

Getting the best from our land, consultation on a draft Land Use Strategy for Scotland 2016-2021

Strategic Environmental Assessment Environmental Report

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November 2015



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Abbreviations

AQMA	Air Quality Management Area
BAP	Biodiversity Action Plan
CAP	Common Agricultural Policy
CAR	Controlled Activity Regulations
CBD	Convention on Biological Diversity
CCAP	Climate Change Adaptation Plan
CCRA	UK Climate Change Risk Assessment
CH ₄	Methane
CO ₂	Carbon dioxide
CSGN	Central Scotland Green Network
EC	European Commission
EIA	Environmental Impact Assessment
EU	European Union
GES	Government Economic Strategy
GHG	Greenhouse Gas(es)
GVA	Gross Value Added
GWh	Gigawatt Hours
HRA	Habitats Regulations Appraisal
LFA	Less Favoured Area
LUS	Land Use Strategy
MPA	Marine Protected Area
Mt CO ₂ e	Million Tonnes Carbon dioxide Equivalent
NGO	Non-Government Organisations
NH ₄	Ammonia
NMP	National Marine Plan
NNR	National Nature Reserve
NO ₂	Nitrogen dioxide
NO _x	Nitrogen oxides
NPF3	National Planning Framework 3
NSA	National Scenic Area
O ₃	Ozone
PM	Particulate Matter

PPS	Plans, Programmes and Strategies
RBMP	River Basin Management Plan
RCAHMS	Royal Commission on the Ancient and Historical Monuments of Scotland
RPP2	Low Carbon Scotland: Meeting our Emissions Reduction Targets 2013 – 2027: The Second Report of Policies and Proposals
SAC	Special Area of Conservation
SEA	Strategic Environmental Assessment
SFS	Scottish Forestry Strategy
SHEP	Scottish Historic Environment Policy
SNH	Scottish Natural Heritage
SO ₂	Sulphur dioxide
SPA	Special Protection Area
SPP	Scottish Planning Policy
SRDP	Scottish Rural Development Programme
SSSI	Site of Special Scientific Interest
SUDS	Sustainable Urban Drainage Systems
The 2005 Act	Environmental Assessment (Scotland) Act 2005
The 2009 Act	The Climate Change (Scotland) Act 2009
The draft Strategy	Scotland's Land Use Strategy 2016-2021
UK	United Kingdom
UKFS	UK Forestry Standard
WFD	Water Framework Directive
WHS	World Heritage Site

Non-Technical Summary

Introduction

The Scottish Government has published a new draft Strategy on land use in Scotland. This updates the existing Land Use Strategy 2011-2016 and is a requirement of the Climate Change (Scotland) Act 2009.

A Strategic Environmental Assessment (SEA) of the draft Strategy has been undertaken under the Environmental Assessment (Scotland) Act 2005. This Non-Technical Summary describes the content of the Environmental Report which is the output of the SEA process. It includes a description of the significant environmental effects expected as a result of the proposed policies and proposals in the draft Strategy. The Environmental Report, alongside the draft Strategy is open for public consultation.

What is the draft Strategy?

The Climate Change (Scotland) Act 2009 places a duty on Scottish Ministers to produce a Land Use Strategy that is revised every 5 years or less. The first Strategy was produced in 2011, and following its publication, two regional land use pilot projects commenced in Aberdeenshire and the Scottish Borders aimed at considering land use in a collective and integrated way. “Getting the best from our land, consultation on a draft Land Use Strategy for Scotland 2016-2021” has now been developed by the Scottish Government. The draft Strategy continues the policy direction set out in the first strategy, taking forward the same Vision to 2050 and Objectives and Principles for Sustainable Land Use. Primarily, the 10 strategic indicators developed to monitor progress of the first Land Use Strategy will continue to be used to monitor progress of the new Strategy. With these central components in place, the draft Strategy focuses on the priority actions for the next five year period and proposes a suite of policies and proposals developed around three themes.

The theme of the first group of policies and proposal sets out to provide further clarity on the status and context of issues relating to land use and current Scottish Government policy. For example, policies that relate to natural resource use, planning, forestry, land ownership and management. It also sets out a commitment to consider an integrated approach to the management of land, water and living resources that promotes conservation and sustainable use in a fair way. The second theme groups policies and proposals that seek to underpin decision making with improved data and increased accessibility to information, including those that support the mapping of ecosystem services (the benefits we receive from nature). The third theme comprises policies and proposals that relate to the direct application of the Principles of the draft Strategy, either directly through specific projects or through their use in ways that will influence direct changes. Considered within this group is the management of the agricultural, urban and uplands environments.

What is a Strategic Environmental Assessment (SEA) and how was it undertaken?

SEA is a means of considering the environment when preparing public plans, programmes and strategies. It identifies potential significant environmental effects and, where necessary, proposes how these effects can be avoided or reduced. Through consultation, it also provides an opportunity for the public to express their views on proposed policies and their potential environmental impacts.

The SEA of the draft Strategy considered the likely environmental effects of each of the groups of policies and proposals on aspects of the environment including soil health, water quality, their contribution to reducing the emissions of greenhouse gases to the atmosphere and therefore their impact on meeting government targets to achieve this. In addition, the assessment looked at the range of benefits we obtain from the natural environment, such as food, fresh water, air quality and supporting biodiversity and a sense of place. The natural atmosphere can also capture and store carbon dioxide, known as carbon sequestration, which has the potential to reduce our contribution to climate change. Together these benefits are known as ecosystem services and an ecosystems approach is a way of looking at the natural environment and how it works as a whole, looking at the many interactions within it, and considering the ecosystem services we get from it.

Following this, the SEA considered the potential impacts of the full suite of policies and proposals set out in the draft Strategy, focusing on the identification of common themes and ambitions between them. The last part of the assessment looked at the possible impacts of the draft Strategy in the context of wider policy, for example, at national, UK and international levels.

What were the key environmental considerations identified?

How our land is managed and used influences and impacts on the health of ecosystem services, therefore affecting their ability to provide the goods and services that we rely on. In addition, land use and management can make a significant contribution to meeting climate change targets. Conversely, the predicted impacts of climate change can impact on the ability of the land and ecosystem services to meet our growing demands.

There are a range of environmental issues that can arise through land use and management and the interconnections between them. For example, pollution from the use of fertilisers or run-off in the urban environment can lead to water pollution, which has implications on drinking water quality and also for sectors reliant on good water quality, such as tourism. Further impacts may arise on the quality of soil and species and habitats. The natural environment can also provide multiple benefits, such as the creation of green infrastructure. The health benefits greenspace can bring are well documented; in addition, it can also contribute towards climate change

mitigation and adaptation, have a positive effect on air, soil and water quality, which in turn can be beneficial for biodiversity. Increased pressure on our resources, land management practices and the predicted impacts of climate change are known pressures on the natural environment.

Key considerations are set out in the boxes below.

Biodiversity

- Biodiversity plays a key role in both the functioning of ecosystems and in supporting our lives through the provision of crucial resources like fresh air, clean water and food.
- Scotland's biodiversity receives protection through a range of existing designations and conservation objectives.
- While many habitats and species are classed as stable or improving, a third of habitats and a fifth of species are identified as being in decline.



