Scottish Environment Protection Agency

A Climate Change Plan for SEPA 2007– 2012

Strategic Environmental Assessment

Environmental Report

December 2007

SEA ENVIRONMENTAL REPORT – COVER NOTE – SECTION 1		
To	SEA.gateway@scotland.gsi.gov.uk	
SEA ENVIRONMENTAL TEMPLATE – COVER NOTE – SECTION 2		
An Environmental Report is attached for		
A Climate Change Plan for SEPA 2007 - 2012		
The Responsible Authority is:		
The Scottish Environment Protection Agency		
SEA ENVIRONMENTAL REPORT TEMPLATE – COVER NOTE – SECTION 3		
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A CLIMATE CHANGE PLAN FOR SEPA

STRATEGIC ENVIRONMENTAL ASSESSMENT – ENVIRONMENTAL REPORT

LIST OF TABLES AND FIGURES

A CLIMATE CHANGE PLAN FOR SEPA

STRATEGIC ENVIRONMENTAL ASSESSMENT – ENVIRONMENTAL REPORT

NON TECHNICAL SUMMARY

1. INTRODUCTION

The Climate Change Plan

1.1 The Scottish Environment Protection Agency (SEPA) has prepared a Climate Change Plan (CCP) which sets out the Agency's strategic aims and objectives in the context of climate change from 2007 to 2012 in the following main areas:

- Environmental monitoring and analysis;
- Regulation of industry
- Provision of advice
- Demonstrating leadership and exemplary performance in minimising SEPA's ecological footprint;
- Informing and influencing policy; and
- Communication and information services

1.2 The Scottish Government's Climate Change Programme "Changing our Ways" presents a long term vision for Scotland on climate change and sustainable development. It quantifies Scotland's equitable contribution to reducing carbon dioxide emissions and sets a Scottish target. A Climate Change Bill which proposes to set a statutory target of 80% reductions in carbon dioxide emissions by 2050 will be put before the Scottish Parliament in Spring 2008. With this context in mind, SEPA considers that it has an obligation to ensure that it is well positioned and proactive in helping the Scottish Government deliver its climate change targets and that it has effective measures in place to minimise the impacts of climate change.

1.3 The Plan sets out:

- Current baseline of SEPA activities in the context of climate change
- Strategic aims and objectives for the period 2007 – 2012 (2007/8 activities are those already committed and under way)
- Specific actions SEPA will take to achieve the aims and objectives
- Some key performance indicators

1.4 The Plan is structured around immediate and longer term actions and takes into account SEPA's activities connected with monitoring, advice, and regulatory activities. A copy of the plan is available at www.sepa.org.uk/pdf/consultation/current/climate/climate_consultation.pdf. Under the Environmental Assessment (Scotland) Act, the CCP requires a "Strategic Environmental Assessment" (SEA) as part of its preparation.

Purpose of this Environmental Report

1.5 The purpose of this Environmental Report is to fulfil the requirements of the Environmental Assessment (Scotland) Act 2005 by:

- Introducing Strategic Environmental Assessment and its application to the CCP;

- Explaining the method adopted for assessing the significant environmental effects of implementing the CCP;
- Setting out the potential significant environmental effects (positive and negative) of implementing the CCP; and
- Identifying where mitigation measures are required to prevent, reduce or offset any adverse environmental effects.

Relationship with other Plans, Programmes & Objectives

1.6 Consideration of the relationship of the CCP with other plans, programmes, strategies and environmental objectives that it may influence or be influenced by is an important part of Strategic Environmental Assessment. Understanding these relationships will assist the identification of significant environmental effects and will also allow understanding of which plans may be best placed to implement any mitigation measures required. Appendix 1 sets out the plans and programmes considered to be relevant to the CCP.

2. ENVIRONMENTAL BASELINE – CLIMATE CHANGE IN SCOTLAND

2.1 Our climate depends on the Earth's temperature. Due to rapidly increasing concentrations of carbon dioxide (CO_2) and other greenhouse gases in the atmosphere, the temperature of the planet is rising quickly compared with relatively stable temperatures throughout the past millennium. The increasing use of fossil fuels for energy generation and transport purposes means carbon dioxide is the most critical greenhouse gas. Although Scotland's carbon dioxide emissions fell by 8% between 1990 and 2003, our energy demands for transport, businesses and homes increased by over 10% during the same period.

2.2 The following section briefly explains observed patterns of climatic change in Scotland over the past 50 years as set out in two key documents:

- The Scotland & Northern Ireland Forum For Environmental Research (SNIFFER) 2006 publication **Handbook of Climate Trends Across Scotland**; and
- SEPA's **State of the Environment 2006 Report**

2.3 The SNIFFER handbook presents recorded changes in Scotland's climate in the last century and provides a benchmark against which we can measure future climate change and develop strategies to cope with its impact. The handbook includes analysis of historic data relating to temperature, rainfall, snowfall, air-pressure and sunshine.

2.4 The State of the Environment report concludes that climate change is evident in Scotland from observed trends in temperature, rainfall and snow cover, higher river flows and sea levels. It also notes other climate-related changes, including shifts in growing, breeding and migration seasons and in species abundance and diversity.

Observed Effects

2.5 The following effects have been observed since 1961. These are detailed in Chapter 3 of the main report:

- Average temperatures in Scotland have risen by more than 1^{o}C;
- There has been an upward trend in minimum temperatures, particularly in the east and west of Scotland;
- The average growing season across Scotland has lengthened by 33 days;
- The number of frosty days has decreased in most areas by 26%;
- Scotland over the year is on average 20% wetter than it was in 1961, with a significant increase in winter rain recorded;

- The number of days of snow cover has reduced;
- There has been an increase in the levels of prolonged rain and in the intensity of rain. Together, these can lead to flooding;
- The seas around Scotland have warmed by around 1°C over the past 20 years, which have prompted changes in the composition, abundance and distribution of a number of marine species.

Predicted Future Climate Change in Scotland

2.6 Based on models of projected climate change[1] into the future, the following effects are predicted unless significant cuts in global CO2 levels are made:

- Continued increases in average temperatures;
- Milder temperatures will result in wetter conditions, particularly during the winter;
- Higher intensity of rainfall is likely;
- Longer periods without rain, particularly during summer;
- Snowfall will continue to decrease;
- Scotland's seas will continue to warm by up to 2.5 °C

Predicted Impacts on Scotland

2.7 If the above predictions are accurate, the following effects might be experienced in Scotland:

- More frequent and more severe flooding
- Summer droughts may be more common, particularly in the south and east of Scotland
- Sea level rises, causing coastal flooding and land loss;
- Impacts on water quality – eg flooding causes run off of pollutants;
- Significant changes to the abundance and distribution of Scotland's native wildlife;
- An increase in the number of new species;
- Possible impacts on industry – eg restrictions on abstraction during periods of drought
- Economic and social hardship caused by climatic factors such as flooding and droughts;

3. ASSESSMENT OF THE ENVIRONMENTAL EFFECTS OF THE CLIMATE CHANGE PLAN

3.1 An assessment was conducted which sought to test each part of the CCP against a set of objectives to test whether the CCP was likely to move towards them. The use of "SEA objectives" is a common approach to SEA and provides for a systematic process of establishing whether the CCP is likely to have any environmental effects. These "SEA objectives" cover a wide range of environmental topics that are prescribed in the legislation. The objectives used in this assessment were:

TOPIC	OBJECTIVE
AIR	Will the CCP contribute to improving air quality and meeting national air quality objectives?
WATER	Will the CCP contribute to the protection and enhancement of waterbodies?
WATER	Will the CCP contribute to reduction of flood risk?
SOIL	Will the CCP contribute to the protection of soil quality and function ?
SOIL	Will the CCP contribute to reduction in rates of contaminated and derelict land?
CLIMATE	Will the CCP contribute to reduction in greenhouse gas emissions?
CLIMATE	Will the CCP contribute to effective adaptation to climate change?

[1] See: www.metoffice.gov.uk/research/hadleycentre/models/modeltypes.html

BIODIVERSITY	Will the CCP contribute to implementing the Scottish Biodiversity Strategy?
HEALTH	Will the CCP contribute to objectives for protecting and enhancing human health ?
MAT. ASSETS	Will the CCP promote appropriate use of renewable resources?
MAT. ASSETS	Will the CCP reduce energy consumption and promote efficiency?
MAT. ASSETS	Will the CCP reduce waste and encourage reuse and recycling?
LANDSCAPE	Will the CCP contribute to the protection and enhancement of areas of landscape, amenity and recreational value?
OTHER	Does the CCP apply the "polluter pays" principle?
OTHER	Is the CCP in line with objectives for environmental justice?
OTHER	Does the CCP apply the precautionary principle where relevant scientific information does not exist?

3.2 The results of the assessment are described in the completed matrices in part 2 of the main report. These results are summarised below and in the table on page 17

3.3 EFFECTS ON AIR

3.3.1 Generally, most of the activities in the CCP will contribute to an improvement in air quality. In particular, by seeking to reduce the emission of greenhouse gases, it is likely that other polluting emissions to air will also be reduced. The activities connected with *monitoring and analysis* (section 8.1), *regulation* (section 8.2), *advice to operators* (section 8.3) and *informing and influencing* (section 8.5), should all lead to some improvements in air quality, although the contribution of the CCP compared to other drivers will likely be small. Where improvements in air quality might occur is difficult to predict as this will depend upon the location of activities that may be regulated by SEPA.

3.3.2 One challenge the assessment has identified is the potential conflict between SEPA's regulatory activities and its climate change objectives. Through its regulation of processes that may result in emissions to air SEPA may require the installation of abatement technologies that reduce the impact of those processes on air quality. While these are an important part of protecting the environment, some can be extremely energy intensive and have climate change implications in terms of increased greenhouse gas emissions. Activities 8.2.1 and 8.2.3 under *regulation* in particular seek to build climate change factors into regulatory decision-making and which may therefore need to balance local environmental quality protection with reductions in greenhouse gas emissions. In these instances, it is important that a full evaluation is undertaken to ensure that the best solution is found that enables both effective environmental protection of local air quality and efficient use of energy/reduction in greenhouse gas emissions within the plant.

3.4 EFFECTS ON WATER

3.4.1 As with air, generally, most of the activities in the CCP will contribute to an improvement in water quality. In particular, by seeking to reduce the emission of greenhouse gases, it is likely that other polluting emissions to water will also be reduced. The activities connected with *monitoring and analysis* (section 8.1), *regulation* (section 8.2), *advice to operators* (section 8.3) and *informing and influencing* (section 8.5), should therefore all lead to some improvements in water quality, although the contribution of the CCP compared to other drivers will likely be small. Where improvements in water quality might occur is difficult to predict as this will depend upon the location of activities that may be regulated by SEPA.

3.4.2 One challenge that this assessment has identified is the potential conflict between SEPA's regulatory activities and its climate change objectives. Through its regulation of processes that may result in emissions to water (eg waste water treatment works) SEPA may require

the installation of abatement technologies that treat the water to remove pollutants to an acceptable level prior to discharge to a receiving waterbody . While these are an important part of protecting the environment, some can be extremely energy intensive and have climate change implications in terms of increased greenhouse gas emissions. Activities 8.2.1 and 8.2.3 under *regulation* in particular seek to build climate change factors into regulatory decision-making and which may therefore need to balance local environmental quality protection with reductions in greenhouse gas emissions. In these instances, it is important that a full evaluation is undertaken to ensure that the best solution is found that enables both effective environmental protection of local water quality and efficient use of energy/reduction in greenhouse gas emissions within the plant.

3.4.3 Further, it was found that the CCP did not refer in any great detail to role of sustainable flood management and SEPA's contributions in this regard. For a plan covering adaptation to climate change, this was felt to be an omission that should be addressed.

3.5 EFFECTS ON SOIL

3.5.1 As a result of potentially reduced emissions to air and water (see above), most of the activities in the CCP will also contribute to an improvement in land quality. The activities connected with *monitoring and analysis* (section 8.1), *regulation* (section 8.2), *advice to operators* (section 8.3) and *informing and influencing* (section 8.5), should therefore all lead to some improvements in land quality, although the contribution of the CCP compared to other drivers will likely be small. Where improvements in land quality might occur is difficult to predict as this will depend upon the location of activities that may be regulated by SEPA.

3.5.2 SEPA's wider activities aimed at reducing waste and increasing reuse, recovery and recycling will also reduce pressures on land. While these are not specifically referenced in the CCP, activities in the CCP will support and provide a framework for the wider suite of activities for which SEPA is responsible for. Few parts of the CCP were found likely to have any part to play in reducing amounts of contaminated and derelict land, although some activities such as planning liaison were found likely to have some local benefits.

3.6 EFFECTS ON CLIMATIC FACTORS

3.6.1 As is to be expected for a plan that is aimed at putting into place a series of actions to enhance SEPA's contribution to climate change mitigation and adaptation, the assessment found that the CCP was significantly contributing to these objectives. All of the actions in the CCP were either directly or indirectly contributing to addressing climate change issues where SEPA has a role. The actions are designed to take forward the Scottish Government's climate change agenda as set out in the climate change programme and in the proposed climate change bill. Accordingly, the CCP fits well with the other plans, programmes and strategies that make up Scotland's policy and legislative framework on climate change.

3.7 EFFECTS ON BIODIVERSITY

3.7.1 Generally, most of the activities in the CCP will contribute to seeking to improve biodiversity in Scotland. SEPA's primary contribution to biodiversity is the protection of the quality of the environment through environmental regulation and therefore activities under *regulation* (section 8.2) will assist in this regard. In particular, through the actions under *monitoring and analysis* (section 8.1) and in association with wider research activities, SEPA will improve its ability and capacity to take action and provide advice on a number of significant biodiversity issues where its scientific, regulatory or advisory involvement with biodiversity issues is less well-developed.

3.7.2 The likely contribution that the CCP will make to improving air, water and soil will have some benefits for biodiversity. For example, improvements to water bodies as a result of reduced water use will have direct benefits for aquatic biodiversity. The effects of the CCP are likely to be small compared to other drivers however. Some activities in the CCP are also specifically geared towards considering the effects of climate change on certain receptors and this will, when implemented, further contribute to protecting biodiversity from the effects of climate change.

3.8 EFFECTS ON HUMAN HEALTH

3.8.1 Generally, most of the activities in the CCP will contribute to seeking to improve health in Scotland. The most direct contribution that the CCP will make to protecting and enhancing human health will be for those activities connected to flood risk and flood warning. Flooding is a significant risk to both life and property and it is likely that both the frequency and magnitude of flooding in Scotland will increase due to climate change. Through its *monitoring and analysis* activities (section 8.1), SEPA will better understand the risks from future flooding in Scotland. This will help both in *informing and influencing* (section 8.6) through planning liaison and in being able to identify new ways to disseminate flood warnings. This will make a considerable contribution to protecting and enhancing human health.

3.8.2 Some activities in the CCP (eg 8.2.5 *identification of targets for human health…that may be compromised by climate change, and will seek to improve regulatory practices in order to minimise risks and maximise opportunities*) are specifically geared towards considering the effects of climate change on certain receptors and this will, when implemented, further contribute to protecting human health from the effects of climate change. Other activities which for example target emissions from transport may also have some benefits for local air quality.

3.9 EFFECTS ON LANDSCAPE

3.9.1 The activities in the CCP will not, in themselves, likely have any significant effects on landscape. It is, however, possible that some actions in the CCP will indirectly contribute to activities which may lead to landscape effects as part of the wider policy and legislative framework on climate change, particularly in respect of renewables. SEPA's support in principle for appropriate use of renewables via the CCP may make a small and indirect contribution to landscape issues such as:

- an increase in biomass production in Scotland which would have landscape effects in terms of the land use and crop mix grown in parts of the country. Other drivers such as biomass policy, land suitability and price are likely to be much stronger contributors.
- an increase in wind energy generation either on or off shore. Again, other drivers such as planning policy, renewable energy targets (eg via the Renewables Obligation (Scotland) Order 2007), price and wind resource are likely to be much stronger determinants.

3.9.2 The extent of these types of effects arising from the CCP as opposed from other drivers is however very uncertain. Climate change itself is likely to have landscape impacts, for example through loss of land as a result of sea level rises, or through erosion of river banks as a result of fluvial flooding.

3.10 EFFECTS ON MATERIAL ASSETS

3.10 Overall, the CCP was found likely to make a positive contribution to the objectives covered under material assets. In particular, the CCP is strongly focused towards efficiency as a means of reducing greenhouse gas and other emissions and therefore scores well in this regard.

4. MITIGATION MEASURES

4.1 The following mitigation measures are identified and which should be considered as the CCP is taken forward from draft stage and implemented.

Mitigation Identified	Why	By Whom and When
SEPA should develop a method for allowing potential conflicts between regulatory objectives and climate change objectives to be reconciled. This should be focused on "win-win" situations where both effective environmental protection and climate change objectives can be achieved.	In order to secure better integration between environmental protection and climate change objectives without adversely affecting local environmental quality.	SEPA when implementing activities 8.2.1 and 8.2.3
As and when proposals for biomass and energy from waste proposals come forward, these must be subject to more detailed level assessment through other processes such as EIA to assess local impacts on the environment.	In order to assess local effects on the environment from these facilities.	By regulators when proposals come forward
There is a small possibility that additional monitoring may lead to an increase in SEPA's greenhouse gas emissions for this activity (eg through travel or from power for monitoring equipment). To address this, any future rise in emissions from these activities should be factored into wider actions to reduce SEPA's overall carbon footprint.	To ensure SEPA's overall greenhouse gas emissions are reduced.	SEPA via its *Greening SEPA* activities
The CCP does not refer in any great detail to role of sustainable flood management and SEPA's contributions. The potential future opportunities that may available to SEPA under the "*Floods Directive*"[2] and other legislation should be referenced. A joined up approach between SEPA's flood risk management/flood warning responsibilities and its climate change obligations should be considered.	This was felt to be an omission	By SEPA as CCP is finalised
CCP should make more specific reference to, and be clear about, SEPA's position on renewables and should, where appropriate, identify activities which could be used to provide more proactive support for appropriate renewables technologies	As renewable energy is integral to climate change mitigation	By SEPA as CCP is finalised

[2] EC Directive 2007/60/EC on the assessment and management of flood risks

5. CONSULTATION

5.1 This Environmental Report and SEPA's Climate Change Plan is out for consultation between until 4th March 2008. SEPA welcomes your comments.

5.2 Comments should be made in writing by **4th March 2008** to either:

Environmental Strategy
SEPA Corporate Office
Erskine Court
The Castle Business Park
Stirling. FK9 4TR

or to climatechange@sepa.org.uk

Summary of Assessment Findings (see Part 2 of main report for details)

SEA Objective / Part of CCP	Strategic Vision & Aims	Monitoring & Analysis	Regulation	Advice to Operators	Greening SEPA	Informing & Influencing	Changing Attitudes	Summary
AIR QUALITY	☑☑ ☒	☑☑	☑ ☒	☑	☑ o	☑	☑ o	Most parts of CCP working towards this objective. Possible issues connected with CO2 emissions from abatement technologies.
WATER - QUALITY	☑ ☒	☑☑	☑	☑	☑ o	☑☑	☑ o	Most parts of CCP working towards this objective.
WATER – FLOODING	☑☑	☑☑	☑☑ ☒	☑ o	☑ o	☑☑	☑ o	Most parts of the CCP directly working towards this objective.
SOIL - QUALITY	☑☑	☑☑	☑☑	☑	☑	☑ ☒	☑ o	Most parts of CCP working towards this objective.
SOIL – LAND USE	o	o	o	o	☑	☑	o	Most parts of CCP are unlikely to have significant contributions to this objective.
CLIMATE - MITIGATION	☑☑	☑☑	☑☑	☑☑	☑☑	☑☑	☑☑	All parts of the CCP directly working towards this objective.
CLIMATE - ADAPTATION	☑☑	☑☑	☑☑	☑☑	o	☑☑	☑☑	Most parts of the CCP directly working towards this objective.
BIODIVERSITY	☑	☑☑	☑☑ ☒	☑	o	☑	☑ o	Most parts of CCP working towards this objective.
HUMAN HEALTH	☑	☑☑	☑ ☒	o	☑ o	☑	☑ o	Most parts of CCP working towards this objective.
LANDSCAPE	o	o	o	o	o	o	o	Most parts of CCP are unlikely to have significant contributions to this objective.
PROMOTE RENEWABLES	☑ ☒	☑ o	☑☑	o	☑ o	☑	o	Most parts of CCP are unlikely to have significant contributions to this objective.
REDUCE ENERGY	☑☑	☑ o	☑☑	☑☑	☑	☑	☑ o	Most parts of the CCP directly working towards this objective.
REDUCE WASTE	☑	o	☑ o	☑☑	o	o	☑ o	Most parts of CCP working towards this objective.
POLLUTER PAYS	☑	☑ o	☑ o	☑	o	☑	☑	Most parts of CCP working towards this objective.
ENVIRONM'TAL JUSTICE	☑	☑ o	☑☑ ☒	☑ o	o	o	o	Most parts of CCP are unlikely to have significant contributions to this objective.
PRECAUTION'Y PRINCIPLE	☑	☑ o	☑☑	o	o	o	o	Most parts of CCP are unlikely to have significant contributions to this objective.

A CLIMATE CHANGE PLAN FOR SEPA

STRATEGIC ENVIRONMENTAL ASSESSMENT – ENVIRONMENTAL REPORT

CHAPTER 1 - INTRODUCTION TO ENVIRONMENTAL REPORT

Introduction

1.2 SEPA is a public body, originally established in 1996, under the Environment Act 1995. SEPA is accountable to the Scottish Parliament via Scottish Ministers. SEPA's main role is to protect the environment and human health. It does this by controlling activities that can cause harmful pollution and by monitoring the quality of Scotland's air, land and water. SEPA publishes a wide range of environmental information and we advise Scottish Ministers, regulated businesses, industry and the public on best environmental practice. SEPA's vision[3] is one "*where the environment is protected and improving and is the basis for a successful and sustainable Scotland*"; where "*Scotland's people are well-informed and are included in environmental decision making*"; and where "*environmental regulation has continued to evolve and focused on reducing risks from pollution and activities that cause most damage to the environment*".

