comments from SEA public exhibition

Post it Note comments on maps	Response
Maintenance of sea defences poor - grants for the work not for the maintenance.	The CSS will endeavour to ensure that the best coastal strategy will be implemented for the area and will consider the next 100 years.
Protruding rock armour was dumped in error, as High Point Rendel admitted at the time!	The existing sea defence was strategically placed to reduce the impact of wave action upon the coastline.
Remove rock armour at south end, which was extra to requirements. This traps people when walking to RHB on a rising tide, rather than the works enhancing access as originally intended.	The SEA will aim to reduce the impact on the coastal footpaths however the disruption of existing footpaths will not be rectified within its scope.
Please remove the protruding rock armour that cuts people off when the tide is in. People with children, dogs, pushchairs and older people cannot possibly clamber over those rocks and don't want to get wet either!!	The existing sea defence was strategically placed to reduce the impact of wave action upon the coastline, the removal of which may result in detrimental effects on coastal erosion.
Erosion on railway cycle track which Scarborough Council ignores.	The SEA will follow guidance through policies on the effects of erosion on existing access routes throughout the study area. This will include assessing the existing erosion effects to the existing cycle routes.
Minimising Pollution' This is a short term objectives. 'concrete', 'vehicles', 'septic tanks' et al can be contained easily - long term protection is more important.	The SEA will consider minimising pollution in direct relation to the CSS in both the short and long term.
Minimising pollution is a cost of long term protection. It is not an objective but a tactic.	Minimising pollution is an important objective when considering the potential construction of coastal defences and the minimising of pollution during construction e.g. waste and emissions. The SEA will consider the potential amount of pollution for different management strategies.

Post it Note comments on maps	Response
Pumping stations and sewage treatment sites - storm outfall on beach several storms resulting in release of sewage on beach in emergencies.	The pollution caused from storm outfall is considered outside the scope of the SEA however it will consider the impact of any coastal retreat on pollution events caused by storms.
Local services have to be protected, not eroded by stealth if the community is to prosper.	The SEA will consider the impact of coastal management on local services, including any that may be at risk from erosion.
Stricklands tip - old (Victorian) tip on edge of cliff on clay section of Robin Hoods Bay beach - much eroded away now.	The SEA will consider the impacts of potential contaminated land within the CSS; this may also include assessing the potential release of pollution from a variety of sources.
Boggle Hole Sewage Treatment Works needs to be considered.	The treatment works is not within the 100 m study area boundary.
Old railway line needs to be an important link for walkers etc. The idea of trying to reinstate it as a working train line should not be considered.	The existing railway link has been considered with the scope of this report. Guidance from existing policies will be followed. Currently we have found no evidence of policies or proposals to reinstate the link.
Should the WWII pill box be preserved or demolished?	The WWII pill box will be considered within the scope of the report because it is of heritage value. Further assessment will need to be carried out to determine the impact of different management options.
Second World War pillbox on cliff edge between Boggle Hole and Robin Hoods Bay in vulnerable state and could be dangerous.	The WWII pill box will be considered within the scope of the report because it is of heritage value. Further assessment will need to be carried out to determine the impact of different management options.

Post it Note comments on maps	Response
Alum quarries and brickworks at Ravenscar need to be investigated.	The Alum Quarries have been recognised and considered within the scope of the SEA. No information on the brickworks could be found within the study area.
Think about disabled access and problems of access for the elderly where appropriate.	Access will be considered within the scope of the SEA. The development of the preferred options will consider the impact of disabled access and access for the elderly.
There is an area of National trust Land (1 acre) being the steps leading to the beach in Robin Hoods Bay.	This piece of land has been identified within the scope of the SEA.
Would like to see the lower and top of cliff area between Robin Hoods Bay and Boggle Hole left to nature. No concrete or alien boulders and absolutely no development or public invasion on the lower cliff SSSI.	The area will be assessed in the Environmental Report and recommendations will be made for its management.
There is continuous woodland between the two sections of ancient woodland by Hayburn Wyke.	This area has been considered within the scope of the SEA.
The area of cliff left without protection (insisted upon by Natural England) to show strata is now showing signs of under cutting due to pebble erosion.	This area has been included within the scope of the SEA.
Planning and building regs policies which reduce water runoff will reduce flash floods and erosion of cliff tops. Less tarmac, less concrete etc. less drainage over the cliff top.	Geotechnical studies are underway to identify the extent of surface runoff in the village of Robin Hoods Bay and the impacts on coastal erosion.
Small stream at end of Victoria Terrace approx. 10 m before Rocket House. Discharges over cliff edge. This washes away clay at cliff top. This is very extensive.	Geotechnical studies are underway to identify the extent of surface runoff and the impacts on the coastal erosion. These will be incorporated into the decision making process.