Population and human health

- The natural environment provides climate regulating and air filtering services, supports the production of goods such as food, and provides opportunities for outdoor recreation and learning.
- Scotland's population is predicted to increase by 10% by 2035
- Some 70% of people live in urban settlements, covering just 2% of Scotland's land area.
- Around a half of Scots visit the outdoors at least once a week, however, just one third of all scots use greenspace within a five minute walk from their home.



Climatic Factors

- Greenhouse gas (GHG) emissions are having a detrimental impact upon the global atmosphere.
- Between 1990 and 2013, there was a 34.3 % reduction in estimated Scottish GHG emissions, with net emissions from the agriculture sector falling by around 23% over the same period.
- The role of forestry as a carbon sink has increased by 42.0% between 1990 and 2013.



Air

- Air quality is important for both long term and short term human health and can have adverse effects on the wider environment.
- While the quality of Scotland's air has improved considerably over the last few decades, air pollution is estimated to reduce life expectancy of every person in the UK by an average of 7–8 months
- Scotland's local authorities have established 35 Air Quality Management Areas (AQMA's); primarily as a result of traffic emissions.



Soil

- Soil is essentially a non-renewable resource and is fundamentally one of Scotland's most important assets.
- Some 25% of Scotland's soils are cultivated for agriculture, 45% for rough grazing and 17% forested.
- Scotland's soils contain approximately 3 billion tonnes of carbon, primarily in our peat soils, making up over half of the UK's soil carbon.
- In 2013, there were 11,114 hectares of derelict and urban vacant land in Scotland; a decrease of 187 hectares (1.7%) from 2012.



Water

- The well-being we derive from the water environment depends primarily on the health and availability of our waters.
- While most of Scotland's water resources are of good to high status, much work remains in improving the status of many of our rivers, canals, freshwater lochs and groundwater aquifers.
- There have been significant reductions in pollution over the last 25 years.
- It is estimated that 1 in 22 of all residential properties and 1 in 13 of all non-residential or business properties in Scotland are at risk from flooding.



Cultural Heritage and Landscape

- Scotland's diverse and distinctive landscapes are a significant part of the country's natural and cultural heritage, making an important and positive contribution to the economic, cultural and social wellbeing of the nation.
- While Scotland's cultural heritage is recognised through a wide range of designations, it is likely that there are many more unrecorded or undiscovered features throughout our lands and waters.
- Scotland's unique and varied landscapes are recognised not just through the 40 National Scenic Areas (NSAs), covering around 13% of the total land area, but also through its National Parks, biosphere reserves, geoparks, wild land areas and local designations.



Material Assets

- Agricultural land is a key material asset in Scotland and soil is an important component of this.
- Scotland's agricultural land is given over to a mix of livestock, crops and fallow. Set-aside land represents only 10% of the total agricultural area.
- The quantity of timber harvested from Scotland's forests has increased relatively steadily over the past few decades, and is now around seven times the level of that in the late 1970s.
- Tourism generated some £4.6 billion in direct expenditure from overnight visitors in 2013 and provided employment to around 181,500 people.

What are the environmental implications of the draft Strategy?

Scotland's land is a fundamental asset and important to our social, economic and environmental health. It provides a number of functions from which we gain benefits, such as the provision of food and water, it stores carbon and supports habitats and species. It also plays a role in less tangible ways, such as the role of the historic and cultural environment and landscape in contributing to our sense of place. The natural environment also plays a significant role in how we adapt to climate change, such as reducing our GHG emissions through its role as a carbon sink or helping our resilience to predicted effects of a changing climate, for example; its role in natural flood management.

Overall there are likely to be significant benefits from the implementation of the proposals and policies set out in the draft Strategy. Whilst it is acknowledged that many of these simply seek to inform or align policy ambitions across Government, it is considered that together the policies and proposals can be seen to have the potential for positive effects.

Potential benefits include increased understanding of the environmental implications of land use and its management, including greater consideration of the importance of ecosystem health in underpinning the services which are beneficial to our quality of life. The provision and availability of sound data and relevant information should additionally help to underpin and inform the decision making process when considering land use, in addition to measures set out to facilitate stakeholder engagement in the process of considering the management of land for which they have an interest. Combining these actions with those aimed at informing future work in areas such as the urban environment, agriculture, forestry and uplands, also has the potential to deliver positive effects on how land in these areas is used and managed.

The promotion of healthy and robust ecosystems and reinforcing these considerations in the decision making process is fundamental to our ability to adapt to the predicted impacts of climate change. Whilst these have the potential to have significant positive effects in terms of climatic factors, there are likely to be a number of other associated benefits. This includes the potential for additional benefits for biodiversity, water, soil, air, cultural heritage and landscape, associated with improved land use and management.

What recommendations did the assessment make?

The SEA supported the alignment of the ambitions and objectives of the draft Strategy with wider Government policy. It also supported the continued promotion of the consideration of ecosystems in decision making processes and encouraging the adoption of an ecosystem approach. It identified further opportunities for linking ecosystem health with wider policy areas, such as the health benefits attained from accessible and resilient green infrastructure.

The provision of data, information and tools, such as data mapping, was supported as it was considered that this was vital for an informed and robust decision making process. It acknowledged and supported the role that stakeholder engagement and facilitation measures in the draft Strategy could play in this process. The SEA identified that there may be an opportunity for additional benefits from facilitating these relationships particularly where the benefits are not just environmental, but also socio-economic, for example, encouraging community engagement.

The SEA supported measures set out in the draft Strategy that have the potential for a significant benefit on GHG emissions and climate change adaptation. It considered that any potential benefits should be optimised where possible at landscape or catchment level. In addition, the SEA reported that there were additional opportunities for the draft Strategy to set out the importance of adaptation measures and increase awareness of the consideration of climate change adaptation within all three groups of proposals and policies.

What are the reasonable alternatives to the draft Strategy?

The Environmental Assessment (Scotland) Act 2005 requires that reasonable alternatives be assessed. Guidance on SEA explains that alternatives must be realistic. When considering whether or not an alternative is reasonable, potential restrictions to their implementation; for example, parameters set by relevant legislation and any relevant policy commitments should be considered. The draft Strategy builds on and takes forward a policy direction on land use as set out in the first Strategy, including the same Vision, Objectives and Principles. A number of scenarios, or options, were set out and considered in the development of the first Strategy and ultimately these resulted in the construction of these Objectives and Principles as taken forward in this draft Strategy. As these remain in place, the SEA of the strategic alternatives undertaken in the first Strategy, and the findings of this SEA, remain valid for the current process.

Next Steps

Public views are now sought on the Environmental Report and the draft Strategy “Getting the best from our land, consultation on a draft Land Use Strategy for Scotland 2016-2021” to which it relates. The following questions may provide structure for the responses:

Consultation Questions on the Environmental Report:

Q 1a: Do you consider that the Environmental Report set out an accurate description of the current environmental issues/baseline? Agree/Disagree/Partially/Don't know.

Q 1b: Please give reasons for your answer.

Q 2a: Do you consider that the predicted environmental effects as set out in the Environmental Report are accurate? Agree/Disagree/Partially/Don't know.