1.3 SEPA has prepared a Climate Change Plan (CCP) which will set out the Agency's strategic aims and objectives in the context of climate change from 2007 to 2012 in the following main areas:

- Environmental monitoring and analysis;
- Regulation of industry
- Provision of advice
- Demonstrating leadership and exemplary performance in minimising SEPA's ecological footprint;
- Informing and influencing policy; and
- Communication and information services

The Plan also gives some key performance indicators for subsequent development.

Purpose of SEA

1.3 The requirement for Strategic Environmental Assessment comes from the European Directive on the assessment of the effects of certain plans and programmes on the environment – commonly known as the SEA Directive. This is implemented in Scotland through the Environmental Assessment (Scotland) Act 2005.

1.4 The purpose of Strategic Environmental Assessment is to ensure that information on the environmental effects of a plan or programme is gathered and made available as the plan is prepared and implemented with a view to promoting sustainable development. The key objectives of an assessment are:

- To provide a systematic means of identifying, describing, evaluating and reporting on the environmental effects of a plan;

[3] *SEPA (2007) SEPA's Provisional Corporate Strategy: Our Proposals for 2008 - 2011*

- To try and prevent, reduce and/or offset as far as possible any possible adverse effects of implementing a plan;
- To try and improve the environmental performance of a plan through its preparation.
- To ensure consultation and engagement with the statutory Consultation Authorities and the public;
- To monitor implementation of a plan for any unforeseen environmental effects and to take appropriate remedial action where necessary.

Purpose of this Environmental Report

1.5 The purpose of this Environmental Report is to:

- Introduce Strategic Environmental Assessment and its application to the CCP;
- Set out the method adopted for assessing the significant environmental effects of implementing the CCP;
- Set out the potential significant environmental effects (positive and negative) of implementing the CCP; and to
- Identify where mitigation measures are required to prevent, reduce or offset any adverse environmental effects.

1.6 The key stages of SEA and a summary of progress relative to the CCP are briefly described in Table 1 below:

Table 1 - Summary of SEA steps

SEA Stage	Description of stage	Progress
Screening	Determining whether the plan or programme is likely to have significant environmental effects and whether an SEA is required	A screening report was published for consultation with the statutory consultation authorities[4] on 16th July 2007. This confirmed that SEPA would undertake SEA of the CCP.
Scoping	Deciding on the scope and level of detail of the Environmental Report, and the consultation period for it - this is done in consultation with the Consultation Authorities (Scottish Natural Heritage and Historic Scotland).	A scoping report was prepared and sent to the Consultation Authorities on 10th August 2007. As SEPA is acting as a Responsible Authority, it must not consult itself as a Consultation Authority and therefore the Scoping Report was sent only to Historic Scotland and SNH. A copy of the Scoping Report is available on request. A summary of the outcome of the Scoping process is provided in Chapter 4 of this report and detailed in Appendix 2.
Environmental Report	Publishing and consulting upon a report which describes the significant environmental effects which may arise from implementing the plan, which identifies mitigation measures to address adverse effects and which compares alternatives that were considered during the plan's preparation	This report fulfils this stage. It sets out the significant environmental effects of the CCP and evaluates the options considered. This report is out for consultation until 4th March 2008.
Adoption	Publishing an "SEA Statement" which explains how the Environmental Report and views expressed upon it	This will be prepared following the consultation period. SEPA must take into account this report and any views

[4] *Under the Environmental Assessment (Scotland) Act 2005 these are Scottish Natural Heritage and Historic Scotland (on behalf of Scottish Ministers). SEPA is also a Consultation Authority but under section 3(2) of the Act does not act in this capacity when it is doing SEA under its duties as a Responsible Authority.*

	have been taken into account for adopting the plan	expressed upon it during the consultation period.
Monitoring	Monitoring significant environmental effects after adopting the plan and taken remedial action where necessary	Chapter 6 of this report explains how we intend to monitor. Once the plan is adopted, these arrangements will be put into place.

1.7 This Environmental Report has been prepared to meet the requirements of Schedule 3 of the Environmental Assessment (Scotland) Act 2005. In addition, it has been prepared as far as possible using the Scottish Executive SEA toolkit[5]. The blue box at the start of each chapter explains which part of this Environmental Report is designed to meet which part of the Schedule 3 requirements.

[5] *Scottish Executive (2006) Strategic Environmental Assessment Toolkit - www.scotland.gov.uk/Publications/2006/09/13104943/0*

CHAPTER 2

THE CONTENTS AND MAIN OBJECTIVES OF SEPA'S CLIMATE CHANGE PLAN AND ITS RELATIONSHIP WITH OTHER PLANS, PROGRAMMES AND STRATEGIES

This section of the Environmental Report is designed to meet the requirements of paragraphs 1 and 5 of Schedule 3 of the Environmental Assessment (Scotland) Act 2005. Namely, an outline of the contents and main objectives of the Plan and its relationship with other qualifying plans and programmes and a summary of those relevant environmental protection objectives set at international, community or member state level.

Background

2.1 SEPA is preparing a Climate Change Plan (CCP) which will set provide a structured umbrella under which to co-ordinate and collate the Agency's action in the field of climate change for the period 2007 – 2012. The plan identifies six main areas in which SEPA will take action on climate change;

- Monitoring and analysis:
- Regulation:
- Advice to operators:
- SEPA's environmental footprint – being an exemplar:
- Informing and influencing: and
- Awareness and attitudes.

2.2 Table 2 below sets out some key facts about SEPA's Climate Change Plan

Responsible Authority	Scottish Environment Protection Agency
Title of Plan	A Climate Change Plan for SEPA
Plan Subject	Climatic Factors
Period Covered	2007 - 2012
Requirement for the Plan	Preparation of the CCP is voluntary. Scotland's Climate Change Programme "Changing our Ways" presents a long term vision for Scotland on climate change and sustainable development. It quantifies Scotland's fair contribution to reducing carbon dioxide emissions and sets a Scottish target. SEPA considers that it has an obligation to ensure that it is well positioned and proactive in helping the Scottish Government deliver the Scottish target and that it has effective measures in place to minimise the impacts of climate change. Accordingly, this plan sets out a series of actions over five years to help achieve the Scottish Climate Change Programme.
Frequency of Updates	Post 2012
Plan area	The whole of Scotland.
Summary of content /nature of	The Plan sets out: ▪ Current baseline of SEPA activities in the context of climate

plan	change ▪ Strategic aims and objectives for the period 2007 – 2012 (2007/8 activities are those already committed and under way) ▪ Specific actions SEPA will take to achieve the aims and objectives ▪ Some key performance indicators The Plan is structured around immediate and longer term actions and takes into account SEPA's activities connected with monitoring, advice, and regulatory activities.

Contents of the CCP for SEPA.

2.3 Set out in table 3 are the contents of SEPA's CCP and indicates those parts of the CCP that have been assessed[6]. The whole plan can be viewed at www.sepa.org.uk/pdf/consultation/current/climate/climate_consultation.pdf .

Table 3 – Parts of the Plan to be assessed in the Environmental Report

Chapter	Content	Are these assessed in the SEA?
1, 2, 3	(1) Context; (2) Introduction; (3) SEPA's Role	No. These chapters provide the contextual background to the CCP, including an introduction to SEPA, Scotland's Climate Change Programme and an outline of SEPA's activities where these relate to climate change.
4	Strategic Vision	Yes. This is the overarching vision for addressing climate change in SEPA.
5	Strategic Aims and Objectives	Yes. These represent the key objectives that drive specific actions in order to implement the strategic vision. (Note, the strategic vision and aims and objectives are assessed together)
6	Baseline	No. This chapter summarises actions which are already being undertaken by SEPA to address climate change. These actions are already in place and have commitment and resources allocated.
7	Immediate Actions - Existing Actions - Planned Actions for 2007/8	No. This chapter summarises actions which are already being undertaken by SEPA to address climate change. These actions are already in place and have commitment and resources allocated.
8	Longer Term Actions (2008-12) - Monitoring and Analysis - Regulation - Advice to Operators - Greening SEPA - Informing and Influencing - Attitudes	Yes. Specific activities are identified under these headings. The specific actions are not assessed individually, but as a basket of activities under each of the headings. Thus, for example, specific actions relative to SEPA's regulatory activities are assessed together.
9	Performance Indicators	These will not be assessed, but will be used as part of the monitoring requirements of the SEA.
10	Governance	No. This chapter will provide details of how the CCP will be prepared, implemented and monitored by the organisation.

[6] *Which parts of the CCP were to be assessed was agreed with the Consultation Authorities as part of the Scoping stage*

Relationship with other Plans, Programmes & Objectives

2.4 Consideration of the relationship of the CCP with other plans, programmes, strategies and environmental objectives that it may influence or be influenced by is an important part of Strategic Environmental Assessment. Understanding these relationships will assist the identification of significant environmental effects and will also allow understanding of which plans may be best placed to implement any mitigation measures required.

2.5 Appendix 1 sets out the plans and programmes considered to be relevant to the CCP. This list sets out the relevant plans and provides brief commentary on their relevance to the Plan. Given the very wide geographic and subject scope of the CCP it is not possible or meaningful to identify every possible plan or programme. Rather, only the key plans and their relationship to the CCP have been identified.

CHAPTER 3

SUMMARY OF CURRENT ENVIRONMENT IN SCOTLAND IN RESPECT OF CLIMATE CHANGE

This section of the Environmental Report is designed to meet the requirements of paragraphs 2, 3 and 4 of Schedule 3 of the Environmental Assessment (Scotland) Act 2005. This requires SEPA to summarise the environmental characteristics of area likely and any existing environmental problems which are relevant to the CCP. It also requires SEPA to explain the likely future evolution of the environment.

3.1 Introduction

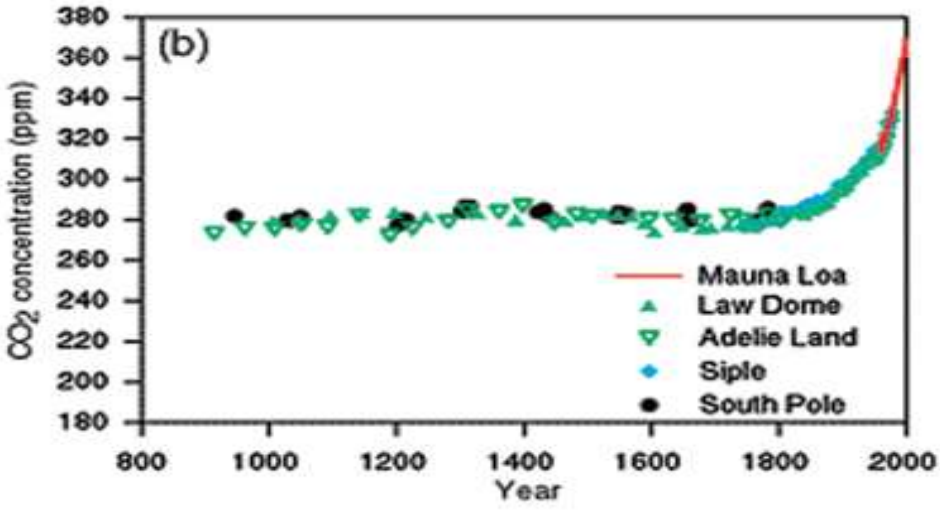
3.1.1 Set out below is a brief summary of the state of the environment in respect of the key areas that the Climate Change Plan for SEPA will cover. Due to the wide geographic and issue coverage of the CCP, it is not appropriate or necessary to go down to a great level of detail in this baseline. This approach was considered appropriate by the Consultation Authorities in their Scoping consultation responses. In 2006 SEPA published its State of the Environment Report for Scotland – Change Tomorrow Today[7] which provides lots of detail about prevailing environmental conditions and trends. Rather than repeat this work in this baseline, a summary of each topic relevant to the CCP has been provided and links to Change Tomorrow Today provided.

3.2 Climate Change in Scotland – Context and Observed Impacts

Context

3.2.1 Our climate depends on the Earth's temperature. Due to rapidly increasing concentrations of carbon dioxide (CO_2) and other greenhouse gases in the atmosphere, the temperature of the planet is rising quickly compared with relatively stable temperatures throughout the past millennium. Atmospheric carbon dioxide concentrations remained relatively constant at around 280 parts per million (ppm) for at least a thousand years, but concentrations have risen since the mid-1700s, reaching 377ppm in 2004 (see Figure 1).

Figure 1: Global carbon dioxide - Carbon dioxide concentration in Antarctic ice cores for the past millennium – recent atmospheric measurements (Mauna Loa) are shown for comparison

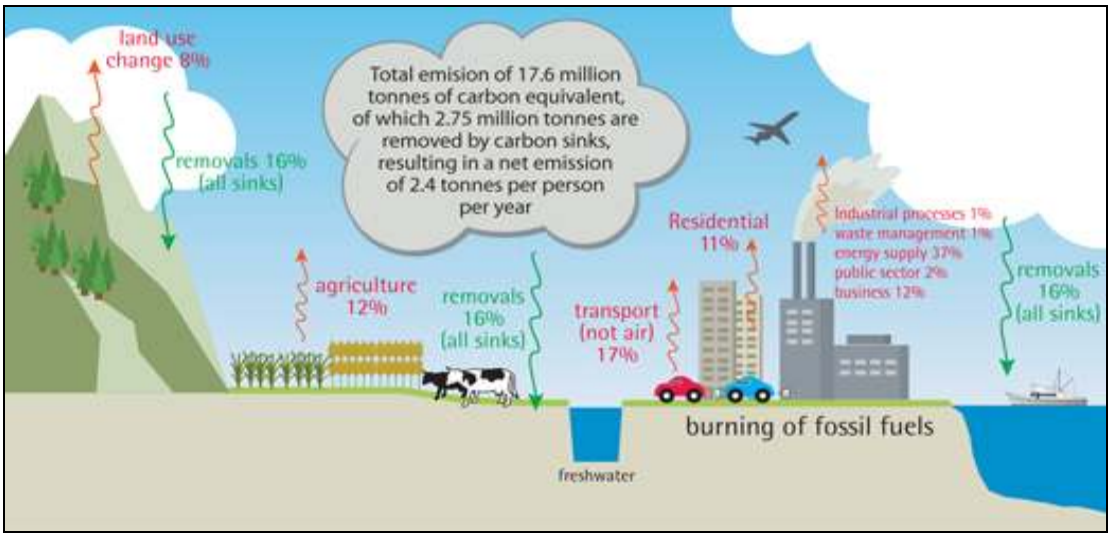


Source: IPCC (2001) Climate Change 2001: Working Group 1 - The Scientific Basis (Fig 10b)

[7] *Change Tomorrow Today* can be downloaded at: www.sepa.org.uk/changetomorrowtoday/report/index.html

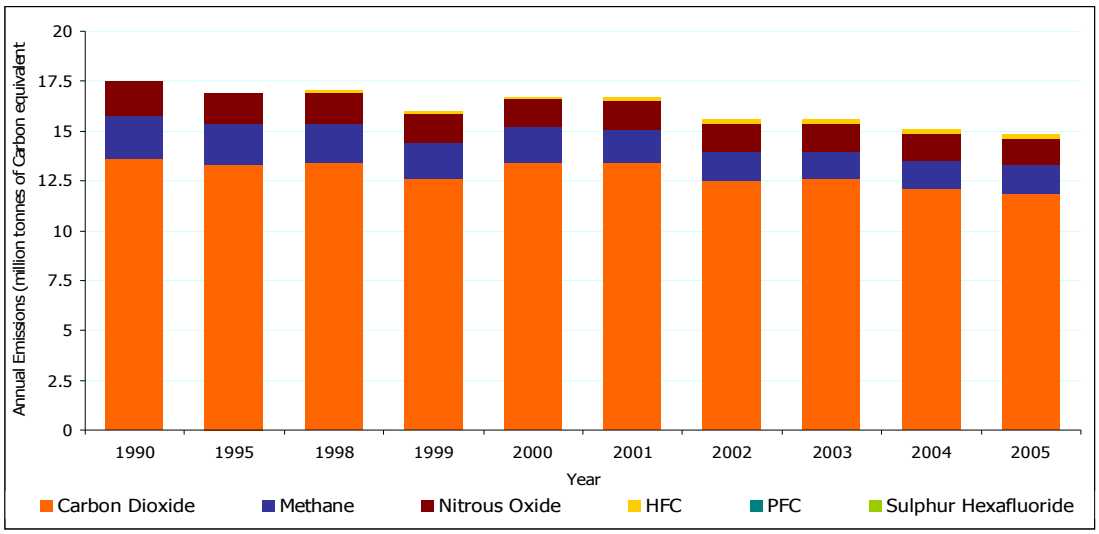
3.2.2 The increasing use of fossil fuels for energy generation and transport purposes means carbon dioxide is the most critical greenhouse gas. The main sources of greenhouse gases in Scotland are shown in Figure 2 below;

Figure 2: Main sources and sinks of carbon emissions in Scotland



3.2.3 Annual emissions of the six main greenhouse gases (carbon dioxide, nitrous oxide, methane, sulphur hexafluoride, perfluorocarbons (PFC) and hydrofluorocarbons (HFC) expressed as carbon equivalents are shown in Figure 3 below. Although Scotland's carbon dioxide emissions fell by 8% between 1990 and 2003, our energy demands for transport, businesses and homes increased by over 10% during the same period. Despite methane emissions falling by 35% between 1990 and 2005[8], significant volumes of carbon dioxide and methane could be released from soils as a result of increased temperatures or changes in land use. For example, Scotland's peat uplands are vulnerable to changes in climate and land management and, if only 0.1% is released as carbon dioxide, Scotland's emissions will double.

Figure 3: Scotland's greenhouse gas emissions, 1990–2005



[8] Graph produced by SEPA using data from data UK National Atmospheric Emissions Inventory www.naei.org.uk

Observed Impacts

3.2.4 This section sets out observed patterns of climatic change in Scotland over the past 50 years as set out in two key documents:

- The Scotland & Northern Ireland Forum For Environmental Research (SNIFFER) 2006 publication **Handbook of Climate Trends Across Scotland**; and
- SEPA's **State of the Environment 2006 Report**

3.2.5 The SNIFFER handbook presents recorded changes in Scotland's climate in the last century and provides a benchmark against which we can measure future climate change and develop strategies to cope with its impact. The handbook includes analysis of historic data relating to temperature, rainfall, snowfall, air-pressure and sunshine.

3.2.6 The State of the Environment report concludes that climate change is evident in Scotland from observed trends in temperature, rainfall and snow cover, higher river flows and sea levels. It also notes other climate-related changes, including shifts in growing, breeding and migration seasons and in species abundance and diversity.

3.2.7 Significant observations described in these two documents with respect to temperature, rainfall, changes in the marine environment and in Scotland's coastline are described below;

3.2.8 Temperature

Average temperature **-** Scotland's temperature records indicate average spring, summer and winter temperatures rising by more than 1°C since 1961. This has been particularly prevalent in southern and eastern Scotland. Average temperature increases are smallest in autumn.

Maximum temperatures – 24 hour maximum temperatures have similarly been increasing, on average by over 1°C since 1961. This is particularly marked in winter and spring. The rise in maximum temperatures has been relatively constant across the country.

Minimum temperatures – Since 1914 there has been an upward trend in minimum temperatures in both east and west Scotland for all seasons. Minimum temperatures in northern Scotland while increasing are doing so at a slower rate than the rest of the country and some areas not having experienced much increase at all. Minimum temperatures have not increased at the same rate as maximum temperatures.

Growing Season – Since 1961, the growing season across the whole of Scotland has lengthened by 33 days. This is particularly marked in coastal areas, in western Scotland where the growing season is now nearly 37 days longer than in 1961 and the Shetland Islands where it has been extended by over two months. The increase in growing season is most influenced by an early start which on average now occurs 21 days earlier.

Frosts – Since 1961 there has been a 26% reduction in the number of days each year of air frost. This reduction has been constant across the country, although some small areas in northern Scotland have witnessed an increase. The reduction is most noticeable in the spring and autumn seasons. Since 1961 there has been a 28% reduction in the number of days each year of ground frost, although most of these reductions have occurred since the early 1980s.

3.2.9 Rainfall

Average rainfall – Scotland over the year is on average 20% wetter than it was in 1961. Winter precipitation shows a clear upward trend since this time, with a 58% increase recorded across the country. This is most marked in the north (nearly 70% increase) and less marked in the east (36% increase). There is less variability in precipitation across the other seasons and patterns are less clear. The key trends for non winter months appear to be that the east has become slightly drier during the summer and the west wetter in Spring.

Heavy rain – There has been a trend of increasing heavy rainfall in winter, particularly in the north and west. There is a link between the number of days of heavy rain and overall rainfall.

Snow Cover – The number of days of snow cover has reduced across the country. This is particularly prevalent in autumn where decreases of over 70% have been recorded (nearly 83% in western Scotland).

Drought – There has been very little change in the maximum number of consecutive dry days with little long term trends recorded since 1961. Overall there is a clear contrast in the number of consecutive dry days between east and west Scotland, but there would appear to be no significant changes since 1961.

Flooding – There is a clear trend of an increase in the levels of maximum five day precipitation (ie maximum recorded precipitation over a five day period in any year) of about 20%. A steady increase has been recorded across all Scotland. Increases in prolonged precipitation and rainfall intensity may lead to greater flooding.

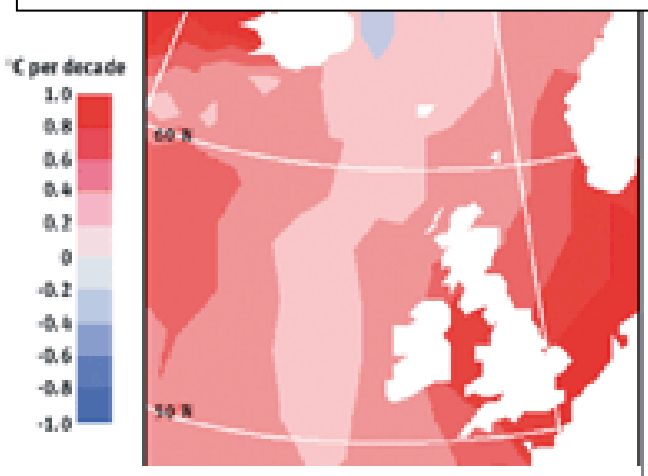
3.2.10 Other

There is no clear trend in windspeeds or number of gale days across the country. Since 1961, the number of sunshine hours in a day has increased slightly over the year, but a more significant increase is recorded across Scotland during autumn. While there are significantly different patterns of sunshine across the country, changes in those patterns appear not to show any trends.