Post it Note comments on maps	Response
<p>I agree with comments that the 'stream' at the end of Victoria Terrace discharges over the clay top of the cliff and over the years has caused considerable erosion - could it not be piped to help?</p>	<p>Geotechnical studies are underway to identify the extent of surface runoff and the impacts on the coastal erosion. These will be incorporated into the decision making process.</p>
<p>Protection from north of existing 'sea wall' to stabilise Victoria Terrace are to almost the 1st field on the cliff (rocket post field) is needed to preserve the existing housing and Edwardian areas of RHB. To combine the effects of both land and sea erosion. Nature will have to have it's own effect on the majority of our coastline</p>	<p>The area will be assessed in the Environmental Report and recommendations will be made for its management.</p>

## Appendix F – Quality Assurance Checklist

Table F.1 - Quality Assurance Checklist

Information Required for Inclusion in the SEA	Location in SEA
<b>Objectives and Context</b>	
The plan's or programme's purpose and objective are made clear.	Section 3
Environmental issues and constraints, including international and EC environmental protection objectives, are considered in developing objectives and targets.	Table 5.1
SEA objectives, where used, are clearly set out and linked to indicators and targets where appropriate.	Appendix D
Links with other related plans, programmes and policies are identified and explained.	Appendix A
Conflicts that exist between SEA objectives, between SEA and plan objectives and between SEA objectives and other plan objectives are identified and displayed.	Table 5.1
<b>Scoping</b>	
Consultation Bodies are consulted in appropriate ways at appropriate times on the content and scope of the Environmental Report.	Appendix E
The assessment focuses on significant issues.	Appendix E
Technical, procedural and other difficulties encountered are discussed; assumptions and uncertainties are made explicit.	Appendix E
Reasons are given for eliminating issues from further consideration.	Appendix E
<b>Alternatives</b>	
Realistic alternatives are considered for key issues, and the reasons for choosing them are documented.	Section 6 and Appendix D
Alternatives include 'do minimum' and/or 'business as usual' scenarios wherever relevant.	Section 6 and Appendix D
The environmental effects (both adverse and beneficial) of each alternative are identified and compared.	Section 6 and Appendix D
Inconsistencies between the alternatives and other relevant plans, programmes or policies are identified and explained.	Section 6 and Appendix D
Reasons are given for selection or elimination of alternatives.	Section 6 and Appendix D

Information Required for Inclusion in the SEA	Location in SEA
<b>Baseline Information</b>	
Relevant aspects of the current state of the environment and their likely evolution without the plan or programme are described.	Section 2 Appendix B
Environmental characteristics of areas likely to be significantly affected are described, including areas wider than the physical boundary of the plan area where it is likely to be affected by the plan.	Section 6 Appendix B
Difficulties such as deficiencies in information or methods are explained.	N/A
<b>Prediction and evaluation of likely significant environmental effects.</b>	
Effects identified include the types listed in the Directive (biodiversity, population, human health, fauna, flora, soil, water, air, climate factors, material assets, cultural heritage and landscape), as relevant; other likely environmental effects are also covered as appropriate.	Section 4 Appendix B
Both positive and negative effects are considered, and the duration of effects (short medium or long term) is addressed.	Section 4 Appendix B
Likely secondary, cumulative and synergistic effects are identified where practicable.	Section 4 Appendix B
Inter-relationships between effects are considered where practicable.	Section 4 Appendix B
The prediction and evaluation of effects makes use of relevant accepted standards, regulation and thresholds.	Section 4 Appendix B
Methods used to evaluate the effects are described.	Section 4 Appendix B
<b>Mitigation measures</b>	
Measures envisaged preventing, reducing and offsetting any significant adverse effects of implementing the plan or programme are indicated.	Section 8
Issues to be taken into account in project consents are identified.	Section 8
<b>The Environmental Report</b>	
Is clear and concise in its layout and presentation.	Whole Report
Uses simple, clear language and avoids or explains technical terms.	Whole Report
Uses maps and other illustrations where appropriate.	N/A