Q 2b: Please provide reasons for your answer including further information you feel should be considered in the assessment.

Q 3a: Do you consider that the recommendations and opportunities for mitigation and enhancement are accurate? Agree/Disagree/Partially/Don't know.

Q 3b: Please provide reasons for your answer.

Q 4: Are you aware of alternatives to the proposed policies that should be considered as part of the Strategic Environmental Assessment (SEA) process conducted for the draft Strategy?

The consultation runs until 29 January 2016 and there are a number of ways that you can respond. Comments on the Draft Strategy and the Environmental Report can be submitted via:

- online on the Scottish Government website
- by email and sending your response to the Land Use and Biodiversity Team at LandUseStrategy@gov.scot
- In writing, by sending your responses to Land Use and Biodiversity Team, The Scottish Government, 1C-North, Victoria Quay, Edinburgh, EH6 6QQ

Following the conclusion of the consultation period, the responses received on both the draft Strategy and this Environmental Report will be analysed and reported. Key messages from respondents, including those of the various stakeholder groups, will be highlighted and the findings of the analysis will be taken into account in the preparation of the final Strategy.

1. Background

1.1 Introduction

- 1.1.1 The development of Scotland's first Land Use Strategy¹, and further revised versions, are a key commitment of Section 57 of the Climate Change (Scotland) Act 2009 (the 2009 Act), which places a duty on Scottish Ministers to produce a Land Use Strategy that should be revised every 5 years or less.
- 1.1.2 Getting the best from our land, consultation on a draft Land Use Strategy for Scotland 2016-2021 has been prepared in accordance with this duty and builds on Scotland's first Land Use Strategy 2011-2016. This strategy falls within the scope of the Environmental Assessment (Scotland) Act 2005 (the 2005 Act) and this Report sets out the findings of the Strategic Environmental Assessment (SEA) undertaken on it. Scotland's Land Use Strategy 2016-2021 and this Environmental Report are now out for public consultation.

1.2 What is Scotland's Land Use Strategy 2016-2021?

Background

- 1.2.1 The first Land Use Strategy set out a long term vision for 2050 with three Objectives focused on economic prosperity, environmental quality and communities. The accompanying ten Principles for Sustainable Land Use set out in the first Strategy reflected Scottish Government policies on the priorities which should inform land use choices across Scotland. The first Strategy contained thirteen Proposals for Action across a wide range of policy areas. These were detailed in the first [Action Plan](#)² published in 2011. In addition, a set of ten high level indicators was developed to measure the delivery of the Objectives. Progress in the delivery of the Proposals and trends shown by the Indicators were reported on annually in the [Progress Statements](#)³.
- 1.2.2 The first Strategy covered all land use, both urban and rural, and was developed to complement the Statutory Planning System. Following this, two regional land use pilot projects commenced in Aberdeenshire and the Scottish Borders in 2013. The aim of the pilots was to consider land use in a collective and integrated way. The pilot projects concluded in March 2015. Further information on the pilot projects can be found [here](#).

¹ Scottish Government (2011) Getting the best from our land – A land use strategy for Scotland [online] Available at: <http://www.scotland.gov.uk/Publications/2011/03/17091927/12> (accessed 29/10/2014)

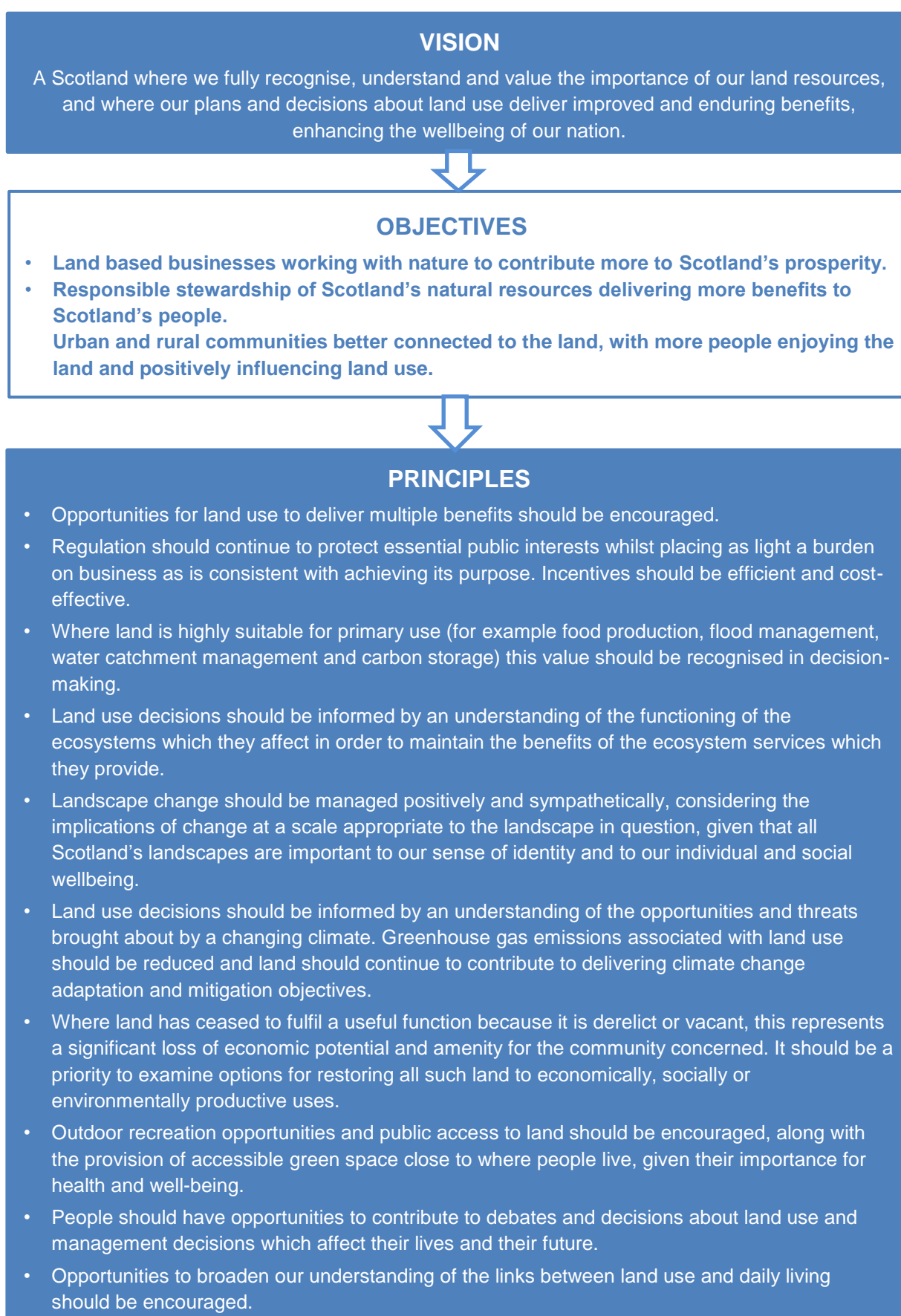
² Scottish Government (2011) getting the best from our land – A land use strategy for Scotland – Action Plan (online) available at <http://www.gov.scot/Topics/Environment/Countryside/Landusestrategy/Monitoring> (accessed 26/10/2015)