3.2.11 The Marine Environment

The seas around Scotland have warmed by 1°C over the last 20 years . Warmer seas have prompted changes in composition, abundance and distribution of a number of marine species including plankton, fish, sea birds, whales, mammals, dolphins and porpoises. Warm water fish such as red mullet, sardines and anchovies have been caught off Scotland's coast since 1995[9]. Some plankton species, which form the basis of the marine food web, have migrated north by up to 10 degrees latitude (about 700 miles). Changes in plankton distribution and abundance have serious consequences not only for the marine ecosystem but for the ability

Figure 4 – Temperature Change in the Marine Environment 1981 - 2000



Source: *Scottish Ocean Climate Status Report 2002 – 2003,* Fisheries Research Services, 2005

[9] *Fisheries Research Service (2005) Scottish Ocean Climate Status Report*

Table 4 – Predicted Marine Environment Changes[10]

	WHAT IS ALREADY HAPPENING	WHAT COULD HAPPEN	CONFIDENCE
Temperature (air and sea)	• Sea surface temperature (SST) and air temperature over the sea within the mid-latitude North Atlantic and UK coastal waters have been rising by 0.2 – 0.6 ºC per decade over the past 30 years. • Warming is greatest within the English Channel and North Sea where temperatures have risen faster than land temperature. • Warming is also evident in waters of the upper 1500 m of the North Atlantic.	• Climate change models anticipate that SST will continue to rise in all waters around the UK coast, with stronger warming in the south-east (~0.15 – 0.4 ºC per decade in the southern North Sea) than the north-west (~0.05 – 0.2 ºC per decade at Rockall).	HIGH
Ocean salinity	• An increasing trend in surface salinity since 1995 around the North Atlantic is less evident in the UK shelf-seas. • Deep waters of the North Atlantic have freshened over the past 40 years.	• Difficult to predict, but changes in precipitation, evaporation, ocean circulation and ice melt have the potential to impact upon salinity.	LOW
Storms and waves	• There has been a greater incidence of severe winds and increasing wave heights (by about 2% per year) in western and northern UK territorial waters over the past 50 years.	• Different modelling approaches project different scales of change but indicate that wind strengths and wave heights will increase.	HIGH (present) LOW (future)
Large-scale oceanic processes	• The Atlantic Meridional Overturning Circulation (MOC) helps to maintain relatively mild temperatures in north-west Europe. Some observations suggest that the MOC has reduced in strength by up to 30% since the early 1990s. However, other studies disagree with this interpretation.	• Most climate models anticipate some reduction in strength of the MOC due to increased freshwater influence in high latitudes, but continue to show overall future warming of the UK climate. • An abrupt MOC shutdown leading to rapid cooling remains a high-impact, low-probability event. Our level of understanding is hampered by both model and observation limitations.	LOW
Sea level	• Global average sea level has risen during the 20th century by between 1 and 2 mm per year. Satellite measurements suggest the rise was around 3 mm per year between 1993 and 2003.	• During the 21st century it is likely that global average sea level will rise by between 9 and 88 cm, relative to 1990, but will not be uniform around the world. • The anticipated range of relative sea-level rise by the 2080s (relative to the 1961 – 1990 mean) is 20 to 80 cm in south-west England and 0 to 60 cm in Scotland.	MEDIUM
Acidification	• Ocean acidity has been relatively stable for over 20 million years. • The ocean is becoming more acidic as increasing atmospheric carbon dioxide (CO_2) is absorbed at the sea surface. Models suggest that surface pH has decreased by 0.1 pH unit since pre-industrial times.	• Model projections suggest that the change in average pH in UK waters this century will exceed its current range of variation. • The full impacts of acidification remain largely unknown but organisms such as corals, some plankton, shellfish and sea urchins are expected to become less able to produce calcareous parts, such as shells, by the middle of this century.	HIGH (for pH change)
Shelf-sea Stratification	• Stratification is the term used when the sea becomes layered due to changes in temperature and salinity with depth. The seasonal cycle of stratification in shelf-seas is subject to significant interannual variability in timing and strength. • Modelling suggests that over the last 40 years, the timing of peak stratification in the Irish Sea has become later by about 20 days.	• Possible changes in timing and strength of stratification. • Changes to rainfall seasonality and extreme events may impact stratification in areas of freshwater influence, such as estuaries.	LOW
Seabed (nearshore and offshore)	• Unknown. At present there are no changes definitely attributable to climate change.	• Changed sediment conditions at some coastal environments, such as partially enclosed lagoons and bar-built estuaries, may occur. • Sediment supply may be altered if climate change results in the modification, construction or removal of sea-defences.	LOW

[10] *Extract from Marine Climate Change Impacts Partnership (2006) Annual Report Card (www.mccip.org.uk/arc)*

of the oceans to absorb carbon dioxide and ultimately regulate the Earth's climate. The Marine Climate Change Impacts Partnership Annual Report Card 2006 (www.mccip.org.uk/arc) provides a summary of the predicted climate change effects on the marine environment. This summary is set out in Table 4 on the previous page. The Scottish Oceans Status Ocean Climate Status Report for 2004 and 2005[11] also provides further information about predicted changes.

3.2.12 Coastline

Sea level is rising all around the UK coastline, but at a slower rate around Scotland because the Scottish mainland is still rebounding following the last ice age. Nonetheless, all Scottish mainland gauges have recorded a sea level rise over the long term, with the longest individual record at Aberdeen indicating an average sea rise of 0.6mm per year since 1862. Sea level rise increases the risk of flooding of coastal and estuarine towns and leads to erosion of intertidal habitats and loss of biodiversity. This, combined with evidence of increasing storminess and wave height in the North East Atlantic, suggests that future storm surges will probably become more severe, leading to increased risk of coastal flooding.

3.3 Climate Change in Scotland - Predicted Impacts

This section summarises the likely evolution of Scotland's environment as a result of predicted impacts from climate change. This section is designed to meet the requirements of paragraph 2 of Schedule 3 to the Act

3.3.1 The speed and impact of climate change will be become more severe if we remain heavily dependent on fossil fuels. Indeed, it is predicted that temperatures in Scotland may rise by up to 4°C by the end of the century, with consequences including milder and wetter winters, hotter and drier summers, more extreme weather events and rising sea levels.

3.3.2 *Climate Change Scenarios for the United Kingdom: The UKCIP02 Scientific Report* presents four climate change scenarios. These scenarios are based on global emission scenarios from the Intergovernmental Panel on Climate Change (IPCC) and outputs from Hadley Centre climate models[12]. Due for release in 2008, *UKCIP08*[13] will introduce probabilities to climate predictions for the first time in order to improve risk assessment and management of climate change.

3.3.3 UKCIP02 predicts a number of impacts that may occur in the UK by 2080. The key findings of this work suggest:

- 1.5 to 2°C warmer in winter; up to 3.5°C warmer in summer; and possibly 4°C warmer in autumn. Summers will suffer some significant heat waves.
- Milder temperatures in winter will result in wetter conditions, with extremes of rainfall leading to serious flooding events.
- Precipitation will increase by over 30% in the east of the country and up to 20% in the west during the winter season. Conversely, summer rainfall will be around 40% less, particularly in the south and east of Scotland.

[11] *Available at www.frs-scotland.gov.uk*
[12] See: *www.metoffice.gov.uk/research/hadleycentre/models/modeltypes.html*
[13] *For details, see: www.ukcip.org.uk/scenarios/ukcip08/what_is_ukcip08.asp*

- Daily winter rainfall will increase by at least 20% for storms that normally occur only once every two years.
- Summer cloud cover will decrease by 10%, with a slight increase in winter cloud cover.
- Daily average wind speed is not likely to change significantly, although it could be up to 3% higher, particularly in the north west of Scotland. Meanwhile, the two year daily mean average wind speed could be up to 4% higher. If this increase applies to storm gusts, considerably more damage to infrastructure will be inevitable.
- Snowfall across much of Scotland will decrease by over 90%.
- Sea level will rise by approximately 60cm around Scotland's coastline and storm surges could be up to 0.7m higher, resulting in higher risks of coastal flooding.
- Sea surface temperature will be 1°C to 2.5°C warmer; the greatest increase being off South East Scotland.
- The frequency of high impact weather events will increase with rising average global temperature

3.4 Implications for Scotland

3.4.1 This section sets out the possible effects of predicted climate change on Scotland, with particular reference to the SEA topics proposed to be covered in the SEA.

3.4.2 Water

Flooding[14] - It is likely that with increased average rainfall, increased rainfall intensity and prolonged periods of rain, that more frequent and more severe river flooding will occur. It is estimated that this may affect more than 70,000 properties, many of which are concentrated within particular areas of risk. In addition, with higher sea levels and increased wave height, it is predicted that coastal flooding in Scotland will become both more frequent and more severe. It is predicted that a further 30000 properties could be at risk from this source of flooding. Flooding can have very significant effects on property, businesses, agriculture and can be a risk to life.

Droughts – Long term predictions are for an increased likelihood of summer droughts. While the observed impacts in Scotland have not borne this prediction out, if realised, this could result in river water quality problems (caused by lack of flow), limitations on abstraction of water (particularly for agricultural use) and even possible problems with water supply.

Water quality – Increased flood events and the potential for summer time droughts may result in water quality issues that need to be addressed. For example, reduced river flows during drought periods will provide less dilution for aquatic discharges which may increase pollution risk. Reduced river flows may also affect abstraction for drinking water or for commercial use. Conversely, increased flooding may increase run off of pollutants (eg from agricultural land) into waterbodies and which may affect their status – eg run off impacting on bathing water quality.

The marine environment – It is predicted that sea levels will rise, that there may be increased wave heights (particularly during storms) and that sea temperatures around Scotland will rise. While the consequences of these are difficult to predict, it is possible that greater coastal erosion will result from higher sea levels and wave heights. This in turn may lead to land and habitat loss on land. In the marine environment, increased sea temperature may result in changes to the distribution and abundance of marine biodiversity. This may result in the increase of some species and the decrease or even loss of others (with warmer water species replacing colder water species). This may in turn affect other species – eg

[14] *For further details about flooding in Scotland go to: www.sepa.org.uk/flooding*

the recent poor breeding of Scottish Island seabirds. Changes in marine species may also affect economic activities such as commercial fisheries.

3.4.3 **Biodiversity**

Climate change predictions for the UK suggest that as the environment changes, biodiversity will be significantly affected. It is still not exactly clear how biodiversity in Scotland will be affected or how species will adapt to climate change, but it is suggested that there will be the potential for:

- Changes in the abundance and distribution of species;
- Changes in the length of growing and breeding seasons;
- Higher temperatures to be less favourable for native species, while new species may appear. New species may compete with native species for food and habitat;
- High intensity rainfall and flooding to cause destruction to river habitat
- Increased erosion resulting in loss of habitat
- Disruption to food chain with potential catastrophic loss of species (e.g. island breeding sea bird populations)

In addition, climate change mitigation measures may also have biodiversity impacts. Renewable energy developments could for example have effects on aquatic species and habitats (for hydro and run of river schemes) or on bird populations (for large scale wind). An increase in use of land for growing biomass crops may also lead to biodiversity effects.

3.4.4 **Land**

As the climate changes, the land and soil will also likely be subject to change, in terms of their physical properties, their quality and the way in which we use land for growing crops or for other commercial activities. The physical structure of soil may be changed through drought combined with higher intensity storm events causing landslides. In particular, peaty soils may suffer from accelerated decomposition (through drying) which may result in an increase in emissions of greenhouse gases normally locked up in these soils which in turn may fuel further climate change. Land may also be lost through erosion caused by water (eg through flooding, particularly coastal flooding) or by wind (particularly when associated with drying of soils).

Damage to soils (for example by landslide) can lead to significant disruption of human activities, particularly where transport infrastructure is affected. Changes to the climate may also lead to significant changes in the way that land is used. This is most likely to occur in respect of the types of crops able to be grown in Scotland, where crops previously unsuited to the climate may be able to be commercially grown and some crops may be less suited to new conditions.

Another feature which may affect land and soil are measures to adapt to climate change. For example, biomass crops to offset fossil fuel use may become increasingly grown, replacing traditional crops. This may in turn have impacts for landscape and biodiversity. Further, the need to protect land from flooding may also result in changes to land use, with some areas left as sacrificial land (eg flood meadows) while other areas requiring new or upgraded defences.

3.4.5 **Population and Human Health**

It is likely that climate change will have effects upon communities and individuals in terms not just of their day to day activities, but also potential their health. Disruption caused by severe weather and flooding can lead to significant impacts upon stress levels and therefore upon health. Such events can also make access to health services more difficult. Other

restrictions – eg in water supply during drought and flood periods – can also lead to increased disruption and stress. While the prediction of warmer winters may lower winter mortality and fuel poverty, the predicted warmer summers could lead to increase in incidences of heat stress. Very hot summers such as those experienced in 2003 – which contributed to the death of about 35000 people across Europe - are predicted to be more common, although very extreme temperatures are considered less likely to affect Scotland, although heat related respiratory illnesses for example may increase.

The economic cost of climate change will also affect communities and individuals and this may also contribute to stress related health problems. The Stern Report[15] estimated that the cost of extreme weather alone is expected to be 0.5 – 1% of the world's GDP by about 2050.

3.4.6 Air quality

Direct effects of climate change on air quality are likely to be less significant than for other SEA topics such as water or biodiversity. However some effects that may be experienced include an increase in summertime photochemical smog linked to increasing temperatures and small reductions in cloud cover. It is likely that the frequency of wintertime air quality pollution events will reduce.

Indirectly, measures to mitigate climate change (such as improving the efficiency of buildings, reducing vehicle emissions, increasing energy derived from renewables etc) – may result in improvements in air quality generally and in specific areas.

3.4.7 Climatic Factors (Weather Patterns)

Many of the predicted weather related effects have been described above. Overall, it is expected that the weather will become more erratic and therefore less predictable, with a greater likelihood of extreme events including increased storm and flood damage .

3.4.8 Landscape

Landscape will likely be affected by climate change predominantly due to the changes in land use that may result from both mitigation and adaptation measures. With respect to mitigation, landscape changes may result from measures such as increased growing of biomass crops and from on shore renewable energy developments, particularly windfarms and hydro/run of river schemes. Significant environmental effects from such proposals will be identified as part of the consenting processes and will not be considered in this SEA. With respect to adaptation, landscape impacts may result from measures such as flood prevention schemes and coastal defences. Managed realignment of coastal areas to adapt to flood risk may offer opportunities for landscape enhancement. It is possible that some landscape features, particularly those in coastal locations and therefore vulnerable to erosion, may be threatened by the effects of higher sea levels and higher wave heights.

3.4.9 Cultural Heritage

Direct effects of climate change on cultural heritage are likely to be less significant than for other SEA topics, but there is, as for landscape, the potential for impacts derived from measures to mitigate and to adapt to climate change and from its actual effects. With respect to mitigation, cultural heritage impacts may result from measures such as on or off shore renewable energy developments, particularly windfarms, biomass production, microrenewables and hydro/run of river schemes. Significant environmental effects from

[15] www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/stern_review_report.cfm

such proposals will be identified as part of the consenting processes and will not be considered in this SEA. With respect to adaptation, cultural heritage impacts may result from measures such as flood prevention schemes and coastal defences, which have the potential to impact upon specific features which are afforded protection. It is possible that some cultural heritage features, particularly those in coastal locations or adjacent to rivers and therefore vulnerable to erosion, may be threatened by the effects of higher sea levels, increased wave heights and increased occurrence and severity of riverine flooding.

3.4.10 **Material Assets**

Extreme weather events, flooding and subsidence are predicted to lead to increased damage to buildings and infrastructure, which may in turn increase disruption and cost. Existing flood and coastal defences may require to be upgraded to take account of increased levels of risk caused by climate change. It is likely that new defences will be required to protect vulnerable communities and key infrastructure such as emergency services, sites providing power and water, and the transport network.

CHAPTER 4.

ASSESSMENT OF ENVIRONMENTAL EFFECTS OF THE CCP, INCLUDING REASONABLE ALTERNATIVES

This section of the Environmental Report is designed to meet the requirements of paragraphs 6 and 8 of Schedule 3 of the Environmental Assessment (Scotland) Act 2005. Namely, an assessment of the environmental effects of the CCP for SEPA, including an outline of the reasonable alternatives dealt with.

CHAPTER 4 - PART 1 - ASSESSMENT METHOD

4.1 Scope of Assessment

4.1.1 A process called "Scoping" is required prior to the completion of an Environmental Report. This is a statutory stage of SEA and requires SEPA to consult with the Consultation Authorities on the proposed scope and level of detail of the SEA and on its proposed approach to the assessment.

4.1.2 A scoping report was submitted on 10th August 2007. The scoping stage confirmed which SEA topics[16] listed in Schedule 3 of the Act will be considered in the assessment. In the Scoping Report, SEPA proposed that all SEA topics be assessed in the Environmental Report as the CCP is likely to result in significant effects on them all.

4.1.3 The issues raised by the consultation authorities at the Scoping stage and how they have been taken into account by SEPA are summarised in Appendix 2. Historic Scotland in its response queried whether the historic environment should be scoped into the assessment given the limited effect that the CCP was likely to have on this topic. As a result it has been scoped out of the assessment.

4.2 SEA Checklist

4.2.1 Schedule 3 of the Environmental Assessment (Scotland) Act requires that the likely significant environmental effects of implementing the plan are identified and assessed. This extends to include short, medium and long term effects, permanent and temporary effects, positive and negative effects and secondary, cumulative and synergistic effects. To undertake this assessment, a simple checklist was used which assesses each part of the plan against a set of objectives which cover the range of environmental topics identified in table 6 below. This high level approach to the assessment is commensurate with the strategic nature of the CCP.

4.2.2 The use of a SEA checklist and objectives is not a requirement of the Act, however their use is widely adopted as a tool for helping identify and evaluate the significant environmental effects of a plan. In this assessment, the SEA objectives (set out as a series of questions) describe a set of desired outcomes and are designed to test whether the various actions proposed in the CCP are likely to move towards or away from that objective. These objectives have been derived from the requirement to cover a range of environmental issues which are set out in the Environmental Assessment (Scotland) Act. The SEA objectives used in this assessment are summarised in table 6 below.

[16] The full list of SEA topics described in the legislation is provided in the glossary

4.2.3 A full description of the how the checklist was used and copies of all completed checklists are set out in Part 2 of this Chapter.

Table 5 –Assessment Checklist

For Each Part of the CCP…(eg Monitoring and Analysis)				
BOX A: - SEA TOPIC (eg AIR)				**BOX B** – SEA Objective – Each part of the plan is tested again each of the 17 Objectives listed below
BOX C: Score	☑ o ☒ ?	**BOX D: Timescale**	**S/M/L**	
BOX E – Comments are given to justify the scores given in box B with respect to the contribution that each part of the . Commentary is also made where appropriate on the timescales for the effects and the potential for cumulative or other types of effects.				
BOX F - Summary				**Box G - Mitigation Recommendations**
After each part of the plan has been assessed against each objective, a summary about the overall contribution that part of the plan is making to the objectives as a whole is provided.				Where appropriate, recommendations for mitigating

4.2.4 **BOX A. SEA Topic** – This box identifies which SEA topics the checklist is covering. Note, the SEA topic cultural heritage is missing as this SEA topic was scoped out of the assessment following consultation with Historic Scotland.

4.2.5 **BOX B. Objectives** – This box describes the objective against which each part of the CCP is being assessed. The objectives used are described in table 6 below.

Table 6 – SEA Objectives Used in this Assessment

SEA Objectives	
AIR	Will the CCP contribute to improving air quality and meeting national air quality objectives?
WATER	Will the CCP contribute to the protection and enhancement of waterbodies?
	Will the CCP contribute to reduction of flood risk?
SOIL	Will the CCP contribute to the protection of soil quality and function ?
	Will the CCP contribute to reduction in rates of contaminated and derelict land?
CLIMATIC FACTORS	Will the CCP contribute to reduction in greenhouse gas emissions?
	Will the CCP contribute to effective adaptation to climate change?
BIO-DIVERSITY	Will the CCP contribute to implementing the Scottish Biodiversity Strategy?
HUMAN HEALTH	Will the CCP contribute to objectives for protecting and enhancing human health
LANDSCAPE	Will the CCP contribute to the protection and enhancement of areas of landscape, amenity and recreational value?
MATERIAL ASSETS	Will the CCP promote appropriate use of renewable resources?
	Will the CCP reduce energy consumption and promote efficiency?
	Will the CCP reduce waste and encourage reuse and recycling?
Wider Considerations	
OTHER	Does the CCP apply the “polluter pays” principle?
	Is the CCP in line with objectives for environmental justice?
	Does the CCP apply the precautionary principle where relevant scientific information does not exist?

4.2.6 **BOX C. Assessment** – this column evaluates the contribution each part of the corporate plan will make to achieving each objective. The assessment is simple and high level and sets out where the plan:

(a) is making a significant positive contribution [☑☑],

(b) is making a minor positive contribution [☑]

(c) is strongly moving away from the desired objective [☒☒],

(d) is slightly moving away from the desired objective [☒],

(e) may have both positive and negative effects [☑/☒]

(f) has no significant relationship with the objective [**O**], and

(g) may have an effect on the topic but its nature and extent are unknown [?].

4.2.7 **BOX D. Short, Medium and Long Term Effects** – This column will record whether the effects are likely to be short, medium or long term.

4.2.8 **BOX E. Comments** – This section gives a reason for the score in box B and records other information as required.

4.2.9 **BOX F. Summary** – This section summarises the overall effects of each part of the CCP taking into account the specific effects recorded against each of the environmental objectives.