Information Required for Inclusion in the SEA	Location in SEA
Explains the methodology used.	Section 2
Explains who was consulted and what methods of consultation were used.	Section 2.9 & Appendix E
Identifies sources of information, including expert judgement and matters of opinion.	Appendix B
Contains a non-technical summary covering the overall approach to the SEA, the objectives of the plan, the main options considered, and any changes to the plan resulting from the SEA.	Non Technical Summary
<b>Consultation</b>	
The SEA is consulted on as an integral part of the plan making process.	Section 2.9 & Appendix E
Consultation bodies and the public likely to be affected by, or having an interest in, the plan or programme are consulted in ways and at times which give them an early and effective opportunity within appropriate time frames to express their opinions on the draft plan and Environmental Report.	Section 2.9 & Appendix E
<b>Decision-making and information on the decision</b>	
The environmental report and the opinions of those consulted are taken into account in finalising and adopting the plan or programme.	Appendix E
An explanation is given of how they have been taken into account.	Appendix E
Reasons are given for choosing the plan or programme as adopted, in the light of other reasonable alternatives considered.	Section 7
<b>Monitoring Measures</b>	
Measures proposed for monitoring are clear, practicable and linked to the indicators and objectives used in the SEA.	Section 9
Monitoring is used, where appropriate, during the implementation of the plan or programme to make good deficiencies in baseline information in the SEA.	Section 9
Monitoring enables unforeseen adverse effects to be identified at an early stage (these effects may include predictions which prove to be incorrect)	Section 9
Proposals are made for action in response to significant adverse effects.	Section 9

## References

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- <sup>i</sup> ODPM (2004) Environmental Assessment of Plans and Programmes Regulations, *London*: The Stationary Office.
- <sup>ii</sup> ODPM (2006) A Practical Guide to Strategic Environmental Assessment Directive.
- <sup>iii</sup> <http://www.defra.gov.uk/environment/flooding/policy/guidance/sea.htm> - viewed on 23/12/2009.
- <sup>iv</sup> Levett-Therivel (2006) Appropriate Assessment of Plans and Policies.
- <sup>v</sup> River Itchin, Weston Shore, Netley and River Hamble Coastal Defence Strategy Study Strategic Environmental Assessment: Scoping Report. Mouchel, October 2006.
- <sup>vi</sup> MAFF (2001) Flood and Coastal Defence Project Appraisal Guidance (FDCPAG) Strategic Planning and Appraisal.
- <sup>vii</sup> The Council of European Communities (1979) EC Directive on the Conservation of Birds.
- <sup>viii</sup> The Council of European Communities (1992) EC Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora.
- <sup>ix</sup> ODPM (2004) Environmental Assessment of Plans and Programmes Regulations. *London*: The Stationary Office.
- <sup>x</sup> ODPM (2006) Natural Environment and Rural Communities Act. *London*: The Stationary Office.
- <sup>xi</sup> Department of Environment, Food and Rural Affairs (DEFRA) (2008) Marine and Coastal Access Bill. *London*: Authority of the House of Lords London – The Stationary Office Limited.
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- <sup>xvii</sup> Government Office for Yorkshire and the Humber (2008) The Yorkshire and Humber Plan: Regional Spatial Strategy to 2026. *London*: The Stationary Office.
- <sup>xviii</sup> Department for Communities and Local Government (DCLG) (2006) Good Practice Guide on Planning for Tourism: *Yorkshire*: DCLG Publications.
- <sup>xix</sup> North York Moors National Park Authority (2008) North York Moors National Park Authority Local Development Framework: Core Policies and Development Policies.
- <sup>xx</sup> Scarborough Borough Council (2002) Scarborough Borough Local Plan. *London*: Forward Planning.
- <sup>xxi</sup> (2006) Scarborough Borough Local Development Framework: Draft Appropriate Assessment.
- <sup>xxii</sup> Scarborough Borough Council (2006) Sustainability Appraisal of the Draft Core Strategy (Preferred Options). *Leeds*.
- <sup>xxiii</sup> Lane, N. Guthrie, G. (2007) River Tyne to Flamborough Head SMP2: Non Technical Summary for Scarborough Area.
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