³ Scottish Government (2011) Getting the best from our land – a land use strategy for Scotland – Annual Progress Statements <http://www.gov.scot/Topics/Environment/Countryside/Landusestrategy/Monitoring> (accessed 26/10/2015)

Getting the best from our land, consultation on a draft Land Use Strategy for Scotland 2016-2021

- 1.2.3 The 2009 Act states that “Getting the best from our land, consultation on a draft Land Use Strategy for Scotland 2016-2021” (the draft Strategy) should set out Scottish Ministers’ objectives in relation to sustainable land use and their proposals and policies for meeting those objectives. It is also a requirement that it set out how it will contribute to the achievement of Ministers duties and objectives for climate change mitigation and adaptation and sustainable development. The Vision, Objectives and Principles in the first Strategy (see Figure 1.1) received support amongst stakeholders in the 2014 programme of stakeholder events and have been accepted as fit for purpose in terms of the strategic direction for sustainable land use matters. The draft Strategy continues to support these ambitions, and through their inclusion, they continue to provide an indication of Scotland’s policy direction and ensure stability of purpose in the second Strategy’s development.
- 1.2.4 As such, the draft Strategy continues the current policy direction established in the first Strategy. It moves towards more integrated land use, the generation of multiple benefits from our land resources, better informed and more inclusive decision making processes, and through the continued use of an ecosystems approach, helping to build a better understanding of how we can utilise our natural resources more sustainably. The draft Strategy proposes a sharper focus on key activities, particularly those relating to climate change, resource efficiency and the use of spatial approaches.

Figure 1.1: Vision, Objectives and Principles of the First Strategy



Policies and Proposals

- 1.2.5 With these central components in place, the draft Strategy focuses on the priority activities, presenting a 5 year programme of activity. A suite of policies and proposals has been developed around three themes: 'Policy context', 'Informed decision making' and 'Applying the Principles'.

Policy Context

- 1.2.6 The four policies and proposal seek to provide further clarity on the status and context of current Scottish Government policy and ensure consistent messages across the policy spectrum. Together, this group deals with policy alignment issues, including policies relating to natural resource management, planning, forestry and the relationship between land ownership, use and management. The group also emphasises an on-going commitment to the use of an ecosystems approach to decision making and policy development, continued exploration of the potential for the natural capital agenda to contribute to policy thinking in Scotland, and acknowledgement of the work of land use pilot projects. A review of the Scottish Forestry Strategy is proposed alongside the potential development of an Uplands Strategy.

Group 1 – Policy Context

Policy 1 (Natural Resource Management)
Policy 2 (Policy Alignment)
Policy 3 (Planning)
Policy 4 (Forestry)
Proposal 1 (Land Reform)

Informed Decision Making

- 1.2.7 The two policies and two proposals within this group seek to underpin decision making with improved data, increased accessibility to information and further empowerment of communities and stakeholders in decision making. Together, this group includes policies and proposals relating to the continual development of a suite of freely available data sets for ecosystem services and exploring the feasibility of developing these into a freely available downloadable national online mapping platform. In addition, they seek to encourage the establishment of regional land use partnerships and frameworks and provide support for land use mediation and facilitation between communities and land owners/managers.

Group 2 – Informed Decision Making

Policy 5 (Ecosystem service mapping and tools)
Policy 6 (Regional land use partnerships)
Proposal 2 (Regional land use frameworks)
Proposal 3 (Land use mediation and facilitation)

Applying the Principles

- 1.2.8 The five policies and proposals in this group relate to the direct application of the Land Use Strategy Principles on the ground, either as specific projects themselves or through their use in ways that will influence direct changes on the ground. The group includes policies and proposals aimed at facilitating a step change towards climate friendly farming and promoting low emissions agriculture, environmental benefits and increasingly integrated land use. In addition, agri-environment targeting under the Scottish Rural Development Programme (SRDP) including the utilisation of localised map based ecosystems assessments to inform funding decisions. Possible approaches to the next SRDP programme (2020), exploring the feasibility of establishing an urban land use pilot project, and scoping the potential to develop a strategic vision for the Scottish uplands, are also considered.

Group 3 – Applying the Principles

Policy 7 (Agriculture)

Policy 8 (Agri-environment)

Proposal 4 (Agri-environment)

Proposal 5 (Urban land use)

Proposal 6 (Upland land use)

1.3 What is an Ecosystems Approach?

- 1.3.1 The draft Strategy continues to encourage the adoption of an ecosystems approach to land use decision making. An ecosystems approach is a way of looking at the natural environment and considering the way that this works as a system or a whole. In doing so, this can enable exploration of the many benefits that the natural environment can provide and the many interactions between different aspects of the environment that are inherently linked⁴. One method of doing this is by considering the ‘ecosystem services’ produced by the natural environment. Some of these provide clear and tangible benefits whilst others provide services that are less tangible yet underpin all services. For example, the natural environment provides materials such as food, freshwater and timber for our consumption (provisioning services); helps to regulate air quality, carbon sequestration, protect against extreme events such as storms and flooding, and aid in pollination of our plants and trees (regulating services). Others provide habitats for species and supports and maintains genetic biodiversity (supporting services); and provides benefits for human health by offering resources for recreation, tourism and cultural benefits such as giving us a sense of place (cultural services)⁵. Together, these services are called ‘ecosystem services’.
- 1.3.2 Considering these ‘ecosystem services’ throughout the decision making process can help us to identify links and symbiotic relationships in the natural environment, our interactions with it, and present opportunities for

⁴ UK Government (2014) Environmental Management – guidance, Ecosystem Services [online] Available at: <https://www.gov.uk/guidance/ecosystems-services> (accessed 02/09/2015)

⁵ The Economic of Ecosystems and Biodiversity (undated) Ecosystem Services [online] Available at: <http://www.teebweb.org/resources/ecosystem-services/> (accessed 02/09/2015)

mutual benefits or identify the potential for adverse effects. As an example, soil is known to play a fundamental role in supporting ecosystem health, whether through facilitating and sustaining vegetation growth, supporting biodiversity or helping in carbon sequestration. Positive effects for soil can lead to associated benefits for biodiversity, air quality and water quality; but at the same time, adverse impacts to soil can also have secondary adverse effects on these.

- 1.3.3 Taking an ecosystems approach in the decision making process can help to identify these linkages, and through considering the ecosystem as a whole, can help in maintaining a healthy and resilient natural environment by better managing our interactions, and any associated ramifications, with it. Adopting such an approach in undertaking this assessment has enabled identification of many mutual benefits across the natural environment, and helped to identify these linkages across the range of topic areas, rather than in isolation. An example of this is the assessment proposals relating to green infrastructure in the urban environment and the identification of potential benefits to a number of topics such as biodiversity, soil, water, air, population and human health and landscape and culture heritage.