4.2.10 **BOX G. Mitigation Recommendations** – This section describes mitigation options to offset or as far as possible reduce adverse effects which have been identified.

4.2.10 One checklist has been completed for each part of the plan that has been assessed (see table 3 on page 22 and 4.3 below).

4.3 Level of Detail of the Assessment

4.3.1 As noted in Chapter 2 of this Report, the CCP for SEPA is a document comprised of several parts. The scoping stage agreed which parts of the plan were to be assessed and in what level of detail. The following components of the Plan are assessed in this Environmental Report:

- Strategic Vision and Aims and Objectives (assessed together)
- Longer Term Actions (assessed by the following groupings)
    - Monitoring and Analysis
    - Regulation
    - Advice to Operators
    - Greening SEPA
    - Informing and Influencing
    - Attitudes

4.3.2 Each of these parts of the CCP has been assessed using the checklist shown in table 4.. Recognising the high level strategic nature of the CCP, the actions have not been assessed individually, but rather as groups of activities as shown above. This allowed the combined

effects of measures to be identified in order to assess their effectiveness. Accordingly, 7 checklists have been produced. The outcomes of these assessments are set out in the checklists in part 2 of this chapter.

4.4 Alternatives

4.4.1 Other than preparing the CCP for SEPA, the only other alternative considered at this stage has been to carry out individual actions without the benefit of a co-ordinating plan or strategy. This would incur risks of overlaps, gaps and losses of synergy and efficiencies with other activities. Brief commentary on these two alternatives and how they compare has been provided in paragraph 4.20 and table 8 of this Environmental Report. These are also compared against SEPA not undertaking climate change activities beyond those it is statutorily bound to do.

PART 2 - ASSESSMENT FINDINGS – COMPLETED ASSESSMENT MATRICES

STRATEGIC VISION, AIMS AND OBJECTIVES

5. **STRATEGIC AIMS & OBJECTIVES**

5.1 We will ensure that our scientific monitoring and assessment activities are reviewed, as a priority, to ensure that they remain fit for purpose, in the light of current and predicted future climate change, and help inform Scotland's of the associated risks and impacts.

5.2 We will review all of our regulatory activities over the life of the plan to ensure that the impacts of, and on, climate change are fully considered when determining environmental permits and taking regulatory decisions.

5.3 We will give prominence to climate change issues in our advice to businesses and others. Our advice will be effective, consistent and timely, and will be developed, where appropriate, in partnership with other agencies.

5.4 We will seek to maximise and periodically review all reasonable opportunities to reduce greenhouse gas emissions from all of SEPA's activities.

5.5 We will seek to influence the decisions of others, including government and businesses, so that the environmental, economic and social consequences, risks and opportunities of climate change are fully considered. This should help to enable substantial progress on transport, buildings, agriculture, energy generation and industrial activities by 2012.

5.6 We will develop SEPA's role as an education and information provider and as a prominent public voice on climate change issues. We will work with the Scottish Government and others to make measurable progress in raising awareness and understanding of climate change, adoption of effective mitigation and adaptation measures and in developing positive attitudes to tackling climate change.

Strategic Vision, Aims and Objectives

5.1 AIR				Will the CCP contribute to improving air quality and meeting national air quality objectives?
Score	☑☑ ☒	**Timescale**	**M/L**	

Reasons for ☑☑

The CCP seeks to reduce SEPA's emissions from its own activities. It also seeks to use SEPA's influence to make industry, business and transport more efficient. It is therefore expected that the CCP will make a positive contribution to air quality. In particular, actions in the CCP under the following headings will significantly contribute to this objective:

8.1 – Monitoring and Analysis
8.2 – Regulation
8.3 - Advice to Operators
8.5 – Informing and Influencing

Reasons for ☒

In some areas there may be conflict between the need for SEPA to require abatement technology when regulating industry to protect or improve air quality and the need to reduce GHG emissions from this source. Measures to address this potential conflict are set out at the bottom of this table.

5.1 WATER				Will the Climate Change Plan contribute to the protection and enhancement of waterbodies?
Score	☑☒	**Timescale**	**M/L**	

Reasons for ☑

In parallel with a drive for more sustainable development from other, wider, policy initiatives, it is expected that SEPA's CCP and other targets will generally improve the water environment. In particular, actions in the CCP under the following headings will significantly contribute to this objective:

8.1 – Monitoring and Analysis
8.2 – Regulation
8.3 - Advice to Operators
8.5 – Informing and Influencing

Reasons for ☒

However, in some areas there may be a conflict between the need for SEPA to require abatement technology when regulating industry to remove a pollutant and the need for energy reduction to reduce GHG emissions. Measures to address this potential conflict are set out in box G (mitigation) below.

5.1 WATER				Will the Climate Change Plan contribute to reduction of flood risk?
Score	☑☑	**Timescale**	**M/L**	

Reasons for ☑☑

It is expected that climate change will lead to increased flooding, requiring us to adapt to this by improved and more sustainable flood management. The fundamental aims of the climate change plan are to mitigate and adapt to climate change and accordingly the CCP, along with SEPA's established flooding duties, should make a significant contribution.

In particular, actions in the CCP under the following headings will significantly contribute to this objective:

8.1 – Monitoring and Analysis 8.2 – Regulation 8.3 - Advice to Operators
8.5 – Informing and Influencing

5.1 SOIL				Will the Climate Change Plan contribute to the protection of soil quality and function ?
Score	☑☑	**Timescale**	**M/L**	

Reasons for ☑☑

The impact of a changing climate on Scottish soils, and the likely release of carbon from our carbon rich soils has further highlighted the need for soil protection, monitoring and management.

In particular, actions in the CCP under the following headings will contribute to this objective:

8.1 – Monitoring and Analysis 8.2 – Regulation 8.3 - Advice to Operators
8.5 – Informing and Influencing

5.1 SOIL				Will the Climate Change Plan contribute to reduction in contaminated and derelict land?
Score	o	**Timescale**	**o**	

Although there may be some indirect effects derived from long term protection of soils, the CCP is unlikely to make a significant contribution to this objective, although SEPA's land use planning liaison role will be useful in this context.

5.1 CLIMATIC FACTORS				Will the Climate Change Plan contribute to reduction in greenhouse gas emissions?
Score	☑☑	**Timescale**	**M/L**	

Reasons for ☑☑

The fundamental purpose of the CCP is to ensure that reduction in greenhouse emissions are considered in every activity SEPA undertakes, and to maximise our effectiveness in this area.

All of the proposed actions will contribute significantly to this objective

5.1 CLIMATIC FACTORS				Will the Climate Change Plan contribute to effective adaptation to climate change?
Score	☑☑	**Timescale**	**M/L**	

Reasons for ☑☑

The fundamental purpose of the CCP is to ensure that the risks and impacts of climate change are considered in every activity SEPA undertakes, and to maximise our effectiveness in this area.

All of the proposed actions will contribute significantly to this objective

5.1 BIODIVERSITY				Will the Climate Change Plan contribute to implementing the Scottish Biodiversity Strategy?
Score	☑	**Timescale**	**M/L**	

Reasons for ☑

By ensuring that SEPA considers mitigation and adaptation measures to climate change in all it decision making, the CCP should support and enhance the agency's contribution to protecting and enhancing biodiversity.

In particular, actions in the CCP under the following headings will contribute to this objective:

8.1 – Monitoring and Analysis 8.2 – Regulation 8.3 - Advice to Operators
8.5 – Informing and Influencing

5.1 HUMAN HEALTH				Will the Climate Change Plan contribute to objectives for protecting and enhancing human health
Score	☑	**Timescale**	**M/L**	

Reasons for ☑
The CCP requires that SEPA considers mitigation and adaptation measures to climate change in all it decision making. Accordingly, the CCP should support and enhance the agency's work in protecting human health.

In particular, actions in the CCP under the following headings will contribute to this objective:

8.1 – Monitoring and Analysis 8.2 – Regulation 8.3 - Advice to Operators
8.5 – Informing and Influencing

5.1 LANDSCAPE				Will the Climate Change Plan contribute to the protection and enhancement of areas of landscape, recreational or amenity value
Score	**O**	**Timescale**	**O**	

The activities in the CCP will not likely make any significant contribution to this objective. It is possible that some actions in the CCP will indirectly contribute to activities which may lead to landscape effects. Eg, support for renewable energy to reduce greenhouse gas emissions may make an indirect contribution to an increase in biomass production in Scotland (although the contribution of the CCP will be minor compared to other drivers) which would have landscape effects. The extent of effects are however very uncertain and these effects should be considered in SEA of other plans – eg SNH's biomass policy.

5.1 MATERIAL ASSETS				Will the Climate Change Plan promote appropriate use of renewable resources?
Score	☑ ☒	**Timescale**	**M/L**	

Reasons for ☑
The CCP requires that SEPA considers climate change impacts in all it decision making. Accordingly, the CCP should support the reuse of materials and will promote sustainable consumption and production. In particular, actions in the CCP under the following headings will contribute to this objective:

8.1 – Monitoring and Analysis 8.2 – Regulation 8.3 - Advice to Operators
8.5 – Informing and Influencing

Reasons for ☒
The CCP though makes little reference to renewable energy, which is a potential omission from a plan of this nature. Recommend consideration of some coverage of this issue. Mitigation measures to address this are set out at the bottom of this table.

5.1 MATERIAL ASSETS				Will the Climate Change Plan reduce energy consumption and promote efficiency?
Score	☑☑	**Timescale**	**M/L**	

Reasons for ☑☑

This plan supports and improves SEPA's role in seeking to ensure that Scottish businesses and society is as energy efficient as possible. In particular, actions in the CCP under the following headings will significantly contribute to this objective:

8.1 – Monitoring and Analysis 8.2 – Regulation 8.3 - Advice to Operators
8.5 – Informing and Influencing

5.1 MATERIAL ASSETS				Will the Climate Change Plan reduce waste and encourage reuse and recycling?
Score	☑	**Timescale**	**M/L**	

Reasons for ☑

The CCP requires that SEPA considers climate change impacts in all its decision making. Accordingly, the

CCP should support the reuse of materials and will promote sustainable consumption and production. In particular, actions in the CCP under the following headings will contribute to this objective:

8.1 – Monitoring and Analysis 8.2 – Regulation 8.3 - Advice to Operators
8.5 – Informing and Influencing

Wider Considerations

Score	☑	Timescale	M/L	Will the Climate Change Plan apply the "polluter pays" principle?

Reasons for ☑
The climate change plan seeks to ensure that climate change is considered in execution of SEPA's powers and duties many of which apply the polluter pays principle.

Score	☑	Timescale	M	Is the Climate Change Plan in line with objectives for environmental justice?

Reasons for ☑
Climate change may lead to environmental injustices at a wide range of levels. It may also exacerbate environmental justice issues already being experienced. By ensuring that climate change is considered in the execution of SEPA's powers and duties, the plan supports the objectives of environmental justice. There may be a risk that development of renewable energy sources may lead to environmental effects at the local level and affecting local communities (eg energy production from incineration of waste or biomass). The effects of these will need to be controlled through regulation of such processes by SEPA.

Score	☑	Timescale	M	Will the Climate Change Plan apply the "precautionary principle"?

Reasons for ☑
The CCP itself is a precautionary approach to the uncertainties of climate change and how they may affect SEPA's activities and Scotland's environment. SEPA has a general presumption in favour of considering the precautionary principle. Many of the impacts of climate change are presently a risk based approach.

Summary	Mitigation Recommendations
Overall, the CCP strategic vision and aims and objectives are likely to lead to significant positive effects on the environment, particularly in respect of climatic factors, air quality, flood risk management and resource efficiency. This is unsurprising given the objective of the CCP to provide a framework for SEPA to positively contribute to mitigating and adaptation to climate change. One challenge that this assessment has thrown up is the potential conflict between SEPA's regulatory activities and its climate change objectives. Through its regulation of processes that may result in emissions to air, water or land, SEPA may require the installation of abatement technologies that reduce the impact of those processes on the receiving environment. While these are an important part of protecting the environment, some can be extremely energy intensive and have climate change implications in terms of increased greenhouse gas emissions. The CCP recognises this and seeks to address this potential conflict in activities 8.2.1 and 8.2.3 for example. It will be extremely important that potential effects on air and water quality in particular from balancing emission controls with climate change objectives are fully considered.	Measures that should be considered are: • SEPA develops a method for allowing potential conflicts between regulatory objectives and climate change objectives to be reconciled. This should build upon the SNIFFER project UKPIR11: Minimising Greenhouse Gas Emissions From Environmentally Regulated Industry • Activities 8.2.1 and 8.2.3 to review regulatory activities will provide a framework for identifying those areas where environmental protection and climate change objectives can be better integrated. • SEPA should consider making more specific reference to renewable energy in the CCP with particular reference to how the agency can influence the scale, location and nature renewable energy developments and how it can contribute to renewables policy.

LONGER TERM ACTIONS (2008-12) – Monitoring and Analysis

8.1 MONITORING AND ANALYSIS

8.1.1 We will review all aspects of our scientific monitoring, analyses and assessment activities for all environmental media and functions, including chemistry, ecology, hydrology and marine science, identify gaps such as soil monitoring and analyses and promote and seek improvements including data sharing to enhance our ability to report on and manage the environment for a changing climate.

8.1.2 To keep pace with the evolving science of climate change prediction and trend observations we will assess and periodically review the robustness of the models and tools that we use to support our regulatory and permitting processes (for example, consequences of changes in rainfall for river flows and implications for the regulation of water use activities). Strategic monitoring reviews will incorporate environmental parameters to enhance our understanding of climate change trends and impacts and will endeavour to ensure that our monitoring effort does not impact unnecessarily upon climate change.

8.1.3 We will explore new systems for flood message dissemination including the national Flood Early Warning System.

8.1.4 We will use the Scottish Pollutant Release Inventory as a tool to improve understanding of greenhouse gas emissions and the carbon footprint of Scotland's regulated industry and for comparison with other key Scottish emission sources.

Longer Term Actions (2008-12) – Monitoring and Analysis

8.1 - AIR				Will the Climate Change Plan contribute to improving air quality and meeting national air quality objectives?
Score	☑☑	**Timescale**	**L**	

Reasons for ☑☑

Monitoring and analysis of trends indicative of climate change will help SEPA to assess what additional action or measures may be required to protect and enhance air quality. It is therefore expected that this part of the CCP will, in the long term, make a positive contribution to air quality.

In particular the following "monitoring and analysis" actions will significantly contribute to this objective:

8.1.1 – Review of monitoring activities
8.1.2 – Review robustness of regulatory models and tools
8.1.4 – Use SPRI to improve understanding of GHG emissions

8.1 - WATER				Will the Climate Change Plan contribute to the protection and enhancement of waterbodies?
Score	☑☑	**Timescale**	**L**	

Reasons for ☑☑

Monitoring and analysis of trends indicative of climate change will help SEPA to assess what additional action or measures are required to protect and enhance water. It is therefore expected that this part of the CCP will, in the long term, make a positive contribution to water quality.

In particular the following "monitoring and analysis" actions will significantly contribute to this objective:

8.1.1 – Review of monitoring activities
8.1.2 – Review robustness of regulatory models and tools

8.1 - WATER				Will the Climate Change Plan contribute to reduction of flood risk?
Score	☑☑	**Timescale**	**L**	

Reasons for ☑☑

Improved trend analysis of river flows, research etc will improve SEPA's ability to identify future flood risk and adopt effective sustainable flood management practices. It is therefore expected that this part of the CCP will in the long term make a positive contribution to reducing the risk to life and property from flooding through good knowledge and effective dissemination of flood data and warnings.

In particular the following "monitoring and analysis" actions will significantly contribute to this objective:

8.1.1 – Review of monitoring activities
8.1.2 – Review robustness of regulatory models and tools
8.1.3 – Explore new systems for flood message / warning dissemination

8.1 - SOIL				Will the Climate Change Plan contribute to the protection of soil quality and function ?
Score	☑☑	**Timescale**	**L**	

Reasons for ☑☑
Monitoring and analysis of trends indicative of climate change will help SEPA to assess what additional action or measures are required to protect and enhance soil. It is therefore expected that this part of the CCP will, in the long term, make a positive contribution to protecting soil quality and function. Eg It will contribute to determining net balance of carbon in soil stocks, and identifying vulnerable soils that need protection etc

In particular the following "monitoring and analysis" actions will significantly contribute to this objective:

8.1.1 – Review of monitoring activities
8.1.2 – Review robustness of regulatory models and tools

8.1 - SOIL				Will the Climate Change Plan contribute to reduction in contaminated and derelict land?
Score	**O**	**Timescale**	**O**	

Although there may be some indirect effects derived from long term protection of soils, this part of the CCP is unlikely to make a significant contribution to this objective

8.1 - CLIMATIC FACTORS				Will the Climate Change Plan contribute to reduction in greenhouse gas emissions?
Score	☑☑	**Timescale**	**L**	

Reasons for ☑☑
Increased monitoring activity may contribute slightly more to SEPA's overall carbon footprint (eg for travel to monitoring sites or power for monitoring equipment) but the aim of other parts of the CCP (eg activities in "Greening SEPA" (8.4)) is to reduce SEPA's net footprint. The effect of this is likely to be small (hence no negative effect has been recorded), but it is important that any increase in emissions from increased monitoring is factored into activities to reduce SEPA's overall footprint.

Overall, monitoring and analysis of trends indicative of climate change will help assess what additional action or measures are required by SEPA and others to address climate change. Eg. GHG inventory and identification of significant emission sources will assist development of reduction targets

In particular the following "monitoring and analysis" actions will significantly contribute to this objective:

8.1.1 – Review of monitoring activities
8.1.2 – Review robustness of regulatory models and tools
8.1.4 – Use SPRI to improve understanding of GHG emissions

8.1 - CLIMATIC FACTORS				Will the Climate Change Plan contribute to effective adaptation to climate change?
Score	☑☑	**Timescale**	**L**	

Reasons for ☑☑
Monitoring and analysis of trends indicative of climate change will help assess what additional action or measures are required by SEPA and others to address climate change. Eg Monitoring results and trend analysis, extreme events etc will all help plan for more efficient water use in drought prone areas, flood preparedness etc.

In particular the following "monitoring and analysis" actions will significantly contribute to this objective:

8.1.1 – Review of monitoring activities
8.1.2 – Review robustness of regulatory models and tools

8.1 - BIODIVERSITY				Will the Climate Change Plan contribute to implementing the Scottish Biodiversity Strategy?
Score	☑☑	**Timescale**	**M**	

Reasons for ☑☑

Monitoring and analysis of trends indicative of climate change will help assess what additional action or measures are required to protect and enhance biodiversity. It is therefore expected that this part of the CCP will contribute to understanding how to protect biodiversity from the effects of climate change E.g. Identify constraints to habitat networks, species at risk, threats from alien species, and identify opportunities to enhance biodiversity through the range of SEPA's functions.

In particular the following "monitoring and analysis" actions will significantly contribute to this objective:

8.1.1 – Review of monitoring activities
8.1.2 – Review robustness of regulatory models and tools

8.1 - HUMAN HEALTH				Will the Climate Change Plan contribute to objectives for protecting and enhancing human health
Score	☑☑	**Timescale**	**M**	

Reasons for ☑☑
Monitoring and analysis of trends indicative of climate change will help assess what additional action or measures are required to protect and enhance human health. It is therefore expected that this part of the CCP will contribute to protecting human health from the effects of climate change. Eg - Local air quality maps assist in identifying at risk communities, development of new systems for flood message/warning dissemination, and development of quality of life indicators will enable long term monitoring of quality of life.

In particular the following "monitoring and analysis" actions will significantly contribute to this objective:

8.1.1 – Review of monitoring activities
8.1.2 – Review robustness of regulatory models and tools
8.1.3 – Explore new systems for flood message / warning dissemination

8.1 - LANDSCAPE				Will the Climate Change Plan contribute to the protection and enhancement of areas of landscape, recreational or amenity value
Score	o	**Timescale**	**o**	

The activities in this part of the CCP will not likely make any significant contribution to this objective. It is possible that some actions in the CCP will indirectly contribute to activities which may lead to landscape effects. Eg, support for renewable energy to reduce greenhouse gas emissions may make an indirect contribution to an increase in biomass production in Scotland (although the contribution of the CCP will be minor compared to other drivers) which would have landscape effects. The extent of effects are however very uncertain and these effects should be considered in SEA of other plans.

8.1 - MATERIAL ASSETS				Will the Climate Change Plan promote appropriate use of renewable resources?
Score	☑/o	**Timescale**	**M**	

Reasons for ☑/o
Improved monitoring and analysis should improve information which will help SEPA to identify where use of renewable resources is most appropriate. The contribution of this part of the CCP to this objective will be quite minor however.

In particular the following monitoring and analysis" actions may contribute to this objective:

8.1.1 – Review of monitoring activities
8.1.2 – Review robustness of regulatory models and tools

8.1 - MATERIAL ASSETS				Will the Climate Change Plan reduce energy consumption and promote efficiency?
Score	☑/o	**Timescale**	**M**	

Reasons for ☑/o
Improved monitoring and analysis should improve information which will help SEPA to identify where reductions in its energy consumption can be made. The contribution of this part of the CCP to this objective will be quite minor however.

In particular the following monitoring and analysis" actions may contribute to this objective:

8.1.1 – Review of monitoring activities
8.1.2 – Review robustness of regulatory models and tools

8.1 - MATERIAL ASSETS				Will the Climate Change Plan reduce waste and encourage reuse and recycling?
Score	**o**	**Timescale**	**o**	

This part of the CCP is unlikely to make a significant contribution, although better monitoring may help SEPA identify ways in which it can reduce waste (and therefore production of greenhouse gases).

8.1 - WIDER CONSIDERATIONS				Will the Climate Change Plan apply the "polluter pays" principle?
Score	**☑/o**	**Timescale**	**M**	

Reasons for **☑/o**
Improved monitoring and analysis may help drive targeted reduction programmes for the biggest greenhouse gas contributors or the least efficient energy users for example. The contribution of this part of the plan will, though, be minor.

8.1 - WIDER CONSIDERATIONS				Is the Climate Change Plan in line with objectives for environmental justice?
Score	**☑/o**	**Timescale**	**M**	

Reasons for **☑/o**
Monitoring and analysis will improve information and determination of "at risk" communities to assist more equitable share of burden within society.

8.1 - WIDER CONSIDERATIONS				Will the Climate Change Plan apply the "precautionary principle"?
Score	**☑/o**	**Timescale**	**M**	

Reasons for **☑/o**
Monitoring and analysis activities under this part of the CCP will be conducted to improve scientific information and fill gaps, thereby improving the certainty of decision making.

CCP SECTION 8.1- SUMMARY	MITIGATION RECOMMENDATIONS
The monitoring and analysis activities are likely to make a significant contribution to many of the SEA objectives, particularly air, water, flood risk management, soil, climatic factors, biodiversity and human health. One challenge that this assessment has thrown up is the potential conflict between SEPA's regulatory activities and its climate change objectives. Through its regulation of processes that may result in emissions to air, water or land, SEPA may require the installation of abatement technologies that reduce the impact of those processes on the receiving environment. While these are an important part of protecting the environment, some can be extremely energy intensive and have climate change implications in terms of increased greenhouse gas emissions. The CCP recognises this and seeks to address this potential conflict in activities 8.2.1 and 8.2.3 for example. It will be extremely important that potential effects on air and water quality in particular from balancing emission controls with climate change objectives are fully considered.	Measures that should be considered are: • There is a small possibility that additional monitoring may lead to an increase in SEPA's greenhouse gas emissions for this activity (eg through travel or from power for monitoring equipment). To address this, any future rise in emissions from these activities should be factored into wider actions to reduce SEPA's overall carbon footprint.

LONGER TERM ACTIONS (2008-12) – Regulation

8.2 REGULATION

8.2.1 We will assess the climate change impacts of our regulatory methods for air, land, water, waste and radioactive substances and seek improvements to optimise environmental effects where the potential for greenhouse gas emissions are not currently considered.

8.2.2 We will adopt more proactive use of our regulatory powers under air quality management provisions to help address the impact of transport and reduce emissions and their impact on local air quality and human health effects.

8.2.3 We will work with Scottish Water and other utilities to help assess how SEPA's regulatory requirements can help improve resource use and efficiency. This work will help inform Scottish Water plan for the next Quality and Standards investment programme.

8.2.4 In anticipation of SEPA being given authority to regulate energy efficiency under our Pollution Prevention and Control remit, which will afford Scotland the same powers currently exercised by the Environment Agency in England and Wales, we will ensure development of inspector competency in the effective and beneficial exercise of these powers.

8.2.5 We will identify targets for human health, biodiversity and for other policy areas that may be compromised by climate change, and will seek to improve regulatory practices in order to minimise risks and maximise opportunities.

Longer Term Actions (2008-12) – Regulation

8.2 - AIR				Will the CCP contribute to improving air quality and meeting national air quality objectives?
Score	☑☒	**Timescale**	**M/L**	

Reasons for ☑

- This part of the CCP seeks to use SEPA's influence to make industry, business and transport more efficient. It is therefore expected that it will make a positive contribution to air quality.
- In reducing emissions of GHGs, levels of air quality pollutants should also be reduced.
- Implementation of energy efficiency powers under the PPC regulations will contribute to reductions in air emissions and result in improvements in air quality
- Activity 8.2.2 in particular seeks to make more proactive use of regulatory powers under air quality management provisions to help address impacts of transport. This will be of direct benefit to local air quality (and also therefore upon human health).

Reasons for ☒

- In some instances, there may be conflict between the need for SEPA to require abatement technology when regulating industry to protect air quality and the increased energy use/GHG emissions that such technology may involve. In implementing activity 8.2.1 for instance, SEPA will need to balance the need to protect air quality through its regulatory activities with potentially greater GHG emissions.
- Possible shift to more energy generation from waste / biomass may have air quality effects local to plant. This will be regulated (by SEPA and others) where appropriate to protect local air quality.

Mitigation measures to address potential adverse effects are provided at the bottom of this table.

8.2 - WATER				Will the Climate Change Plan contribute to the protection and enhancement of waterbodies?
Score	☑	**Timescale**	**M/L**	

Reasons for ☑

- In reducing emissions of GHG, levels of other pollutants should also be reduced. For example, measures to reduce GHG emissions may reduce total effluent thereby reducing emissions of other pollutants (eg waste / liquid effluent / heat).
- In making plants more efficient (e.g. capturing heat and re-using it) this may result in reduction of heat pollution of water bodies.
- In some cases abatement technology may be deemed to be too energy intensive – for example the traditional end-of-pipe approach to the regulation of water utility discharges is increasingly being seen as

an ineffective means of pollution control, in particular where a pollutant such as phosphorus is introduced by the water consumer through the use of high phosphate detergents. Trade regulations to limit or ban high phosphate detergents would potentially be more effective, by reducing high energy treatment required to remove phosphorus as part of the sewage treatment process. But CCP should seek to have win wins .

- Improved efficiency of plants/processes could reduce need for abstraction (and therefore in some cases treatment) of water.

Reasons for ☒

- In some instances, there may be conflict between the need for SEPA to require abatement technology when regulating industry to protect water quality and the increased energy use/GHG emissions that such technology may involve. In implementing activity 8.2.1 for instance, SEPA will need to balance the need to protect water quality through its regulatory activities with potentially greater GHG emissions.

Mitigation measures to address potential adverse effects are provided at the bottom of this table.

8.2 - WATER				Will the Climate Change Plan contribute to reduction of flood risk?
Score	☑☑☒	**Timescale**	**M/L**	

Reasons for ☑☑

- Activity 8.2.5 is likely to contribute to this objective as it seeks to identify potential at risk receptors from climate change (eg human health) and seeks to influence and improve practices in order to minimise risk.
- Through SEPA's wider activities on flood risk management, it is proposed that more sustainable flood prevention measures are adopted(for example the increased provision of flood storage areas and improved land management practices to minimise soil erosion and flood risk. Such practices have the added benefit of enhancing soil carbon retention.
- In some cases hard engineered flood defences may be deemed unsustainable due to the energy required to construct and maintain them, particularly to cope with continually increasing flood risk. Adoption of other, more sustainable practices such as managed coastal and river retreat may for some locations prove to be a safer and more affordable means of minimising the risk of flooding

Reasons for ☒

- CCP makes no mention of the Floods Directive which will likely give SEPA new roles for catchment flood management plan This new regulatory framework will have a strong influence on SEPA's ability to contribute to adaptation to climate change and should have some reference in the plan

Mitigation measures to address potential adverse effects are provided at the bottom of the table below.

8.2 - SOIL				Will the Climate Change Plan contribute to the protection of soil quality and function ?
Score	☑☑	**Timescale**	**L**	

Reasons for ☑☑

- Activity 8.2.1 will likely lead to benefits as this will consider regulation of land and seek improvements. These improvements might include:
  - reducing carbon loss from soil through regulation / other activities;
  - enhancing carbon capacity of soils by improved land management including restoration of natural drainage systems and reduction of artificial drainage systems. Eg - Upland windfarms are regulated under CAR, which can minimise impacts on soil

8.2 - SOIL				Will the Climate Change Plan contribute to reduction in contaminated and derelict land?
Score	**O**	**Timescale**	**O**	

This part of the CCP is unlikely to make a contribution to this objective.

8.2 - CLIMATIC FACTORS				Will the Climate Change Plan contribute to reduction in greenhouse gas emissions?
Score	☑☑	**Timescale**	**L**	

Reasons for ☑☑

This part of the CCP is directly aimed at achieving this objective.

8.2 - CLIMATIC FACTORS				Will the Climate Change Plan contribute to effective adaptation to climate change?
Score	☑☑	**Timescale**	**L**	

Reasons for ☑☑
This part of the CCP is directly aimed at achieving this objective.

8.2 - BIODIVERSITY				Will the Climate Change Plan contribute to protect and enhance biodiversity and contribute to implementing the Scottish Biodiversity Strategy?
Score	☑☑☒	**Timescale**	**M**	

Reasons for ☑☑

- Activity 8.2.3 will likely lead to direct benefit to aquatic diversity as water used is directly / indirectly from an aquatic ecosystem – therefore more efficient use will reduce pressure on aquatic ecosystems.
- Activity 8.22 may lead to benefits when SEPA includes biodiversity in the permitting processes
- Activity 8.2.5 is specifically aimed at this objective.

Reasons for ☒

- There may be some negative effects on biodiversity, although it is difficult to assess the extent or nature – eg by not using some abatement technologies to improve climate footprint may have effects on biodiversity.

Mitigation measures to address potential adverse effects are provided at the end of this table.

8.2 - HUMAN HEALTH				Will the Climate Change Plan contribute to objectives for protecting and enhancing human health
Score	☑☒	**Timescale**	**L**	

Reasons for ☑

- Overall, activities in this part of the CCP should lead to improvements in human health as overall emissions aimed to be reduced– eg by making processes more efficient.
- Activity 8.2.2 seeks to make more proactive use of regulatory powers under air quality management provisions to help address impacts of transport. This will be of direct benefit to local air quality and therefore upon human health.

Reasons for ☒

- May be some negative effects – eg not using some abatement technologies to improve carbon footprint of a facility may have effects on air quality and therefore upon human health.
- Possible shift to more energy generation from waste / biomass may have air quality effects local to plant. This may in turn lead to human health effects that will need to be considered. This will be regulated (by SEPA and others) where appropriate to protect local air quality.

Mitigation measures to address potential adverse effects are provided at the end of this table.

8.2 - LANDSCAPE				Will the Climate Change Plan contribute to the protection and enhancement of areas of landscape, recreational or amenity value
Score	o	**Timescale**	**o**	

The activities in the CCP will not likely make any significant contribution to this objective. It is possible that some actions in the CCP will indirectly contribute to activities which may lead to landscape effects. Eg, support for renewable energy to reduce greenhouse gas emissions may make an indirect contribution to an increase in biomass production in Scotland (although the contribution of the CCP will be minor compared to other drivers) which would have landscape effects. The extent of effects are however very uncertain and these effects should be considered in SEA of other plans – eg SNH's biomass policy.

8.2 - MATERIAL ASSETS				Will the Climate Change Plan promote appropriate use of renewable resources?
Score	☑☑	**Timescale**	**M**	

Reasons for ☑☑
This is a key direction of this part of the CCP. The CCP will also put in place a framework for determining which types of renewable resources are appropriate and where.

8.2 - MATERIAL ASSETS				Will the Climate Change Plan reduce energy consumption and promote efficiency?
Score	☑☑	**Timescale**	**M**	

Reasons for ☑☑
This part of the CCP is all about making SEPA consider energy and resource efficiency in all aspects of its

regulatory activities.

8.2 - MATERIAL ASSETS				
Score	☑/ o	**Timescale**	**M**	Will the Climate Change Plan reduce waste and encourage reuse and recycling?

Reasons for ☑
Reduction of waste and greater encouragement of recycling is a key part of SEPA 's existing activities and the CCP will assist these, although the contribution is likely to be minor.

Wider Considerations

Score	☑/o	**Timescale**	**M**	Will the Climate Change Plan apply the "polluter pays" principle?

Reasons for ☑
The CCP seeks to consider the "whole life" cost of carbon as a pollutant. Therefore CCP working towards applying the PP principle.

Score	☑☑☒	**Timescale**	**M**	Is the Climate Change Plan in line with objectives for environmental justice?

Reasons for ☑☑
- Activity 8.2.5 is particularly aligned to this objective as it proposes to identify targets for assessing impacts on human health from climate change and seeks to improve practices – eg through flood risk management.

Reasons for ☒
- Renewable energy technologies may have adverse effects in different areas than previous technologies – this will depend upon location of new technologies

Mitigation measures to address potential adverse effects are provided at the end of this table.

Score	☑☑	**Timescale**	**M**	Will the Climate Change Plan apply the "precautionary principle"?

Reasons for ☑☑
The CCP itself is a precautionary measure aimed at gearing SEPA to address the uncertain effects of climate change. Accordingly, it aims to achieve this objective.

Summary	**Mitigation Recommendations**
Overall, the activities under the "Regulation" section of the CCP are likely to lead to significant positive effects on the environment, particularly in respect of climatic factors and resource efficiency. Less significant, but nonetheless positive, effects are also recorded for all other sea topics considered. One challenge that assessment of this part of the plan has thrown up is the potential conflict between SEPA's regulatory activities and its climate change objectives. Through its regulation of processes that may result in emissions to air, water or land, SEPA may require the installation of abatement technologies that reduce the impact of those processes on the receiving environment. While these are an important part of protecting the environment, some can be extremely energy intensive and have climate change implications in terms of increased greenhouse gas emissions. Activities 8.2.1 and 8.2.3 in particular seek to build climate change factors into regulatory decision-making and which may therefore need to balance local environmental quality protection with reductions in GHG emissions.	Measures that should be considered are: • SEPA develop a method for allowing potential conflicts between regulatory objectives and climate change objectives to be reconciled. This should build upon the SNIFFER UKPIR11 project Minimising Greenhouse gas Emissions from Environmentally Regulated Industries[17] when published and should be focused on "win-win" situations where both effective environmental protection and climate change objectives can be achieved • Activities 8.2.1 and 8.2.3 to review regulatory activities to better consider climate change issues will provide a framework for identifying those areas where environmental protection and climate change objectives can be better integrated. • Adverse effects on local air quality will be mitigated by SEPA/others regulation of sites. For example, certain renewable energy technologies (waste and biomass) will be

[17] For details, go to www.sniffer.org.uk and search for project UKPIR11

	regulated by SEPA and their local effects on air, water, soil and human health should be fully considered. • SEPA should consider including a section in the CCP explaining how it may use its existing and proposed regulatory activities (eg under the Floods Directive) for flood risk management to contribute to effective climate change mitigation

LONGER TERM ACTIONS (2008-12) – ADVICE TO OPERATORS

8.3 ADVICE TO OPERATORS

8.3.1 We will implement further training for all our regulatory inspectors on the provision of advice to operators on the implementation of climate change mitigation and adaptation measures and information on authoritative sources of guidance and support.

8.3.2 We will work with the Scottish Government to consider ways in which Strategic Environmental Assessment can be most effectively used to integrate climate change into the preparation of Scottish public sector plans, programmes and strategies.

8.3.3 We will improve our advice to small and medium-size enterprises on climate change through NetRegs and other delivery methods.

8.3.4 We will develop our existing relationships with other advice-giving bodies and build new relationships as appropriate.

Longer Term Actions (2008-12) – Advice to Operators

8.3 - AIR				Will the Climate Change Plan contribute to improving air quality and meeting national air quality objectives?
Score	☑	**Timescale**	**L**	

Reasons for ☑

- Likely to be an overall positive contribution through SEPA providing advice on energy conservation and waste minimisation
- Resource efficiency resulting from advice given should reduce air pollutant emissions.
- Understanding roles and remits of other agencies and working with them may have positive contribution – eg Carbon Trust, Energy Savings Trust etc. SEPA has key role in working with regulated industries and can act as conduit from industry to these groups.

8.3 - WATER				Will the Climate Change Plan contribute to the protection and enhancement of waterbodies?
Score	☑	**Timescale**	**M/L**	

Reasons for ☑

- Likely to be an overall positive contribution through SEPA providing advice on water conservation and waste-waste minimisation. Positive as operators advised on water resource use and pollution minimisation.
- Resource efficiency resulting from advice given should reduce water pollutant emissions.
- Understanding roles and remits of others and working with them may have positive contribution – eg Envirowise. SEPA has key role in working with regulated industries and can act as conduit from industry to these groups.

8.3 - WATER				Will the Climate Change Plan contribute to reduction of flood risk?
Score	☑/o	**Timescale**	**M/L**	

Reasons for ☑

- Activity 8.3.1 aims to provide advice on climate change adaptation to operators. This will likely include flooding advice. The effects are likely to be quite minor, although does have significant potential in some sectors (eg agriculture)

8.3 - SOIL				Will the Climate Change Plan contribute to the protection of soil quality and function ?
Score	☑	**Timescale**	**L**	

Reasons for ☑

- Likely to be an overall positive contribution through SEPA providing advice on matters such as water resource use, pollution minimisation and waste minimisation.
- Resource efficiency resulting from advice given may reduce land pollutant emissions.
- Understanding roles and remits of others and working with them may have positive contribution – eg Envirowise. SEPA has key role in working with regulated industries and can act as conduit from industry to these groups.
- Advice to agriculture and land-use sector on minimising soil disturbance, compaction, erosion etc

8.3 - SOIL				Will the Climate Change Plan contribute to reduction in contaminated and derelict land?
Score	o	**Timescale**	o	
This part of the CCP is unlikely to make a significant contribution to this objective.				

8.3 - CLIMATIC FACTORS				Will the Climate Change Plan contribute to reduction in greenhouse gas emissions?
Score	☑☑	**Timescale**	L	
Reasons for ☑☑ This part of the CCP is directly aimed at achieving this objective.				

8.3 - CLIMATIC FACTORS				Will the Climate Change Plan contribute to effective adaptation to climate change?
Score	☑☑	**Timescale**	L	
Reasons for ☑☑ This part of the CCP is directly aimed at achieving this objective.				

8.3 - BIODIVERSITY				Will the Climate Change Plan contribute to implementing the Scottish Biodiversity Strategy?
Score	☑	**Timescale**	M	
Reasons for ☑ • Advice on resource use efficiency and energy efficiency may have positive implications for biodiversity. Eg minimise unsustainable exploitation of natural resources. • Habitat enhancement advice is another vehicle for promoting positive climate change actions.				

8.3 - HUMAN HEALTH				Will the Climate Change Plan contribute to objectives for protecting and enhancing human health
Score	o	**Timescale**	o	
Although this part of the plan may lead to human health improvements as a result of the advice SEPA gives to operators, the contribution of the CCP is likely to be fairly small in this regard.				

8.3 - LANDSCAPE				Will the Climate Change Plan contribute to the protection and enhancement of areas of landscape, recreational or amenity value
Score	o	**Timescale**	o	
The activities in this part of the CCP will not likely make any significant contribution to this objective. It is possible that some actions in the CCP will indirectly contribute to activities which may lead to landscape effects. Eg, support for renewable energy to reduce greenhouse gas emissions may make an indirect contribution to an increase in biomass production in Scotland (although the contribution of the CCP will be minor compared to other drivers) which would have landscape effects. The extent of effects are however very uncertain and these effects should be considered in SEA of other plans.				

8.3 - MATERIAL ASSETS				Will the Climate Change Plan promote appropriate use of renewable resources?
Score	o	**Timescale**	o	
Although this part of the plan may lead to some greater use of renewable resources as a result of the advice SEPA gives to operators, the contribution of the CCP is likely to be fairly small compared to other influences.				

8.3 - MATERIAL ASSETS				Will the Climate Change Plan reduce energy consumption and promote efficiency?
Score	☑☑	**Timescale**	M	
Reasons for ☑☑ This part of the CCP is directly aimed at achieving this objective.				

8.3 - MATERIAL ASSETS				Will the Climate Change Plan reduce waste and encourage reuse and recycling?
Score	☑☑	**Timescale**	M	
Reasons for ☑☑ This part of the CCP is directly aimed at achieving this objective.				

Wider Considerations				Will the Climate Change Plan apply the "polluter pays" principle?
Score	☑	**Timescale**	M	
Reasons for ☑				

By advising operators, business etc of means of reducing emissions and demonstrating that it is in the interest of operators to deliver business efficiencies .

Score	☑/o	Timescale	M	Is the Climate Change Plan in line with objectives for environmental justice?

Reasons for ☑
Not a direct influence but principles of environmental justice should be captured generally in SEPA advice.

Score	o	Timescale	o	Will the Climate Change Plan apply the "precautionary principle"?

Not explicitly applied by activities in this part of the CCP,

Summary	Mitigation Recommendations
Overall, the activities under the "advice to operators" section of the CCP are likely to lead to significant positive effects on the environment, particularly in respect of climatic factors and resource efficiency. Less significant, but nonetheless positive, effects are also recorded for all other sea topics considered. No negative effects are recorded for this part of the CCP	No negative effects are recorded for this part of the CCP therefore no mitigation measures have been identified.

LONGER TERM ACTIONS (2008-12) – GREENING SEPA

8.4 GREENING SEPA

8.4.1 We will work with the Scottish Government and partner agencies to develop and improve mechanisms for delivery of actions by all signatories to the Scottish Climate Change Declaration.

8.4.2 We will review the Greening SEPA programme with regard to climate change.

8.4.3 We will assess the efficacy of existing climate change tools and promote their use where effective and appropriate, including amongst SEPA employees.

8.4.4 Working with the Scottish Government, we will develop a formal position on carbon off-setting – discussing the failings and benefits of off-setting schemes. We will investigate the use of accreditation standards such as the British Research Establishment Environmental Assessment Methods (BREEAM) to ensure that all new SEPA estate and facilities meet the highest environmental standards.

8.4.5 We will investigate how procurement rules can help reduce greenhouse gas emissions and promote best practice.

Longer Term Actions (2008-12) – Greening SEPA

8.4 - AIR				Will the CCP contribute to improving air quality and meeting national air quality objectives?
Score	☑/o	**Timescale**	**L**	

Reasons for ☑/o

- SEPA's Internal Environmental Policy sets CO2 emission reduction targets that will contribute to GHG reductions and to air quality improvements.
- Emissions reduction targets in the Internal Environmental Policy also seek to reduce PM10, SOx and NOx, although effects are likely to be minor given SEPA's low emissions.

8.4 - WATER				Will the Climate Change Plan contribute to the protection and enhancement of waterbodies?
Score	☑/o	**Timescale**	**M/L**	

Reasons for ☑/o

- Water consumption reduction targets are embedded into SEPA's Internal Environmental Policy, although effects are likely to be minor given SEPA's small water footprint. Potential limited indirect impact on water treatment and effluent disposal from SEPA's estate.