1.4 What is Strategic Environmental Assessment?

- 1.4.1 The Scottish Government has undertaken a Strategic Environmental Assessment (SEA) of the draft Strategy and its findings are set out in this Report. The SEA process provides a framework to consider the potential for environmental effects of a plan, programme or strategy (PPS), and facilitate the consideration and integration of environmental management into the PPS development process.
- 1.4.2 The SEA process began in October 2014 with the preparation of a joint Screening and Scoping Report in the early stages of the development of the draft Strategy. It was considered that the draft Strategy fell under Section 5(4) of the Environmental Assessment (Scotland) Act 2005 (the 2005 Act) and had the potential to result in significant environmental effects. Following a period of statutory consultation on the Screening, the Scottish Government determined that an SEA was required. This determination was formally advertised as required under the 2005 Act.
- 1.4.3 The Scoping component of the Report established the proposed scope and level of detail of the environmental assessment. Alongside the Screening, the Scoping Report was prepared and submitted to the SEA Consultation Authorities⁶ via the SEA Gateway. A five week statutory consultation was undertaken, and the views expressed by the Consultation Authorities on the Scoping Report and the proposed approach to the assessment were taken into account in the subsequent SEA of the draft Strategy.
- 1.4.4 This Environmental Report sets out the findings from the SEA undertaken for the draft Strategy and has been prepared in accordance with Schedule 3 of the 2005 Act. The draft Strategy and this Environmental Report are

⁶ Scottish Environmental Protection Agency (SEPA) and Scottish Natural Heritage (SNH) and Historic Scotland (now Historic Environment Scotland).

now open for consultation and views on them are invited. Further information on how to respond to this consultation is provided in Section 7 of this report.

1.5 Overview of the Report

1.5.1 This report is structured as follows:

- Section 1 sets out an overview of the draft Strategy and the SEA process. It also provides an introduction to the ecosystems approach and ecosystem services.
- Section 2 sets out the environmental context for the draft Strategy including the relationship with other plans, programmes and strategies and relevant environmental objectives.
- Section 3 sets out the approach taken in the assessment, including an overview of the scoping process, the assessment methodology used and the development of reasonable alternatives.
- Section 4 sets out the baseline information collected for the SEA, including a summary of environmental issues that can be associated with land use, and environmental baseline for each of the environmental topics scoped into the SEA.
- Section 5 sets out the findings of the assessment including the recommendations and opportunities for enhancement identified in undertaking the SEA.
- Section 6 sets out an overview of the proposals for monitoring.
- Section 7 sets out the next steps in the SEA process and provides an overview of the consultation process.
- Appendix 1 presents a detailed context review of key supporting documents.
- Appendix 2 presents a detailed review of baseline information.
- Appendix 3 presents the detailed assessment findings of the three groups of policies and proposals.

2. Environmental Context

2.1 Introduction

- 2.1.1 The 2005 Act requires that the Environmental Report includes an outline of the relationships between the proposed policy and other relevant plans, programmes and strategies (PPS). It is also a requirement of the 2005 Act that relevant environmental protection objectives at the international, European or national level be identified.
- 2.1.2 There are a number of objectives for environmental protection and improvement set out within existing legislation, policies, strategies and plans that form the context of this SEA. For example, there are many legislative instruments that help to set the framework and further ambitions for the conservation of biodiversity⁷, including the protection of habitats of international significance⁸ and protect important bird species⁹. Others set objectives for air quality¹⁰; aim to achieve a significant shift in the way our waste is managed¹¹, set out ambitions for good practices within the forestry¹² or farming¹³ sectors, present policy relating to the conservation of the historic environment¹⁴ and the importance of the diversity of Scotland's landscapes¹⁵, amongst many others.
- 2.1.3 Section 2.2 provides an overview of the PPS and environmental objectives considered most relevant in the context for the preparation of the draft Strategy. Whilst not explicitly mentioned in the following paragraphs, many other PPS have been discussed in other relevant sections of this Report, notably the Environmental Baseline (Section 4).
- 2.1.4 The policy context for the preparation of the draft Strategy is illustrated on Figure 2.1. In addition, a further detailed overview of selected key PPS was prepared to ensure that the objectives and ambitions are reflected in the draft Strategy and in this assessment. This is provided in Appendix 1.

⁷ Nature Conservation (Scotland) Act (2004)

⁸ Council Directive 92/43/EEC the conservation of natural habitats and of wild fauna and flora

⁹ Council Directive 79/409/EEC on the conservation of wild birds

¹⁰ Local Air Quality Management [online] Accessed: <http://www.scottishairquality.co.uk/laqm/> (accessed 26/10/2015)

¹¹ Scottish Government (2010) Scotland's Zero Waste Plan [online] Available at: <http://www.scotland.gov.uk/Resource/Doc/314168/0099749.pdf> (accessed 06/11/2014)

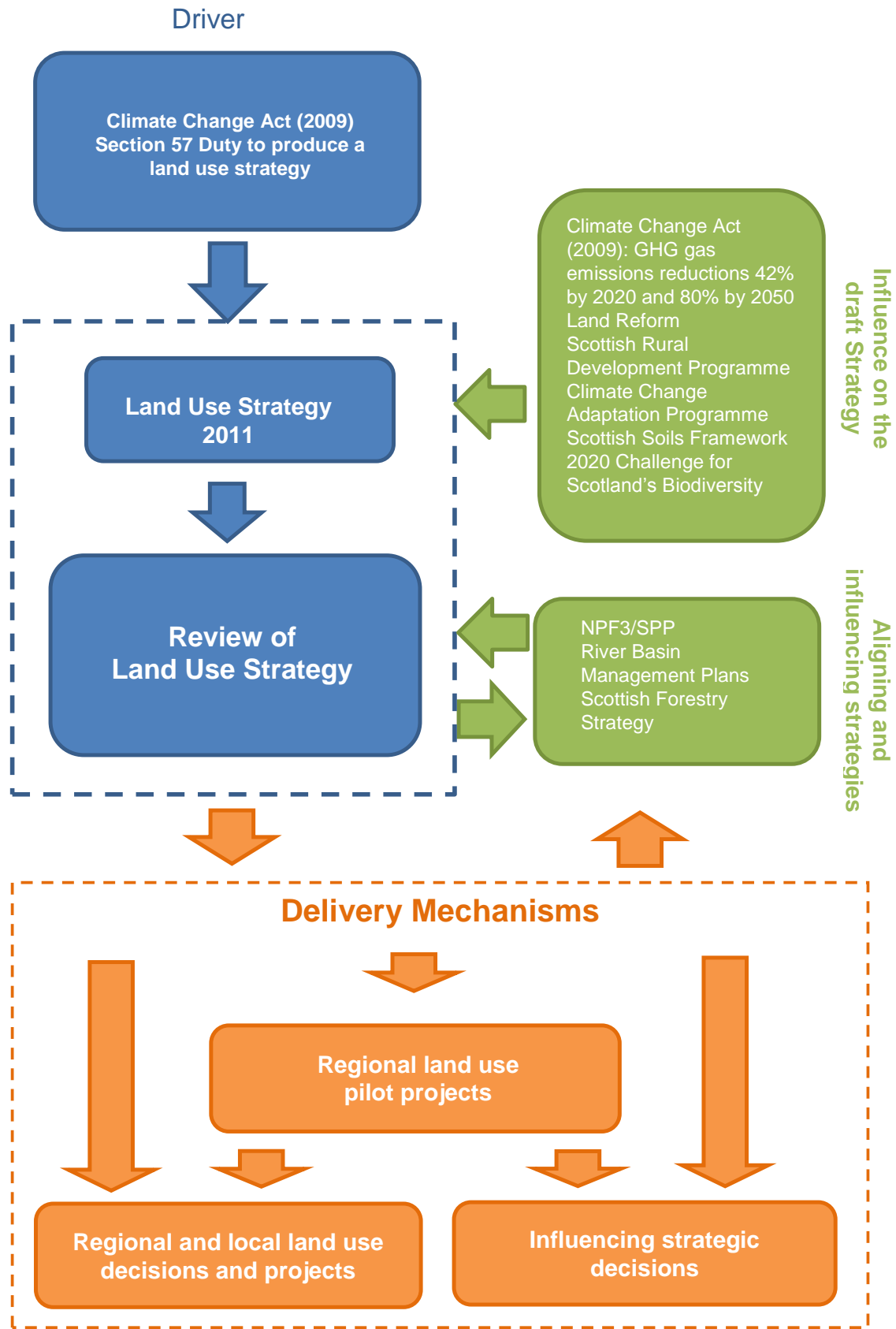
¹² Forestry Commission (undated) The UK Forestry Standard [online] Available at: <http://www.forestry.gov.uk/ukfs> (accessed 29/07/2014)