8.4 - WATER				Will the Climate Change Plan contribute to reduction of flood risk?
Score	☑/o	**Timescale**	**M/L**	

Reasons for ☑/o

- Minor contribution by adoption of sustainable facilities management – eg provision of ponds at some offices and minimisation of impermeable surfaces where SEPA is land-owner, green roofs etc

8.4 - SOIL				Will the Climate Change Plan contribute to the protection of soil quality and function ?
Score	☑/o	**Timescale**	**M/L**	

Reasons for ☑/o

- Composting facilities at SEPA offices produces local soil conditioners.
- Biodiversity targets promote improvements to soil on office land holdings, although degree of improvement will be limited due to small coverage of land-holdings.

8.4 - SOIL				Will the Climate Change Plan contribute to reduction in contaminated and derelict land?
Score	☑	**Timescale**	**o**	

Reasons for ☑

Activities in this part of the CCP are unlikely to make a significant contribution to this objective, although decisions about new buildings may make a positive contribution – eg new Aberdeen office will be located on a brownfield site.

8.4 - CLIMATIC FACTORS				Will the Climate Change Plan contribute to reduction in greenhouse gas emissions?
Score	☑☑	**Timescale**	**L**	

Reasons for ☑☑

- SEPA's Internal Environmental Policy incorporates corporate long and short term CO2 reduction targets for building and transport energy
- Substitution of refrigerant gases in laboratories etc. will have positive but minor impact.
- SEPA's Internal Environmental Policy includes a programme to introduce renewable technologies e.g. ground source heat pumps; rain water harvesting; wind turbines; better insulation; more efficient boilers The new Aberdeen building has a Buildings Research Establishment Environmental Assessment Method (BREEAM) target of "Excellent", this includes energy efficiency as a significant factor
- SEPA is participating in the Local Authority Carbon Management programme during 2007. This is a mentored programme of identifying opportunities to reduce greenhouse gas emissions form all sources including carbon dioxide, methane and refrigerant gases and will lead to the adoption of c.30 projects over 5 years.

8.4 - CLIMATIC FACTORS				Will the Climate Change Plan contribute to effective adaptation to climate change?
Score	**O**	**Timescale**	**O**	

Activities in this part of the CCP are unlikely to make a significant contribution to this objective. Potentially planting drought and/or rain tolerant species as part of biodiversity enhancement on land-holdings will play a part, but contribution minor.

8.4 - BIODIVERSITY				Will the Climate Change Plan contribute to implementing the Scottish Biodiversity Strategy?
Score	**O**	**Timescale**	**M**	

SEPA has a biodiversity target which identifies opportunities to promote biodiversity on its land holdings, but contribution likely to be minor.

8.4 - HUMAN HEALTH				Will the Climate Change Plan contribute to objectives for protecting and enhancing human health
Score	☑/O	**Timescale**	**L**	

Reasons for ☑/ **O**

- Reduction in SEPA's carbon footprint will have air quality (and therefore human health) benefits – e.g. reduced emissions from SEPA's business travel.
- Introduction of 'Green Space' concept at selected offices which promotes staff well-being, improves aesthetics of work environment, opportunities to relax during breaks, lunch etc.

8.4 - LANDSCAPE				Will the Climate Change Plan contribute to the protection and enhancement of areas of landscape, recreational or amenity value
Score	**O**	**Timescale**	**O**	

The activities in this part of the CCP will not likely make any significant contribution to this objective. It is possible that some actions in the CCP will indirectly contribute to activities which may lead to landscape effects. Eg, support for renewable energy to reduce greenhouse gas emissions may make an indirect contribution to an increase in biomass production in Scotland (although the contribution of the CCP will be minor compared to other drivers) which would have landscape effects. The extent of effects are however very uncertain and these effects should be considered in SEA of other plans.

8.4 - MATERIAL ASSETS				Will the Climate Change Plan promote appropriate use of renewable resources?
Score	☑/O	**Timescale**	**L**	

Reasons for ☑/ **O**

- SEPA buys into a "Green" Tariff" (see glossary) for its electricity
- Preventative maintenance to improve buildings insulation and installation of energy microgeneration where appropriate.

8.4 - MATERIAL ASSETS				Will the Climate Change Plan reduce energy consumption and promote efficiency?
Score	☑	**Timescale**	**M**	

Reasons for ☑

- Energy and CO2 reduction targets to be achieved through actions identified in building and target attainment plans for SEPA estate. More sustainable 'build' adopted for any new buildings i.e. must have BREEAM 'Excellent' rating.
- Co-location to maximise efficiency of service delivery across public agencies etc.

8.4 - MATERIAL ASSETS				Will the Climate Change Plan reduce waste and encourage reuse and recycling?
Score	**o**	**Timescale**	**o**	

Activities in this part of the CCP are unlikely to make a significant contribution to this objective. Initiatives such as preventative maintenance to improve buildings insulation and installation of energy microgeneration where appropriate will have some beneficial effects, but impact likely to be small.

Wider Considerations

				Will the Climate Change Plan apply the "polluter pays" principle?
Score	**o**	**Timescale**	**o**	

Activities in this part of the CCP are unlikely to make a significant contribution to this objective.

				Is the Climate Change Plan in line with objectives for environmental justice?
Score	**o**	**Timescale**	**o**	

Activities in this part of the CCP are unlikely to make a significant contribution to this objective.

SEPA aims to demonstrate environmental management best practice in order to lead the Scottish public sector and others by example, but effects with respect to environmental justice likely to be very minor..

				Will the Climate Change Plan apply the "precautionary principle"?
Score	**o**	**Timescale**	**o**	

Activities in this part of the CCP are unlikely to make a significant contribution to this objective.

Summary	**Mitigation Recommendations**
The intention of the 'Greening SEPA' programme is to implement a programme to manage, mitigate and control unavoidable environmental impacts as result of our business activity. Climate Change mitigation, in particular CO2 emission reduction through energy efficiency etc, has formed a significant part of SEPA's environmental management programme since 1999 and the actions contained in the "greening SEPA" section of the CCP strengthens this commitment. No negative effects are recorded for this part of the CCP	No negative effects are recorded for this part of the CCP therefore no mitigation measures have been identified. .

LONGER TERM ACTIONS (2008-12) – INFORMING AND INFLUENCING

8.5 INFORMING AND INFLUENCING

8.5.1 We will emphasise potential climate change risks and opportunities when responding to consultations on legislation and policy from the Scottish Government, public agencies and other sectors.

8.5.2 We will review strategic priority areas including land, transport, energy and air quality and assess their contribution to climate change. This will help to identify where policy needs to change to support adaptation and/or mitigation measures

8.5.3 We will work with the Aldersgate Group1 to look at companies' carbon disclosure.–We will work with the Scottish Government and partners to produce a tool to support the use of carbon balance and costing in decision-making.

8.5.4 In our role as a statutory consultee we will use the planning system and the SEA process to influence the location of new developments, not only to avoid flood risk but also to minimise the carbon footprint and other aspects of developments such as design and resource efficiency and integration with existing infrastructure and facilities.

Longer Term Actions (2008-12) – Informing and Influencing

8.5 - AIR				Will the Climate Change Plan contribute to improving air quality and meeting national air quality objectives?
Score	☑☑	**Timescale**	**L**	

Reasons for ☑☑

- Under activity 8.5.2, SEPA will develop position statements on transport, energy and air quality, which will help identify where policy may need to change to support climate change mitigation or adaptation, which in turn may lead to some benefits for the air environment.
- Activity 8.5.1 will emphasise climate change in SEPA's responses to consultations – this may lead to indirect benefits for air quality
- SEPA's planning liaison function (activity 8.5.5) can make a significant and direct contribution to protecting and enhancing air quality
- The Greening SEPA and the Carbon Management Programme initiatives being progressed by SEPA demonstrate good practice, which can be used to inform and influence others across Scotland.

8.5 – WATER				Will the Climate Change Plan contribute to the protection and enhancement of waterbodies?
Score	☑☑	**Timescale**	**M/L**	

Reasons for ☑☑

- Under activity 8.5.2, SEPA will develop position statements on land transport, energy and air quality, which will help identify where policy may need to change to support climate change mitigation or adaptation, which in turn may lead to some benefits for the water environment.
- Activity 8.5.1 will emphasise climate change in SEPA's responses to consultations – this may lead to indirect benefits for the water environment.
- SEPA's planning liaison function (activity 8.5.5) can make a significant and direct contribution to protecting and enhancing the water environment.

8.5 - WATER				Will the Climate Change Plan contribute to reduction of flood risk?
Score	☑☑	**Timescale**	**M/L**	

Reasons for ☑☑

- SEPA has a strategic role to play in promotion of sustainable flood management, avoidance, awareness and alleviation of flood risk. The activities under the "informing and influencing heading" will provide a framework for awareness activities connected to flood risk.
- SEPA's planning liaison function (activity 8.5.5) can make a significant and direct contribution to reducing flood risk (eg via flood risk protocol).

8.5 - SOIL				Will the Climate Change Plan contribute to the protection of soil quality and function ?
Score	☑☒	**Timescale**	**L**	

Reasons for ☑

- Advice to Scottish Government on agricultural and land-use sector on maintaining and improving integrity of soils to enhance natural carbon sinks
- SEPA's planning liaison function (activity 8.5.5) can make a significant and direct contribution to protecting and enhancing land quality.

Reasons for ☒

- SEPA's influencing when responding to consultations on legislation or policy initiatives may lead to activities with potential for negative impact on soils e.g. support for biofuels may result in increased monoculture, support for renewable energy may influence development on inappropriate soils – windfarms on upland peats etc.

8.5 - SOIL				Will the Climate Change Plan contribute to reduction in contaminated and derelict land?
Score	☑	**Timescale**	**O**	

Reasons for ☑

- SEPA's planning liaison function (activity 8.5.5) can make a significant and direct contribution to protecting and enhancing land quality through remediation of contaminated land and regeneration of previously developed land.

8.5 - CLIMATIC FACTORS				Will the Climate Change Plan contribute to reduction in greenhouse gas emissions?
Score	☑☑	**Timescale**	**L**	

Reasons for ☑☑
This part of the CCP is directly aimed at achieving this objective.

8.5 - CLIMATIC FACTORS				Will the Climate Change Plan contribute to effective adaptation to climate change?
Score	☑☑	**Timescale**	**L**	

Reasons for ☑☑
This part of the CCP is directly aimed at achieving this objective.

8.5 - BIODIVERSITY				Will the Climate Change Plan contribute to implementing the Scottish Biodiversity Strategy?
Score	☑	**Timescale**	**M**	

Reasons for ☑

- Under activity 8.5.2, SEPA will develop position statements on transport, energy and air quality, which will help identify where policy may need to change to support climate change mitigation or adaptation, which in turn may lead to some benefits for biodiversity.
- Activity 8.5.1 will emphasise climate change in SEPA's responses to consultations – this may lead to indirect benefits for biodiversity
- SEPA's planning liaison function (activity 8.5.5) can make a significant and direct contribution to protecting and enhancing biodiversity

SEPA's primary contribution to biodiversity is the protection of the quality of the environment through environmental regulation. By means of the forthcoming R&D strategy SEPA will improve its ability and capacity to take action and provide advice on a number of significant biodiversity issues where its scientific, regulatory or advisory involvement with biodiversity issues is less well-developed: for example on the biodiversity of terrestrial habitats, wetlands, soils, urban and brownfield areas , and in respect of air pollution and invasive non-native species impacts on biodiversity.

8.5 - HUMAN HEALTH				Will the Climate Change Plan contribute to objectives for protecting and enhancing human health
Score	☑	**Timescale**	**L**	

Reasons for ☑

- Under activity 8.5.2, SEPA will develop position statements on land transport, energy and air quality, which will help identify where policy may need to change to support climate change mitigation or adaptation, which in turn may lead to some indirect benefits for human health.
- Activity 8.5.1 will emphasise climate change in SEPA's responses to consultations – this may lead to

indirect benefits for human health

- SEPA's planning liaison function (activity 8.5.5) can make a significant and direct contribution to protecting and enhancing the environment, leading to indirect benefits for human health

8.5 - LANDSCAPE				Will the Climate Change Plan contribute to the protection and enhancement of areas of landscape, recreational or amenity value
Score	o	**Timescale**	o	

The activities in this part of the CCP will not likely make any significant contribution to this objective. It is possible that some actions in the CCP will indirectly contribute to activities which may lead to landscape effects. Eg, support for renewable energy to reduce greenhouse gas emissions may make an indirect contribution to an increase in biomass production in Scotland (although the contribution of the CCP will be minor compared to other drivers) which would have landscape effects. The extent of effects are however very uncertain and these effects should be considered in SEA of other plans.

8.5 - MATERIAL ASSETS				Will the Climate Change Plan promote appropriate use of renewable resources?
Score	☑	**Timescale**	L	

Reasons for ☑

- Under activity 8.5.2, SEPA will develop position statements on energy, which will help identify where policy may need to change to promote appropriate renewable energy development.
- SEPA's planning liaison function (activity 8.5.5) can make a significant contribution to influencing the appropriate development of renewable resources

8.5 - MATERIAL ASSETS				Will the Climate Change Plan reduce energy consumption and promote efficiency?
Score	☑	**Timescale**	M	

Reasons for ☑

- Under activity 8.5.2, SEPA will develop position statements on energy, which will help identify where policy may need to change to promote energy efficiency and enable reduced energy consumption

8.5 - MATERIAL ASSETS				Will the Climate Change Plan reduce waste and encourage reuse and recycling?
Score	o	**Timescale**	o	

We will use our influencing abilities to seek to reduce waste and improve recycling, but contribution of the CCP to this likely to be minor.

Wider Considerations

				Will the Climate Change Plan apply the "polluter pays" principle?
Score	☑	**Timescale**	M	

Not a direct influence but principles of polluter pays should be captured generally in SEPA influencing activities on climate change.

				Is the Climate Change Plan in line with objectives for environmental justice?
Score	o	**Timescale**	o	

Not a direct influence but principles of polluter pays should be captured generally in SEPA influencing activities on climate change.

				Will the Climate Change Plan apply the "precautionary principle"?
Score	o	**Timescale**	o	

Not a direct influence but principles of polluter pays should be captured generally in SEPA influencing activities on climate change.

Summary	**Mitigation Recommendations**
Overall, the activities under the "informing and influencing" section of the CCP are likely to lead to significant positive effects on the environment, particularly in respect of climatic factors and resource efficiency. Less significant, but nonetheless positive, effects are also recorded for all other sea topics considered.	None

LONGER TERM ACTIONS (2008-12) – ATTITUDES

8.6 ATTITUDES

8.6.1 We will work with the Scottish Government, agencies and other sectors to ensure efficient development and delivery of information to influence positive attitudes and behaviours.

8.6.2 We will identify and publish, in a variety of public media, environmental information to help build knowledge and understanding of climate change and develop positive attitudes in responding to the challenges and opportunities of climate change.

8.6.3 We will work with the formal and informal education sectors to inform and support the delivery of education strategies on climate change.

8.6.4 We will ensure that our climate change education and awareness programme is consistent with, and supportive of, programmes delivered by other key providers in the public, voluntary and commercial sectors.

8.6.5 We will seek to support and inform the widest possible range of opportunities for raising awareness of, and encouraging positive attitudes towards, climate change. Awareness-raising activities will take into account the specific needs of those most likely to be affected by and vulnerable to the impacts of climate change

Longer Term Actions (2008-12) – Attitudes

8.6 - AIR				Will the Climate Change P contribute to improving air quality and meeting national air quality objectives?
Score	☑/O	**Timescale**	**L**	

Reasons for ☑/O

The aim of activities in this part of the CCP is to effect behavioural changes amongst SEPA staff, other agencies, sectors of industry and among the public at large on climate change issues. In the context of this air objective, these activities may realise reductions in energy demand, reductions in consumption and use of private transport and improved energy efficiency etc . These outcomes will help to reduce emissions which will thereby improve air quality. Contribution to this objective though likely to be minor compared to other drivers.

8.6 - WATER				Will the Climate Change Plan contribute to the protection and enhancement of waterbodies?
Score	☑/O	**Timescale**	**L**	

Reasons for ☑/O

The aim of activities in this part of the CCP is to effect behavioural changes amongst SEPA staff, other agencies, sectors of industry and among the public at large on climate change issues. In the context of this water objective, these activities may encourage people to use water sustainably. Contribution to this objective though likely to be minor compared to other drivers.

8.6 - WATER				Will the Climate Change Plan contribute to reduction of flood risk?
Score	☑/O	**Timescale**	**L**	

Reasons for ☑/O

The aim of activities in this part of the CCP is to effect behavioural changes amongst SEPA staff, other agencies, sectors of industry and among the public at large on climate change issues. In the context of this water objective, these activities may encourage people to use water more efficiently. Contribution to this objective though likely to be minor compared to other drivers.

8.6 - SOIL				Will the Climate Change Plan contribute to the protection of soil quality and function ?
Score	☑/O	**Timescale**	**L**	

Reasons for ☑/O

The aim of activities in this part of the CCP is to effect behavioural changes amongst SEPA staff, other agencies, sectors of industry and among the public at large on climate change issues. In the context of this soil objective, these activities may enable a change in attitudes with respect to issues such as land-use practices, sustainable agriculture, shift to organic production etc. To this end, the CCP may make some contribution to this objective, but this is likely to be minor.

8.6 - SOIL				Will the Climate Change Plan contribute to reduction in contaminated and derelict land?
Score	**o**	**Timescale**	**o**	
Reasons for **o** This part of the CCP is unlikely to make a significant contribution to this objective.				
8.6 - CLIMATIC FACTORS				Will the Climate Change Plan contribute to reduction in greenhouse gas emissions?
Score	**☑☑**	**Timescale**	**L**	
Reasons for **☑☑** This part of the CCP is directly aimed at achieving this objective.				
8.6 - CLIMATIC FACTORS				Will the Climate Change Plan contribute to effective adaptation to climate change?
Score	**☑☑**	**Timescale**	**L**	
Reasons for **☑☑** This part of the CCP is directly aimed at achieving this objective.				
8.6 - BIODIVERSITY				Will the Climate Change Plan contribute to implementing the Scottish Biodiversity Strategy?
Score	**☑/o**	**Timescale**	**L**	
Reasons for **☑/o** The aim of activities in this part of the CCP is to effect behavioural changes amongst SEPA staff, other agencies, sectors of industry and among the public at large on climate change issues. In the context of this biodiversity objective, these activities may generate greater understanding and respect for how biodiversity and natural resources benefits society, economy and individuals. Contribution to this objective though likely to be minor compared to other drivers.				
8.6 - HUMAN HEALTH				Will the Climate Change Plan contribute to objectives for protecting and enhancing human health
Score	**☑/o**	**Timescale**	**L**	
Reasons for **☑/o** The aim of activities in this part of the CCP is to effect behavioural changes amongst SEPA staff, other agencies, sectors of industry and among the public at large on climate change issues. In the context of this human health objective, these activities may generate benefits of green spaces and development of quality of life indicators. Contribution to this objective though likely to be minor compared to other drivers.				
8.6 - LANDSCAPE				Will the Climate Change Plan contribute to the protection and enhancement of areas of landscape, recreational or amenity value
Score	**o**	**Timescale**	**o**	
The activities in the CCP will not likely make any significant contribution to this objective. It is possible that some actions in the CCP will indirectly contribute to activities which may lead to landscape effects. Eg, support for renewable energy to reduce greenhouse gas emissions may make an indirect contribution to an increase in biomass production in Scotland (although the contribution of the CCP will be minor compared to other drivers) which would have landscape effects. The extent of effects are however very uncertain and these effects should be considered in SEA of other plans – eg SNH's biomass policy.				
8.6 - MATERIAL ASSETS				Will the Climate Change Plan promote appropriate use of renewable resources?
Score	**o**	**Timescale**	**o**	
This part of the CCP is unlikely to make a significant contribution to this objective.				
8.6 - MATERIAL ASSETS				Will the Climate Change Plan reduce energy consumption and promote efficiency?
Score	**☑/o**	**Timescale**	**L**	
Reasons for **☑/o** The aim of activities in this part of the CCP is to effect behavioural changes amongst SEPA staff, other agencies, sectors of industry and among the public at large on climate change issues. In the context of this objective, these activities may influence attitudes with respect to reducing energy consumption and promoting efficiency in homes, businesses and travel choices. Contribution to this objective though likely to be minor compared to other drivers.				
8.6 - MATERIAL ASSETS				Will the Climate Change Plan reduce waste and

Score	☑/o	Timescale	L	encourage reuse and recycling?

Reasons for ☑/o
The aim of activities in this part of the CCP is to effect behavioural changes amongst SEPA staff, other agencies, sectors of industry and among the public at large on climate change issues. In the context of this objective, these activities may influence attitudes with respect to reducing waste generated by households and businesses and improving both domestic and commercial recycling rates. Contribution to this objective though likely to be minor compared to other drivers.

Wider Considerations

Score	o	Timescale	o	Will the Climate Change Plan apply the "polluter pays" principle?

This part of the CCP is unlikely to make a significant contribution to this objective.

Score	☑/o	Timescale	L	Is the Climate Change Plan in line with objectives for environmental justice?

Reasons for ☑/o
The aim of activities in this part of the CCP is to effect behavioural changes amongst SEPA staff, other agencies, sectors of industry and among the public at large on climate change issues. In the context of this objective, these activities may influence attitudes which are related to environmental justice – eg access to greenspace, waste reduction and recycling, flood risk awareness etc. Contribution to this objective though likely to be minor compared to other drivers.

Score	o	Timescale	o	Will the Climate Change Plan apply the "precautionary principle"?

This part of the CCP is unlikely to make a significant contribution to this objective.

Summary	Mitigation Recommendations
The aim of activities in this part of the CCP is to effect behavioural changes amongst SEPA staff, other agencies, sectors of industry and among the public at large on climate change issues. Accordingly, SEPA's activities will likely have some beneficial effects in terms of helping to change attitudes towards mitigation of and adaptation to climate change. However, in the context of wider drivers on this issue, the contribution of this part of the CCP is likely to be quite small. No negative effects are recorded for this part of the CCP	No negative effects are recorded for this part of the CCP therefore no mitigation measures have been identified.