¹³ SEPA (undated) Agricultural Guidance [online] Available at: <http://www.sepa.org.uk/regulations/land/agriculture/agricultural-regulation-and-guidance/> (accessed 26/10/2015)

¹⁴ Historic Scotland (2011) Scottish Historic Environment Policy (SHEP) [online] Available at: <http://www.historic-scotland.gov.uk/index/heritage/policy/shep.htm> (accessed 06/11/2014)

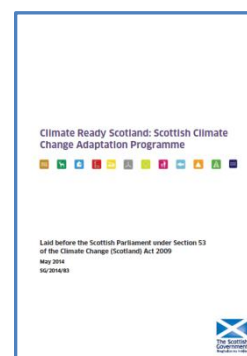
¹⁵ SNH Natural Heritage Futures

Figure 2.1: Relationship to other plans and strategies



2.2 Relationship with other Plans, Programmes and Strategies and Environmental Objectives

- 2.2.1 The Climate Change (Scotland) Act (the 2009 Act) set targets for greenhouse gas (GHG) emissions reductions by 2020 (42%) and 2050 (80%), and the setting of annual GHG emissions targets leading up to these dates. Section 57 of the 2009 Act placed a duty on Scottish Ministers to produce a land use strategy and that this should be revised every 5 years or less.
- 2.2.2 Scotland's first Land Use Strategy "Getting the best from our land – A land use strategy for Scotland"¹⁶ was published in March 2011 and set out a strategic approach and a long term Vision for land use in Scotland. The Land Use Strategy provided a set of Principles for Sustainable Land Use to guide decision making. It also detailed a need to demonstrate how an ecosystems approach might be taken into account in the decision making process.
- 2.2.3 The development of Climate Change Ready Scotland: Scottish Climate Change Adaptation Programme (2014)¹⁷ was required by section 53 of the 2009 Act. The Programme set out Scottish Ministers objectives, policies and proposals to tackle the climate change impacts identified for Scotland in the UK Climate Change Risk Assessment. It emphasises the importance of adaptation to climate change and focused on three themes: natural environment, buildings and infrastructure networks and society. It also set out broad objectives to support a healthy and diverse natural environment with capacity to adapt, and to sustain and enhance the benefits, goods and services that the natural environment provides, amongst others.
- 2.2.4 Low Carbon Scotland – Meeting our Emissions Reduction Targets 2013-2027: The Second Report on Proposals and Policies (RPP2)¹⁸ collated a wide range of policies and proposals over a range of sectors, including rural land use, with a common aim to reduce GHG emissions in Scotland to aid in meeting the targets set by the 2009 Act.
- 2.2.5 The National Planning Framework (NPF3)¹⁹ was published in June 2014 alongside the Scottish Planning Policy (SPP)²⁰. NPF3 set the context for



¹⁶ Scottish Government (2011) Getting the best from our land – A land use strategy for Scotland [online] Available at: <http://scotland.gov.uk/Publications/2011/03/17091927/0> (accessed 26/10/2015)

¹⁷ Scottish Government (2014) Climate Ready Scotland Scottish Climate Change Adaptation Programme [online] Available at: <http://www.scotland.gov.uk/Publications/2014/05/4669> (accessed 26/10/2015)

¹⁸ Scottish Government (2013) Low Carbon Scotland – Meeting our Emissions Reduction Targets 2013-2027 [online] Available at: <http://www.scotland.gov.uk/Topics/Environment/climatechange/scotlands-action/lowcarbon/meetingthetargets> (accessed 26/10/2015)

¹⁹ Scottish Government (2014) National Planning Framework 3: A Plan for Scotland: Ambition, Opportunity, Place and Scottish Planning Policy [online] Available at: <http://www.scotland.gov.uk/Topics/Built-Environment/planning/NPF3-SPP-Review/NPF3> (accessed 26/10/2015)

²⁰ Scottish Government (2014) Scottish Planning Policy [online] Available at: <http://www.scotland.gov.uk/Topics/Built-Environment/planning/Policy> (accessed 26/10/2015)

development planning in Scotland and provided a framework for the spatial development of Scotland as a whole. With a focus on supporting sustainable growth and the transition to a low carbon economy, it was set around four headings:

- A successful, sustainable place.
- A low carbon place.
- A natural, resilient place.
- A connected place.



2.2.6 NPF3 sets out a number of overarching visions including respecting natural and cultural assets, that they are improving in condition and that they represent a sustainable economic, environmental and social resource for Scotland. The importance of resilience to the impacts of climate change, relating to both our environment and infrastructure, was also noted. NPF3 makes reference to the key Principles of the first Land Use Strategy, in addition to the aims of Scotland's 2020 Challenge for Biodiversity, including an aim to develop a national ecological network.

2.2.7 SPP was developed to provide a statement of Scottish Government policy on how nationally important land use planning matters should be addressed across the country. It set out how the visions presented in NPF3 should be delivered on the ground. It further noted that by protecting and making efficient use of Scotland's existing resources and environmental assets, planning can help us to live within our environmental limits and to pass on healthy ecosystems to future generations. It also stated that policies and decisions should "have regard to the Principles for Sustainable Land Use set out in the Land Use Strategy".

2.2.8 The SRDP for 2014-2020²¹ was developed to deliver Pillar 2 of the EU CAP, and fund economic, environmental and social measures for the benefit of rural Scotland. The



The SRDP was also focused on a range of issues such as reducing GHG emissions from agriculture, enhancing the quality of Scotland's soils and peatlands, and the protection of carbon sinks and woodland creation. Also discussed in the SRDP were the other types of benefits gained from Scotland's natural resources, such as the reputation of our food and drink industry. It was noted that all of these focus/priority areas fall under a cross cutting objective of climate change mitigation and adaptation.

²¹ Scottish Government (2014) Scottish Rural Development Programme 2014-2020 [online] Available at: <http://www.scotland.gov.uk/topics/farmingrural/SRDP> (accessed 26/10/2015)

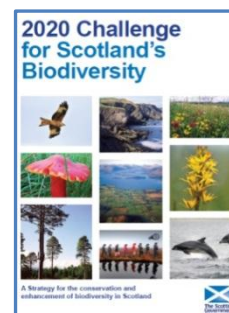
2.2.9 The Scottish Soil Framework²² was developed to promote the sustainable management and protection of Scotland's soils. It acknowledged the multiple functions of soils and included a vision that soils be recognised as a vital part of our economy, environment and heritage, and be safeguarded for existing and future generations. The framework noted that while Scotland's soils were generally in good health, there were two significant pressures on them: climate change and the loss of organic matter. The Framework did not set out new policy but rather sought to integrate soil protection into existing and emerging policies such as those relating to land use and management, water quality and flooding, and planning, amongst others. It also considered that improving the availability of soil data and highlighting the knowledge gaps and research needs in Scotland were important.



2.2.10 The 2020 Challenge for Scotland's Biodiversity²³ was developed as Scotland's response to the development of 20 [Aichi Targets](#) under the United Nations Convention on Biological Diversity (CBD) and the European Union's Biodiversity Strategy for 2020. The 2020 Challenge was developed to supplement the 2004 Scottish Biodiversity Strategy²⁴ with aims to:

- Protect and restore biodiversity on land and in our seas, and to support healthier ecosystems.
- Connect people with the natural world, for their health and wellbeing and involve them more in decisions about their environment.
- Maximise the benefits for Scotland of a diverse natural environment and the services it provides, contributing to sustainable economic growth.

2.2.11 The 2020 Strategy was focused on the importance of healthy ecosystems and an outcome that "Scotland's ecosystems are restored to good ecological health so that they provide robust ecosystem services and build on our natural capital". It considered the key steps to this being the provision of encouragement and support for ecosystem restoration and management, and the establishment of plans and decisions about land use based upon the understanding of ecosystems.

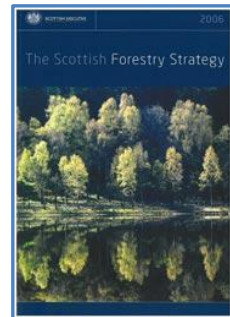


²² Scottish Government (2009) Scottish Soil Framework [online] Available at: <http://scotland.gov.uk/Publications/2009/05/20145602/0> (accessed 26/10/2015)

²³ Scottish Government (2013) 2020 Challenge for Scotland's Biodiversity – A Strategy for the conservation and enhancement of biodiversity in Scotland [online] Available at: <http://www.scotland.gov.uk/Publications/2013/06/5538> (accessed 26/10/2015)

²⁴ Scottish Government (2004) Scottish Biodiversity Strategy – It's in your hands [online] Available at: <http://www.scotland.gov.uk/Publications/2004/05/19366/37239> (accessed 26/10/2015)

- 2.2.12 Scotland's Biodiversity - a route map to 2020²⁵ sets out the priority work over the next five years to help meet the 2020 Challenge for Scotland's Biodiversity.
- 2.2.13 The Scottish Forestry Strategy²⁶ was developed with a core principle based on sustainable development and social inclusion, achieved through a culture of "forestry for and with people" and delivered by well managed forests and woodlands that integrate effectively with other land uses and businesses. The key themes of the Strategy included climate change mitigation and adaptation, increasing sustainable timber resources, supporting community development, increased access, the protection of the environmental quality of natural resources (water, soil and air) and help to restore, maintain and enhance Scotland's biodiversity, amongst others. The Strategy stated that "Scottish forestry will need to integrate effectively with other land uses – and with sectors such as energy, transport, health, water, education and tourism – to get the most out of these key themes".
- 2.2.14 The development of River Basin Management Plans²⁷ (RBMPs) is a requirement of the Water Framework Directive with the aim of protecting Scotland's water resources whilst seeking to achieve an improvement in their ecological quality where possible. The first two plans for Scotland (The River Tweed RBMP and the Scotland RBMP) were both published in 2009 and include targets for improving water quality, reducing impacts on flow and levels, and improving the physical condition of the water environment, including preventing deterioration.
- 2.2.15 Work is currently underway to produce the second set of RMPBs due for publication later in 2015. The key pressures identified during the development of first RBMPs such as diffuse source pollution, changes to physical condition and mechanisms to tackle these pressures, will be a key focus of their development.
- 2.2.16 The EU Floods Directive was transposed into Scots law as the Flood Risk Management (Scotland) Act 2009²⁸. The Act required that flood risk management plans be produced and that these plans be linked with Scotland's RBMPs. Of particular relevance is that there is a requirement



²⁵ Scottish Government (2015) Scotland's Biodiversity – a route map to 2020 [online] Available at: <http://www.gov.scot/Publications/2015/06/8630> (accessed 26/10/2015)

²⁶ Forestry Commission Scotland (undated) The Scottish Forestry Strategy [online] Available at: <http://scotland.forestry.gov.uk/supporting/strategy-policy-guidance/forestry-strategy> (accessed 26/10/2015)

²⁷ SEPA (undated) River Basin Planning [online] Available at: http://www.sepa.org.uk/water/river_basin_planning.aspx (accessed 26/10/2015)

²⁸ Scottish Government (2009) Flood Risk Management (Scotland) Act (2009) [online] Available at: <http://www.scotland.gov.uk/Topics/Environment/Water/Flooding/FRMAct> (accessed 26/10/2015)

that natural flood management²⁹ be considered a part of statutory local flood risk management plans. The guidance for the Act stated that “in recognition of the range of potential benefits that can be obtained from working with our natural landscape, all reasonable and practical efforts should be made to enhance the (urban and rural) landscapes natural ability to slow and store flood waters”³⁰.

2.2.17 The Land Reform (Scotland) Act 2003³¹ was set out in three parts:

- Part 1 establishes a right to be on land for recreational, educational and certain other purposes and a right to cross land. It also sets out the statutory duties, responsibilities and powers of local authorities and national park authorities in relation to the provision and promotion of rights of access.
- Part 2 confers on local bodies representing rural communities a right to buy land with which the community has a connection and defines the land which can be bought and procedures to do this.
- Part 3 gives bodies representing crofting communities a right to buy certain land, defining the land that can be bought, who can buy it and how it is to be acquired.

2.2.18 The Act also placed a duty on Scottish Natural Heritage (SNH) to develop a Scottish Outdoor Access Code³² which set out the rights and responsibilities of individuals and owners of land regarding the provision of responsible access. The code stated that “land managers have to manage their land and water responsibly in relation to access rights”.



2.2.19 In June 2015, the Land Reform (Scotland) Bill was introduced in the Scottish Parliament³³. The development of this Bill is seen as the next step in this Government’s programme of ambitious land reform. The Bill was set out in 10 parts and contained provisions seeking to ensure the development of an effective system of land governance and on-going commitment to land reform in Scotland; that barriers to furthering sustainable development in relation to land and to improving the transparency and accountability of land ownership were addressed, and that commitment to effectively manage land and rights in land for the common good was demonstrated through modernising and improving specific aspects of land ownership and rights over land.