PART 3 - ASSESSMENT FINDINGS – CONCLUSIONS

4.4 SUMMARY

4.4.1 Overall, the CCP is likely to lead to positive effects for the environment, particularly in relation to climate change, air, water and soil quality and in respect of resource efficiency. Set out below is a summary of the main effects that have been identified. This is done firstly by each part of the CCP and then by each environmental receptor. These should be read together and in association with the detailed comments in the matrices in part 2. A summary of the effects of each group of activities against each SEA topic is provided in table 7.

Table 7 – Summary of potential environmental effects.

SEA Objective / Part of CCP	Strategic & Vision Aims	Monitoring & Analysis	Regulation	Advice to Operators	Greening SEPA	Informing & Influencing	Changing Attitudes	Summary
AIR QUALITY	☑☑ ☒	☑☑	☑ ☒	☑	☑ o	☑	☑ o	Most parts of CCP working towards this objective. Possible issues with CO2 emissions from abatement technologies.
WATER QUALITY	☑ ☒	☑☑	☑	☑	☑ o	☑☑	☑ o	Most parts of CCP working towards this objective.
WATER – FLOODING	☑☑	☑☑	☑☑ ☒	☑ o	☑ o	☑☑	☑ o	Most parts of the CCP directly working towards this objective.
SOIL QUALITY	☑☑	☑☑	☑☑	☑	☑	☑ ☒	☑ o	Most parts of CCP working towards this objective.
SOIL – LAND USE	o	o	o	o	☑	☑	o	Most parts of CCP are unlikely to have significant contributions to this objective.
CLIMATE MITIGATION	☑☑	☑☑	☑☑	☑☑	☑☑	☑☑	☑☑	All parts of the CCP directly working towards this objective.
CLIMATE ADAPTATION	☑☑	☑☑	☑☑	☑☑	o	☑☑	☑☑	Most parts of the CCP directly working towards this objective.
BIO-DIVERSITY	☑	☑☑	☑☑ ☒	☑	o	☑	☑ o	Most parts of CCP working towards this objective.
HUMAN HEALTH	☑	☑☑	☑ ☒	o	☑ o	☑	☑ o	Most parts of CCP working towards this objective.
LANDSCAPE	o	o	o	o	o	o	o	Most parts of CCP are unlikely to have significant contributions to this objective.
PROMOTE RENEWABLES	☑ ☒	☑ o	☑☑	o	☑ o	☑	o	Most parts of CCP are unlikely to have significant contributions to this objective.
REDUCE ENERGY	☑☑	☑ o	☑☑	☑☑	☑	☑	☑ o	Most parts of the CCP directly working towards this objective.
REDUCE WASTE	☑	o	☑ o	☑☑	o	o	☑ o	Most parts of CCP working towards this objective.
POLLUTER PAYS	☑	☑ o	☑ o	☑	o	☑	☑	Most parts of CCP working towards this objective.
ENVIRON JUSTICE	☑	☑ o	☑☑ ☒	☑ o	o	o	o	Most parts of CCP are unlikely to have significant contributions to this objective.
PRECAUTION'Y PRINCIPLE	☑	☑ o	☑☑	o	o	o	o	Most parts of CCP are unlikely to have significant contributions to this objective.

4.5 MONITORING AND ANALYSIS (SECTION 8.1)

4.5.1 The monitoring and analysis activities are likely to make a significant contribution to many of the SEA objectives, particularly air, water, flood risk management, soil, climatic factors, biodiversity and human health.

4.5.2 One challenge that this assessment has thrown up is the potential conflict between SEPA's regulatory activities and its climate change objectives. Through its regulation of processes that may result in emissions to air, water or land, SEPA may require the installation of abatement technologies that reduce the impact of those processes on the receiving environment. While these are an important part of protecting the environment, some can be extremely energy intensive and have climate change implications in terms of increased greenhouse gas emissions.

4.5.3 The CCP recognises this and seeks to address this potential conflict in activities 8.2.1 and 8.2.3 for example. It will be extremely important that potential effects on air and water quality in particular from balancing emission controls with climate change objectives are fully considered.

4.5.4 This is discussed further in 4.11 and 4.12 below.

4.6 REGULATION (SECTION 8.2)

4.6.1 Overall, the activities under the "Regulation" section of the CCP are likely to lead to significant positive effects on the environment, particularly in respect of climatic factors and resource efficiency. Less significant, but nonetheless positive, effects are also recorded for all other SEA topics considered.

4.6.2 One challenge that assessment of this part of the plan has thrown up is the potential conflict between SEPA's regulatory activities and its climate change objectives. Through its regulation of processes that may result in emissions to air, water or land, SEPA may require the installation of abatement technologies that reduce the impact of those processes on the receiving environment. While these are an important part of protecting the environment, some can be extremely energy intensive and have climate change implications in terms of increased greenhouse gas emissions. Activities 8.2.1 and 8.2.3 in particular seek to build climate change factors into regulatory decision-making and which may therefore need to balance local environmental quality protection with reductions in greenhouse emissions.

4.6.3 This is discussed further in 4.11 and 4.12 below.

4.7 ADVICE TO OPERATORS (SECTION 8.3)

4.7.1 Overall, the activities under the "advice to operators" section of the CCP are likely to lead to significant positive effects on the environment, particularly in respect of climatic factors and resource efficiency. Less significant, but nonetheless positive, effects are also recorded for all other SEA topics considered.

4.7.2 No significant negative effects are recorded for this part of the CCP

4.8 GREENING SEPA (SECTION 8.4)

4.8.1 Overall, the activities under the "greening SEPA" section of the CCP are likely to lead to positive effects on the environment, particularly in respect of climatic factors and resource efficiency. Less significant, but nonetheless positive, effects are also recorded for most other SEA topics considered.

4.8.2 The intention of the 'Greening SEPA' programme is to implement a programme to manage, mitigate and control unavoidable environmental impacts as result of our business activity. Climate Change mitigation, in particular CO2 emission reduction through energy efficiency, has formed a significant part of SEPA's environmental management programme since 1999 and the actions contained in the "greening SEPA" section of the CCP strengthens this commitment.

4.8.3 No significant negative effects are recorded for this part of the CCP

4.9 INFORMING AND INFLUENCING (SECTION 8.5)

4.9.1 Overall, the activities under the "advice to operators" section of the CCP are likely to lead to significant positive effects on the environment, particularly in respect of climatic factors and resource efficiency. Less significant, but nonetheless positive, effects are also recorded for all other SEA topics considered.

4.9.2 No significant negative effects are recorded for this part of the CCP

4.10 ATTITUDES (SECTION 8.6)

4.10.1 The aim of activities in this part of the CCP is to effect behavioural changes amongst SEPA staff, other agencies, sectors of industry and among the public at large on climate change issues. Accordingly, SEPA's activities will likely have some beneficial effects in terms of helping to change attitudes towards mitigation of and adaptation to climate change. However, in the context of wider drivers on this issue, the contribution of this part of the CCP is likely to be quite small.

4.10.2 No significant negative effects are recorded for this part of the CCP

4.11 EFFECTS ON AIR

4.11.1 Generally, most of the activities in the CCP will contribute to an improvement in air quality. In particular, by seeking to reduce the emission of greenhouse gases, it is likely that other polluting emissions to air will also be reduced. For example, by seeking to reduce the emission of greenhouse gases through SEPA's transport, it is likely that emissions of other transport related pollutants such as PM10s will also reduce.

4.11.2 The activities connected with *monitoring and analysis* (section 8.1), *regulation* (section 8.2), *advice to operators* (section 8.3) and *informing and influencing* (section 8.5), should all lead to some improvements in air quality, although the contribution of the CCP compared to other drivers will likely be small. Where improvements in air quality might occur is difficult to predict as this will depend upon the location of activities that may be regulated by SEPA.

4.11.3 One challenge that this assessment has identified is the potential conflict between SEPA's regulatory activities and its climate change objectives. Through its regulation of processes that may result in emissions to air SEPA may require the installation of abatement technologies that reduce the impact of those processes on air quality. While these are an important part of protecting the environment, some can be extremely energy intensive and have climate change implications in terms of increased greenhouse gas emissions. Activities 8.2.1 and 8.2.3 under *regulation* in particular seek to build climate change factors into regulatory decision-making and which may therefore need to balance local environmental quality protection with reductions in greenhouse gas emissions. In these instances, it is important that a full evaluation is undertaken to ensure that the best solution is found that enables both effective environmental protection of local air quality and efficient use of energy/reduction in greenhouse gas emissions within the plant.

4.12 EFFECTS ON WATER

4.12.1 As with air, generally, most of the activities in the CCP will contribute to an improvement in water quality. In particular, by seeking to reduce the emission of greenhouse gases, it is likely that other polluting emissions to water will also be reduced. For example, by seeking to reduce the emission of greenhouse gases through SEPA's regulatory activities, it is possible that the overall emissions to water from a plant may be reduced as part of wider efficiency of a plant. In particular, reducing overall water use in a plant will result in less greenhouse gas emissions required for abstracting, using (eg heating) and then treating water which will in turn reduce the amount of "polluted" water returning to the environment. Many of the activities under greening SEPA (section 8.2) are also geared at reducing water use across the Agency.

4.12.2 The activities connected with *monitoring and analysis* (section 8.1), *regulation* (section 8.2), *advice to operators* (section 8.3) and *informing and influencing* (section 8.5), should therefore all lead to some improvements in water quality, although the contribution of the CCP compared to other drivers will likely be small. Where improvements in water quality might occur is difficult to predict as this will depend upon the location of activities that may be regulated by SEPA.

4.12.3 One challenge that this assessment has identified is the potential conflict between SEPA's regulatory activities and its climate change objectives. Through its regulation of processes that may result in emissions to water (eg waste water treatment works) SEPA may require the installation of abatement technologies that treat the water to remove pollutants to an acceptable level prior to discharge to a receiving waterbody . While these are an important part of protecting the environment, some can be extremely energy intensive and have climate change implications in terms of increased greenhouse gas emissions. Activities 8.2.1 and 8.2.3 under *regulation* in particular seek to build climate change factors into regulatory decision-making and which may therefore need to balance local environmental quality protection with reductions in greenhouse gas emissions. In these instances, it is important that a full evaluation is undertaken to ensure that the best solution is found that enables both effective environmental protection of local water quality and efficient use of energy/reduction in greenhouse gas emissions within the plant.

4.12.4 Further, it was found that the CCP did not refer in any great detail to role of sustainable flood management and SEPA's contributions in this regard. For a plan covering adaptation to climate change, this was felt to be an omission that should be addressed. In particular, the potential future opportunities that may available to SEPA under the "*Floods Directive*"[18] for example should be referenced. A joined up approach between SEPA's flood risk management/flood warning responsibilities and its climate change obligations should be considered.

4.13 EFFECTS ON SOIL

4.13.1 As a result of potentially reduced emissions to air and water (see above), most of the activities in the CCP will also contribute to an improvement in land quality. In particular, by seeking to reduce the emission of greenhouse gases, it is likely that other polluting emissions to air and water (which are often deposited onto land) will also be reduced. The activities connected with *monitoring and analysis* (section 8.1), *regulation* (section 8.2), *advice to operators* (section 8.3) and *informing and influencing* (section 8.5), should therefore all lead to some improvements in land quality, although the contribution of the CCP compared to other drivers will likely be small. Where improvements in land quality might occur is difficult to predict as this will depend upon the location of activities that may be regulated by SEPA.

[18] EC Directive 2007/60/EC on the assessment and management of flood risks

4.13.2 SEPA's wider activities aimed at reducing waste and increasing reuse, recovery and recycling will also reduce pressures on land. While these are not specifically referenced in the CCP, activities in the CCP will support and provide a framework for the wider suite of activities for which SEPA is responsible for.

4.13.3 Few parts of the CCP were found likely to have any significant part to play in reducing amounts of contaminated and derelict land, although some activities such as planning liaison were found likely to have some local benefits.

4.14 EFFECTS ON CLIMATIC FACTORS

4.14.1 As is to be expected for a plan that is aimed at putting into place a series of actions tot enhance SEPA's contribution to climate change mitigation and adaptation, the assessment found that the CCP was significantly contributing to these objectives. All of the actions in the CCP were either directly or indirectly contributing to addressing climate change issues where SEPA has a role. The actions are designed to take forward the Scottish Government's climate change agenda as set out in the climate change programme and in the proposed climate change bill. Accordingly, the CCP fits well with the other plans, programmes and strategies that make up Scotland's policy and legislative framework on climate change.

4.15 EFFECTS ON BIODIVERSITY

4.15.1 Generally, most of the activities in the CCP will contribute to seeking to improve biodiversity in Scotland. SEPA's primary contribution to biodiversity is the protection of the quality of the environment through environmental regulation and therefore activities under *regulation* (section 8.2) will assist in this regard. In particular, through the actions under *monitoring and analysis* (section 8.1) and in association with wider research activities, SEPA will improve its ability and capacity to take action and provide advice on a number of significant biodiversity issues where its scientific, regulatory or advisory involvement with biodiversity issues is less well-developed.

4.15.2 *Monitoring and analysis* of trends indicative of climate change will help SEPA to assess what additional action or measures are required to protect and enhance biodiversity. It is therefore expected that this part of the CCP will contribute to understanding how to protect biodiversity from the effects of climate change. For example, this might include being able to identify constraints to habitat networks, identifying those Scottish species most likely to be at risk, threats from alien species, and identify opportunities to enhance biodiversity through the range of SEPA's functions.

4.15.3 The likely contribution that the CCP will make to improving air, water and soil will have some benefits for biodiversity. For example, improvements to water bodies as a result of reduced water use will have direct benefits for aquatic biodiversity. The effects of the CCP are likely to be small compared to other drivers however.

4.15.4 Some activities in the CCP (eg 8.2.5 *identification of targets for...biodiversity…that may be compromised by climate change, and will seek to improve regulatory practices in order to minimise risks and maximise opportunities*) are specifically geared towards considering the effects of climate change on certain receptors and this will, when implemented, further contribute to protecting biodiversity from the effects of climate change.

4.15.6 SEPA's *informing and influencing* activities (section 8.5) will also make a contribution to forwarding biodiversity. In particular, SEPA's planning liaison activities can have a significant influence over new developments. These may be of direct biodiversity value

when commenting on climate change related proposals such as flood defences or renewable energy developments.

4.16 EFFECTS ON HUMAN HEALTH

4.16.1 Generally, most of the activities in the CCP will contribute to seeking to improve health in Scotland. The most direct contribution that the CCP will make to protecting and enhancing human health will be for those activities connected to flood risk and flood warning. Flooding is a significant risk to both life and property and it is likely that both the frequency and magnitude of flooding in Scotland will increase due to climate change. The effects of flooding are not only the direct loss of property, physical harm or from pollutants in flood water, but also the long term stress and discomfort of those affected by flooding or who live in a flood risk area. The CCP seeks to identify activities that not only help SEPA's understanding of flood risk in Scotland, but also sets out actions to improve dissemination of flood risk information and flood warnings.

4.16.2 Through it *monitoring and analysis* activities (section 8.1), SEPA will better understand the risks from future flooding in Scotland. This will help both in *informing and influencing* (section 8.6) through planning liaison and in being able to identify new ways to disseminate flood warnings. This will make a considerable contribution to protecting and enhancing human health.

4.16.3 Some activities in the CCP (eg 8.2.5 *identification of targets for human health…that may be compromised by climate change, and will seek to improve regulatory practices in order to minimise risks and maximise opportunities*) are specifically geared towards considering the effects of climate change on certain receptors and this will, when implemented, further contribute to protecting human health from the effects of climate change. Other activities which for example target emissions from transport may also have some benefits for local air quality

4.16.4 The likely contribution that the CCP will make to improving air, water and soil will have some benefits for health. For example, reductions in overall emissions to air will have some health benefits. The effects of the CCP are likely to be small compared to other drivers however.

4.16.5 Monitoring and analysis of trends indicative of climate change will help assess what additional action or measures are required to protect and enhance human health. Eg - Local air quality maps assist in identifying at risk communities and development of quality of life indicators will enable long term monitoring of quality of life.

4.16.6 The assessment has identified two risks with respect to human health. The first issue is referred to above under air and water in that there may be conflict between the need to protect the local environment from emissions from regulated sites through use of abatement technology with the high energy demands (and therefore greenhouse gas emissions) that such technologies can have. It is important that in considering these issues, potential effects on human health are considered. It is the case that human health effects of regulated processes (under Pollution Prevention and Control legislation for example) must be taken into account. The second possible effect on human health relates to the burning of biomass or waste as a renewable resource and the emissions (particularly to air) that such plants may have. More detailed assessment of the potential effects of these is required as and when proposals are brought forward under planning. These sites will be subject to Environmental Impact Assessment[19] as part of planning and/or Electricity Act applications

[19] EIA may be conducted under the Environmental Impact Assessment (Scotland) Regulations 1999 or the Electricity Act (Environmental Impact Assessment) (Scotland) Regulations 2000

and will also be regulated (by SEPA and others) where appropriate to protect both air quality and human health[20].

4.17 EFFECTS ON LANDSCAPE

4.17.1 The activities in the CCP will not, in themselves, likely have any significant effects on landscape. The activities described are ones which are not likely to lead to direct effects as they are designed to put in place a framework for SEPA to operate in on climate change issues. It is, however, possible that some actions in the CCP will indirectly contribute to activities which may lead to landscape effects as part of the wider policy and legislative framework on climate change, particularly in respect of renewables. Support for generation of renewable energy in order to reduce greenhouse as emissions from extraction and utilisation of fossil fuels is an indirect part of the CCP through activities such as *monitoring and analysis* (section 8.1), *informing and influencing* (section 8.5) and *changing attitudes* (section 8.6). SEPA's support in principle for appropriate use of renewables via the CCP may make a small and indirect contribution to landscape issues such as:

- an increase in biomass production in Scotland which would have landscape effects in terms of the land use and crop mix grown in parts of the country. Other drivers such as biomass policy, land suitability and price are likely to be much stronger contributors.
- an increase in wind energy generation either on or off shore. Again, other drivers such as planning policy, renewable energy targets (eg via the Renewables Obligation (Scotland) Order 2007), price and wind resource are likely to be much stronger determinants.

4.17.2 The extent of these types of effects arising from the CCP as opposed from other drivers is however very uncertain. SEPA recommends that as other, more direct, policy instruments are brought forward that the landscape effects are fully considered as part of the SEA of these plans. Scottish Natural Heritage has developed a biomass policy which was subject to SEA and makes recommendations about the landscape effects of biomass.

4.17.3 Mitigation of increased flooding associated with climate change may lead to landscape effects (eg from new flood defences), however the CCP asserts only minor influence over what mitigation measures are required. Although SEPA policy is to prefer "soft engineering solutions" to flood prevention (which tend to have lower landscape impacts), the Agency will advise on each case on its merits. All flood defences will likely be subject to some form of environmental assessment (most often Environmental Impact Assessment (EIA), or through SEA of development plans) and landscape effects will need to be fully covered in these, lower level assessments once the details of a scheme are known.

4.17.4 Climate change itself is likely to have landscape impacts, for example through loss of land as a result of sea level rises, or through erosion of river banks as a result of fluvial flooding.

4.18 EFFECTS ON MATERIAL ASSETS

4.18.1 Overall, the CCP was found likely to make a positive contribution to the objectives covered under material assets. In particular, the CCP is strongly focused towards efficiency as a means of reducing greenhouse gas and other emissions and therefore scores well in this regard.

4.18.2 One potential omission from the CCP is more specific reference to the role of renewables and the influence that SEPA could have in encouraging the use of renewable energy and in ensuring that new renewables developments were sited and operated appropriately. Some

[20] Research into the potential health effects of waste management (including energy recovery) has been published by the Department for Environment, Food and Rural Affairs (DEFRA) in 2004 - www.defra.gov.uk/environment/waste/research/health/index.htm

activities are mentioned (eg planning liaison), but this could be expanded. Accordingly, it is recommended that further consideration is given to whether the CCP should identify activities to set out the agency's position on renewables more clearly.

4.19 OTHER CONSIDERATIONS

4.19.1 The objectives under this heading covered a range of matters which were felt not to sit well under any of the headings required by the SEA legislation. Generally, the CCP performed well against all of these objectives. In particular, the CCP made the most contribution to applying the precautionary principle as the actual existence of the CCP itself is part of a precautionary approach by SEPA to the effects of climate change on Scotland.

4.20 CONSIDERATION OF ALTERNATIVES

4.20.1 The Climate Change Plan brings together a range of actions that SEPA has either commenced (these have not been assessed) or plans to undertake in the period 2008-12. Many of these actions are ones which have already been identified and are not necessarily new. The benefit of the CCP however is that it brings all these actions together into one cohesive document which provides a framework and focus for SEPA's climate change activities. As a result, the plan is an overarching document which has not been developed alongside a wide range of alternative options. The two main alternatives are for SEPA's climate change activities to take place in an uncoordinated way, without the benefit of a framework, or for SEPA not to undertake any actions in respect of climate change. Brief assessment of the effects of each approach are provided in table 8 below:

Table 8 – Summary of Alternatives

	Climate Change Plan	Discrete Actions	No Plan or Actions
Potential positive effects	• Overarching plan that provides a framework for effective delivery of SEPA's climate change activities; • Provides a focus for climate change in the organisation • Enables climate change to be factored in to decision making across a wide range of SEPA's day to day activities • Resource efficient • Avoid duplication in effort and importantly, ensures that there are no gaps in addressing climate change • Demonstrates leadership and contributes to the Scottish Government's climate change programme and Bill	• Flexible approach which allows for quick changes to react to changing environmental needs • Allows new areas to be undertaken as required	• Statutory duties will mean that some climate change work is undertaken, but minimal approach.
Potential negative	• Some activities may lead to potential	• Some activities may lead to potential	• Minimal environmental benefits;

effects	environmental effects (see matrices) and these must be addressed via mitigation.	environmental effects (see matrices) and these must be addressed via mitigation. • No synergy with SEPA's wider activities may result in lost opportunities; • Potential for duplication or for gaps in coverage of climate change issues	• Lack of leadership or direction for the Agency or for others to follow; • Danger that opportunities to address climate change through SEPA's wider activities are missed; • No synergy with SEPA's wider activities may result in lost opportunities; • Potential for gaps in coverage of climate change issues

CHAPTER 5

SUMMARY OF MITIGATION MEASURES REQUIRED

This section of the Environmental Report is designed to meet the requirements of paragraph 7 of Schedule 3 of the Environmental Assessment (Scotland) Act 2005. Namely, a summary of proposed mitigation measures to prevent, reduce or as far as possible offset any adverse environmental effects. All mitigation actions identified have been recorded in the matrices set out in Part 2 of Chapter 4.

5.1 The following mitigation actions are identified in Table 9 below.

Table 9 – Summary of Mitigation Actions

Mitigation Identified	Why	By Whom and When
SEPA should develop a method for allowing potential conflicts between regulatory objectives and climate change objectives to be reconciled. This should build upon the SNIFFER project UKPIR11: Minimising Greenhouse Gas Emissions From Environmentally Regulated Industry when published and should be focused on "win-win" situations where both effective environmental protection and climate change objectives can be achieved. Activities 8.2.1 and 8.2.3 to review regulatory activities will provide a framework for identifying those areas where environmental protection and climate change objectives can be better integrated.	In order to secure better integration between environmental protection and climate change objectives without adversely affecting local environmental quality.	SEPA when implementing activities 8.2.1 and 8.2.3
As and when proposals for biomass and energy from waste proposals come forward, these must be subject to more detailed level assessment through other processes such as EIA to assess local impacts on the environment.	In order to assess local effects on the environment from these facilities.	By regulators when proposals come forward
There is a small possibility that additional monitoring may lead to an increase in SEPA's greenhouse gas emissions for this activity (eg through travel or from power for monitoring equipment). To address this, any future rise in emissions from these activities should be factored into wider actions to reduce SEPA's overall carbon footprint.	To ensure SEPA's overall greenhouse gas emissions are reduced.	SEPA via its *Greening SEPA* activities

The CCP does not refer in any great detail to role of sustainable flood management and SEPA's contributions. The potential future opportunities that may available to SEPA under the "*Floods Directive*"[21] and other legislation should be referenced. A joined up approach between SEPA's flood risk management/flood warning responsibilities and its climate change obligations should be considered.	This was felt to be an omission	By SEPA as CCP is finalised
CCP should make more specific reference to, and be clear about, SEPA's position on renewables and should, where appropriate, identify activities which could be used to provide more proactive support for appropriate renewables technologies	As renewable energy is integral to climate change mitigation	By SEPA as CCP is finalised

[21] EC Directive 2007/60/EC on the assessment and management of flood risks

CHAPTER 6

MONITORING

This section of the Environmental Report is designed to meet the requirements of paragraph 9 of Schedule 3 of the Environmental Assessment (Scotland) Act 2005. Namely, a description of the measures envisaged concerning monitoring.

6.1 Measures are required to monitor the effects that SEPA's Climate Change Plan are having on the environment. The CCP itself puts forward a range of monitoring indicators to assess its success in delivering its primary objective of contributing to mitigation of and adaptation to climate change in Scotland. These indicators are wide ranging although as yet not finalised and it is proposed that these indicators as they develop and other indicators used alongside wider climate change indicators monitored by others will be used to monitor the effects of the CCP. These are described below.

Indicator 1 SEPA's primary emissions of CO_2; (for example, a reduction in CO_2 equivalent emissions of 20% by 2012 of the 2006/7 baseline. (The existing IEP target is a reduction of 20% of the 1998 – 1999 total by 2010)).

Indicator 2 A measure of the change in carbon intensity of key Scottish sectors.

Indicator 3 More specific indicators for industries regulated under Pollution Prevention and Control and the European Union Emissions Trading Scheme.

Indicator 4 The number of SEPA staff having received a programme of relevant training.

Indicator 5 The number of successful referrals to the Carbon Trust and Energy Saving Trust.

Indicator 6 The number of sector polices successfully influenced by SEPA with respect to climate change.

Indicator 7 A measure of attitudinal and behavioural change over time.

CHAPTER 7

NEXT STEPS

7.1 This Environmental Report will be placed on consultation, with the draft Climate Change Plan for SEPA for a period of ten weeks closing on 4 March 2008.

7.2 Comments on this Environmental Report, or on the CCP should be sent, before 4 March 2008 to:

Environmental Strategy
SEPA Corporate Office
Erskine Court
The Castle Business Park
Stirling. FK9 4TR

or to climatechange@sepa.org.uk

7.3 SEPA must take account of the Environmental Report and of any views expressed upon it during the consultation period prior to adopting the CCP. How this has occurred will be set out in an SEA Statement which will be published when the CCP is adopted.

7.4 The next steps in the SEA process following consultation on the Environmental Report are proposed as follows:

Stage	Proposed Time (Indicative)
Consultation Period on Environmental Report	December 2007 – 4th March 2008
Consultation Closes	4 March 2008
SEPA must take account of Environmental Report and views expressed upon it when finalising Climate Change Plan	March 2008
SEPA publishes Climate Change Plan	April 2008
SEPA publishes SEA Statement	April 2008 (with adopted Climate Change Plan
Monitoring of environmental effects	2008 - 2012

Appendix 1 - Other Relevant Plans Programmes and Strategies

This section includes a summary of plans relevant to the CCP for SEPA. The list is not intended to be exhaustive, but concentrates on those PPSs most directly relevant to the CCP. A short summary of the key policy coverage of each plan is also provided.

Plan Name	Key Policy Coverage
Kyoto Protocol (1997)	Sets out international agreement on targets and mechanisms for addressing climate change. Includes commitments to improved energy efficiency, reductions of greenhouse gases, carbon sequestration, sustainable agriculture, renewable energy, appropriate market mechanisms, sustainable transport and waste management.
The Second European Climate Change Programme (currently in preparation)	The first programme focused on achieving climate change targets by reducing emissions and increasing carbon sequestration. The review notes that the work identified in the first programme is being undertaken according to plan, but that further measures will be required in order to meet the EU's commitments under the Kyoto agreement. Some aspects of the first programme have been more successful than others, with energy generation targets having been met, but transport objectives proving more difficult to achieve. Current Commission policy is therefore focusing on achieving modal shift (with targets to reduce CO_2 emissions of cars having already been met).
Tomorrow's Climate, Today's Challenge: UK Climate Change Programme	Sets out policies and priorities for action in the UK and internationally. Sets out measures to reduce emissions target every sector of the economy and include: • A stricter emissions cap for industry; Measures to encourage the uptake of biofuels in petrol; • Tighter building regulations; • Measures to improve household energy efficiency; • A renewed emphasis on encouraging and enabling the general public, businesses and public authorities to help achieve the Government's targets ;and • Increased levels of microgeneration
Changing our Ways : Scotland's Climate Change Programme (2006)	This updates the original Scottish Climate Change Programme (2000). It provides a framework for action needed across all sectors in Scotland and sets a long-term vision for moving towards a low carbon pathway. Sets out steps being taken in Scotland, now and in the near future to tackle climate change. Key elements are; • Presenting longer term view; • Quantifying Scotland's equitable contribution in carbon terms; • Setting a Scottish target to exceed the Scottish Share by 1million tonnes per annum by 2010; • Demonstrating achievements so far; • Setting out new actions and future directions across main sectors; and • Responding to the inevitable consequences of climate change.
UK Climate Change Bill (2007)	The UK Climate Change Bill as introduced in the House of Lords on 14th November 2007 sets up a framework for the UK to achieve its long-term goals of reducing carbon dioxide emissions and to ensure steps are taken towards adapting to the impact of climate change. The main elements are: • Setting emissions reduction targets in statute and carbon budgeting. • The creation of an independent advisory body "Committee on Climate Change". • Trading scheme powers. • A new reporting framework. • Adaptation – risk assessment and development of an adaptation

	programme which must contribute to sustainable development. Policy measures to reduce emissions.
Scottish Climate Change Bill (2007)	The Scottish Government is consulting on a proposed Climate Change Bill which is likely to include: • statutory targets for 2050 and interim carbon budget periods or targets, set ten or more years in advance • mandatory annual reporting • source of independent advice and monitoring • any provisions needed to deliver policies to meet the 2050 target or adapt to climate change, either primary legislation or enabling powers to allow proposals to be taken forward through future secondary legislation Some of these proposals are at a more advanced stage than others. The Government's preference is that the target will be: • based on net domestic emissions measured through the greenhouse gas inventory, rather than a consumption-based footprint measure • an 80% reduction target, rather than a budget to 2050 measured against the baseline for Kyoto protocol
Water Framework Directive (2000/60/EC)	Establishes a new legal framework for the protection, improvement and sustainable use of surface waters, transitional waters, coastal waters and groundwater across Europe in order to: • Prevent deterioration and enhance status of aquatic ecosystems, including groundwater; • Promote sustainable water use; • Reduce pollution; and • Contribute to the mitigation of floods and droughts.
Directive on the assessment and management of flood risks 2007/60/EC	Directive 2007/60/EC on the assessment and management of flood risks entered into force on 26 November 2007. This Directive requires Member States to assess all water courses and coast lines for flood risk, to map the flood extent and assets and humans at risk in these areas and to take adequate and coordinated measures to reduce this flood risk. With this Directive also reinforces the rights of the public to access this information and to have a say in the planning process.
National Planning Framework	Guidance for the spatial development of Scotland to 2025, updated every 4 years. Regarded as a key element in modernising and reforming the planning system, and a material consideration in framing planning policy and making decisions on planning applications and appeals. Analyses the underlying trends in Scotland's territorial development, the key drivers of change and the challenges faced. Describes Scotland in 2004, identifies key issues and drivers of change, sets out a vision to 2025, and identifies priorities and opportunities for different parts of the country. The importance of place is highlighted and priorities for investment in strategic infrastructure are identified.
National Flooding Framework Action Plan	In response to extreme flood events in 2002 the Scottish Executive established a Committee of Ministers to discuss a response. An output of this was to produce the National Flooding Framework Action Plan and a Statement of Commitments, based around 4 “A”s – awareness, avoidance, alleviation and assistance.
Scottish Planning Policy 7 – Planning and Flooding	Scottish planning guidance to prevent further development which would have a significant probability of being affected by flooding or which would increase the probability of flooding elsewhere.

Planning Advice Note 69; Planning and Building Standards Advice on Flooding. (2004)	Provides background information on the water environment and factors that contribute towards flooding. Gives advice on the role of planning and building standards in relation to flooding, design issues and forms of construction, flood prevention schemes and the role of Flood Liaison Advisory Groups (FLAGS).
Planning Advice Note 79; Water and Drainage. (2006)	Provides advice to planners on how they can work with other organisations to ensure that water and waste water infrastructure meets the needs of current and future households.
Scottish Water - Water Resource Plan (produced annually)	Scottish Water is committed to producing a water resource plan with SEPA liaison and guidance to ensure protection of water resources. Includes supply-demand appraisal.
EC Thematic Strategy for Soil Protection	The Thematic Strategy for Soil Protection consists of a Communication from the Commission to the other European Institutions, a proposal for a framework Directive and an Impact Assessment. The **Communication (COM(2006) 231)** sets the frame. It explains why further action is needed to ensure a high level of soil protection, sets the overall objective of the Strategy and explains what kind of measures must be taken. It establishes a ten-year work program for the European Commission. The proposal for a framework **Directive (COM(2006) 232)** sets out common principles for protecting soils across the EU. Within this common framework, the EU Member States will be in a position to decide how best to protect and use soil in a sustainable way within their own territories. The Impact Assessment (**SEC (2006) 1165** and **SEC(2006) 620**) contains an analysis of the economic, social and environmental impacts of the different options that were considered in the preparatory phase of the strategy and of the measures finally retained by the Commission.
EU Thematic Strategy for Soil Protection (2005)	Notes that soil has important functions but that degradation of its quality is accelerating, partly due to wind and water erosion and also as a result of depletion of organic matter content. It sets out commitments to improving quality as a result, including development of a New Directive
Council Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora	The main aim of the “Habitats Directive” is to promote the maintenance of biodiversity by requiring Member States to take measures to maintain or restore natural habitats and wild species at a favourable conservation status, introducing robust protection for those habitats and species of European importance. In applying these measures Member States are required to take account of economic, social and cultural requirements and regional and local characteristics.
Council Directive 79/409/EEC on the conservation of wild birds	The 'Birds Directive' provides a framework for the conservation and management of, and human interactions with, wild birds in Europe. It sets broad objectives for a wide range of activities, although the precise legal mechanisms for their achievement are at the discretion of each Member State (in the UK delivery is via several different statutes). The Directive applies to the UK and to its overseas territory of Gibraltar.
UK Biodiversity Action Plan	UKBAP was published in January 1994 in response to Article 6 of the Biodiversity Convention, to develop national strategies for the conservation of biological diversity and the sustainable use of biological resources. The UK BAP included contributions from Government, statutory conservation agencies, the academic world and the voluntary sector. It committed the then Government and its agencies to 59 programmes or tasks: to conserve species and habitats; to develop public awareness and understanding; and to contribute to biodiversity work in the European and global context.
Scotland’s Biodiversity – It’s In Your Hands. A strategy for the conservation and enhancement of biodiversity in Scotland (2004)	Sets out Scottish aims relating to biodiversity. Seeks to go beyond a previous emphasis on protecting individual sites to achieve conservation at a broader scale. Aims to halt loss and reverse decline of key species, to raise awareness of biodiversity value at a landscape or ecosystem scale, and to promote knowledge, understanding and involvement amongst people.

National Waste Plan (2003)	The National Waste Plan establishes the direction of policies for sustainable waste management in Scotland to 2020. It is designed to significantly improve Scotland's record on waste reduction, recycling, composting and recovery. Waste management can have significant implications for climate change, particularly the production of methane, a powerful greenhouse gas, from the decomposition of waste. Certain forms of energy generation from waste can also make a contribution to the supply of renewable energy in Scotland. The National Waste Plan sets out objectives to enable sustainable waste management in Scotland, including: • Provision of segregated kerbside waste collections to 90% of households by 2020; • Stop growth of levels of municipal waste by 2010; • Achieve 55% recycling/composting by 2020; • Recover energy from 14% of municipal waste; and • Reduce landfill to around 30% of municipal waste.

APPENDIX 2

OUTCOME OF SCOPING

The following table gives a summary of the consultation responses received from the Consultation Authorities.

CONSULTATION AUTHORITY	COMMENT	INCORPORATED INTO ENV REPORT?	WHERE ?
Scottish Natural Heritage	Section 2, Table 1 refers to "Scotland River Basin Management Plan" – this should read "Climate Change Plan".	Yes, this was an error. Revised text in section 2.1 heading	Chapter 2
	Consultation period should be extended from 6 weeks to 12 weeks for Environmental Report stage to allow for Christmas/New Year holiday period.	Consultation period has been extended to run for 10 weeks alongside a 3 month consultation on the plan. This was agreed with Scottish Government in December 2007	Chapter 7
	Other relevant plans and programmes in Appendix A should include draft EU Soils Directive, the Scottish Biodiversity Strategy, the UK Biodiversity Action Plan and the EU Habitats and Birds Directives.	Yes.	Appendix A,
	In section 2.4 of Appendix B • Refer to the Marine Climate Change Impacts Partnership Annual Report Card 2006 (www.mccip.org.uk/arc); • Refer to the Scottish Ocean Climate Status Report for 2004 and 2005 (www.frs-scotland.gov.uk); • Consider the implications of decreasing pH in the marine environment and potential for acceleration of release of certain pollutants from the sediments; and • Consider additional impacts on biodiversity – impacts of sea-level rise on mudflat areas in estuaries supporting wintering birds and threats posed by AIS establishment.	Yes Yes Yes Yes	Chapter 3 Chapter 3 Chapter 3 (table 4) Chapter 3
	Add "Adaptation and Mitigation" to categories listed in the longer term actions.	This comment was in relation to the draft wording of the CCP actions, not the SEA.	n/a
	Mention the Habitats Directive as well as the SBS in the Biodiversity Objective.	No. The SBS translates the HD into a Scottish perspective and is therefore working towards the same aim.	n/a
Historic Scotland	General - Question the need to scope in the historic environment as the CCP strategic actions (as opposed to climate change itself) are unlikely to have significant effects in this.	Cultural Heritage has been scoped out of the assessment	n/a
	General - Clearly identify where impacts are uncertain at the strategic level and make clear how these are to be taken into account at lower levels.	Yes.	Chapters 4 and 5

	ER Consultation Period – Happy with 6 week period, provided this starts on receipt of the relevant documents.	Period now extended to 10 weeks to accommodate SNH request for longer.	Chapter 6 Page 12.
	If decide to keep historic environment scoped in should include the following documents in Appendix A; • Scottish Historic Environment Policy 1. Scotland's Historic Environment (www.historic–scotland.gov.uk/shep1-3.pdf) • Scottish Historic Environment Policy 2. Scheduling: protecting Scotland's nationally important monuments (www.historic-scotland.gov.uk/shep2.pdf) • NPPG 5 Archaeology and Planning • NPPG 18 Planning and the Historic Environment • Passed to the future	Cultural heritage issues have been scoped out of this assessment, therefore these have not been included.	n/a
	Add biomass and micro-renewables to issues identified to mitigate and adapt to climate change.	Yes.	Chapter 3
	Objective for cultural heritage, if to be retained as a receptor, should ideally read "Protect and, where appropriate, enhance the historic environment". See also HS first comment above.	Cultural heritage issues have been scoped out of this assessment, therefore these changes have not been included.	n/a
	In relation to mitigation; • It would be useful to clearly describe in the ER any changes made to the plan as a result of the environmental assessment, and to set out the expectations for lower level plans. • Identify who will be responsible for ensuring the mitigation measures are taken forward as the plan is implemented. • Identify measures to monitor the significant effects of the plan.	Yes.	Chapter 5

APPENDIX 3

GLOSSARY & ABBREVIATIONS

Biomass - non-fossilized and biodegradable organic material originating from plants, animals and micro-organisms. This can include products, by-products, residues and waste from agriculture, forestry and related industries as well as the non-fossilized and biodegradable organic fractions of industrial and municipal wastes. Biomass also includes gases and liquids recovered from the decomposition of non-fossilized and biodegradable organic material. *(Source: UNFCCC - http://cdm.unfccc.int/EB/020/eb20repan08.pdf)*

CCP – SEPA's Climate Change Plan

Climate Change - refers to any change in climate over time, whether due to natural variability or as a result of human activity. (*Source: International Panel on Climate Change*)

Environmental Impact Assessment – An assessment of the significant environmental effects of implementing a project that qualifies under the Environmental Impact Assessment (Scotland) Regulations 1999 or other related EIA legislation.

Environmental Justice - The definition consists of two elements: "1. the 'distributive justice' concern that no social group, especially if already deprived in other socio-economic respects, should suffer a disproportionate burden of negative environmental impacts; and 2. the 'procedural justice' concern that all communities should have access to the information and mechanisms to allow them to participate fully in decisions affecting their environment." (*Source: Poustie (2004) Environmental Justice In SEPA's Environmental Protection Activities*)

Environmental Report – A report required under the Environmental Assessment (Scotland) Act to describe the likely significant effects on the environment of implementing a plan, programme or strategy. This document is the Environmental Report for the SEPA Climate Change Plan.

Greenhouse Gas (GHG) - A gas that contributes to the natural greenhouse effect. The Kyoto Protocol covers a basket of six greenhouse gases produced by human activities: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride. Emissions of these gases taken together are measured in terms of carbon dioxide equivalents on the basis of the gases' global warming potential. (*Source: adapted from European Commission. Climate change: Glossary of common terms and acronyms.)*

PPS – Plan, programme or strategy

Precautionary Principle - This principle requires that "*where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing cost-effective measures to prevent environmental degradation*" or harmful exposures to human health. (adapted from the Rio Declaration (Principle 15)).

Scoping – The process of deciding the scope and level of detail to be included in an Environmental Report along with the consultation period.

Screening – The process of determining whether significant environmental effects are likely to result from the implementation of a plan, programme or strategy.

SEA Topic – These are topics listed in Schedule 3 of the Environmental Assessment (Scotland) Act 2005 which should be considered. This list includes: biodiversity, population, human health, fauna, flora, soil, water, air, climatic factors, material assets, cultural heritage (including architectural and archaeological heritage), landscape and the inter-relationship between these issues.

SEA Objective – An objective used to test whether a qualifying plan, programme or strategy is likely to lead to significant environmental effects. SEPA has used 16 SEA objectives in this assessment. They are described in 4.2.4.

Strategic Environmental Assessment – Term used to describe environmental assessment as applied to plans, programmes and strategies.

APPENDIX 4

REFERENCES

EC Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment

EC Directive 2007/60/EC on the assessment and management of flood risks

Electricity Act (Environmental Impact Assessment) (Scotland) Regulations 2000

Environmental Assessment (Scotland) Act 2005

Environmental Impact Assessment (Scotland) Regulations 1999

Fisheries Research Service (2005) Scottish Ocean Climate Status Report

HM Treasury (2006) The Stern Review

IPCC (2001) Climate Change 2001: Working Group 1 – The Scientific Basis

Marine Climate Change Impacts Partnership (2006) Annual Report Card

Renewables Obligation (Scotland) Order 2007

SEPA (2007) *SEPA's Provisional Corporate Strategy: Our Proposals for 2008 – 2011*

SEPA (2006) *State of the Environment Report for Scotland – Change Tomorrow Today*

SEPA (2005) *SEPA Corporate Plan*

Scottish Executive (2004) Scottish Planning Policy 7 – Planning and Flooding

Scottish Executive (2004) Scottish Biodiversity Strategy

Scottish Executive (2006) SEA Toolkit

Scottish Natural Heritage (2007) Biomass Policy

SNIFFER (2006) Handbook of Climate Change Trends Across Scotland

SNIFFER (2007) UKPIR11: Minimising Greenhouse Gas Emissions From Environmentally Regulated Industry

UK Climate Impacts Programme (UKCIP) (2007) Various climate change data accessed on www.ukcip.org.uk in November 2007

UK Climate Impacts Programme (UKCIP) (2002) Climate Change Scenarios for the United Kingdom: The UKCIP Scientific Report

Data from UK National Atmospheric Emissions Inventory (www.naei.org.uk) accessed 13/12/07