²⁹ Natural flood management is the use of natural features to store or slow down the flow of water.

³⁰ Scottish Government (2011) Flood Risk Management (Scotland) Act 2009: Delivering Sustainable Flood Risk Management [online] Available at: <http://www.scotland.gov.uk/Resource/Doc/351427/0117868.pdf> (accessed 26/10/2015)

³¹ The National Archives (2003) Land Reform (Scotland) Act 2003 [online] Available at: <http://www.legislation.gov.uk/asp/2003/2> (accessed 26/10/2015)

³² SNH (undated) Scottish Outdoor Access Code [online] Available at: <http://www.snh.gov.uk/publications-data-and-research/publications/search-the-catalogue/publication-detail/?id=265> *(accessed 26/10/2015)

³³ Land Reform (Scotland) Bill 2015 [online] Available at: [http://www.scottish.parliament.uk/S4_Bills/Land%20Reform%20\(Scotland\)%20Bill/b76s4-introd.pdf](http://www.scottish.parliament.uk/S4_Bills/Land%20Reform%20(Scotland)%20Bill/b76s4-introd.pdf) (accessed 26/10/2015)

3. Approach to the Assessment

3.1 Scoping the SEA

- 3.1.1 At the Screening and Scoping stage of the SEA process, it was considered that a strategy which has objectives and principles relating to sustainable land use was likely to have significant positive effects. For example, the potential for secondary or indirect impacts to water, air and soil was identified, as ecosystem health is known to be both integral and influential to this.
- 3.1.2 Therefore, as set out in the Screening and Scoping Report, all SEA topic areas were scoped in to this assessment.

3.2 Assessment Methodology

Relationship with Previous SEA

- 3.2.1 In accordance with the 2005 Act, a SEA was also undertaken on Scotland's first Land Use Strategy 2011–2016. The SEA considered the Vision, Objectives and Principles for Sustainable Land Use in Scotland, in addition to the consideration of a number of alternative scenarios (discussed in Section 3.4). The main findings of the SEA included recommendations that the Strategy should give further consideration to functional urban greenspace and the greater consideration of management of landscape and land use at a broad scale. Climate change adaptation was also considered as a key issue and whilst the SEA acknowledged that this had been captured within the first strategy, a recommendation that adaptation be considered further was made. The approach taken during this SEA and the findings reported have been considered and built upon during this assessment process, for example, the consideration of reasonable alternatives (Section 3.4).

Evolution of the Approach

- 3.2.2 The Screening and Scoping Report submitted to the SEA Gateway in October 2014 set out a proposed methodology for considering the environmental effects of the draft Strategy and undertaking the SEA. The proposed approach largely followed that undertaken in the assessment of the first Land Use Strategy, based around the consideration of ecosystem services and the many interactions between aspects of the natural environment. The Scoping Report proposed the development of a series of SEA questions as the basis for the SEA to help to draw out and focus the assessment towards the key issues, pressures and trends associated with land use and management in Scotland.
- 3.2.3 With the input of stakeholders, the draft Strategy has evolved since the development of the Scoping Report, and it became necessary for the approach to the SEA to also evolve to ensure that the Strategy development and SEA processes remained integrated, and also that the assessment provided meaningful and relevant input into the development

of the Strategy. As a consequence, this assessment reflects the strategic-level and ambition-lead nature of the draft Strategy, whilst still acknowledging and exploring the many interactions and inter-dependencies between the different environmental topics. Whilst the ecosystem services approach set out in the Screening and Scoping Report still formed the basis of the SEA, the focus shifted to consider the key issues and interactions in a holistic way, reflecting on the ambitions of the suite of policies and proposals set out in the draft Strategy and exploring the similarities and common themes between them.

Three Stages of Assessment

- 3.2.4 The assessment was undertaken in three stages. The first stage was focused on considering the environmental impacts associated with the implementation of the three groups of policies and proposals on the eight environmental topics scoped into the assessment. This stage of the assessment reflected on the relevant environmental context for the policy groups, including overarching policy and legislative requirements, the constraints and limitations that these could present to each group, and the potential for opportunities to develop. A series of recommendations were developed from the findings of the assessment, and these are presented in the Detailed Assessment Tables in Appendix 3.
- 3.2.5 The second stage of the assessment expanded on this and considered the potential impacts of the implementation of the full suite of policies and proposals set out in the draft Strategy. This focused on the identification of common themes and ambitions between the policies and proposals.
- 3.2.6 This approach was taken further in the third stage of assessment, which explored the inter-relationships and in-combination effects of the draft Strategy and its policies and proposals in the context of the wide range of objectives, ambitions and requirements set out in wider policy at the national, UK and international levels. The findings of stages two and three of the assessment are presented in narrative form, and are presented in Section 5 of this report.
- 3.2.7 All stages of the assessment have explored the constraints and limitations to the draft Strategy and the policies and proposals it sets out, and the important role that stakeholders, particularly land owners, managers and communities, are likely to have in the delivery of its ambitions. It was considered that, while the draft Strategy will promote opportunities and enable land users to improve how land is used and managed, many of these decisions taken on the ground will be subject to other considerations outwith the influence of the draft Strategy. Therefore, the remit of the SEA was largely limited to the influence of the draft Strategy in enabling stakeholders to make appropriate and sustainable decisions, and promoting its ambitions to those with an interest in the decision making process within the current policy framework and regulatory system.

3.3 Recommendations and Opportunities for Mitigation and Enhancement

- 3.3.1 A series of recommendations were developed from the findings of the first stage of the assessment, and these are presented in the Assessment Tables in Appendix 3. These recommendations have been used to inform the subsequent stages of the assessment process, including the identification of opportunities for mitigation and enhancement, as set out in Section 5.

3.4 Reasonable Alternatives

- 3.4.1 The draft Strategy builds on the ground covered by the first Land Use Strategy. The Objectives and Principles for Sustainable Land Use promoted in the first document are not subject to change within the current process to update the Strategy. A number of alternative scenarios (or options) were considered during the process of developing the first Strategy, and these ultimately resulted in the construction of the Objectives and Principles. As these remain in place in the draft Strategy plan making process, it is considered that the assessment of strategic alternatives undertaken in the first Land Use Strategy (LUS) SEA remains valid.
- 3.4.2 The focus of the draft Strategy is on setting out targeted policies and proposals that can work together to increase awareness and incorporation of the Objectives and Principles across land use sectors. The policies and proposals are grouped into those that seek to align with land use policy areas, those that seek measures to better inform decision making, and those that seek to enable greater application of the LUS principles. It is considered these groupings represent reasonable alternatives for targeting and focusing action to implement the principles of the first LUS. As with the consideration of options for the first LUS, proposals that seek to legislate or incentivise were not considered to be within the scope of the powers for the draft Strategy, and thus, are not considered to represent reasonable alternatives. Therefore the policies and proposals presented in the draft Strategy are considered to represent what is reasonable at this point.

4. Environmental Baseline

4.1 Introduction

4.1.1 It is a requirement of the 2005 Act that the environmental characteristics of the environment likely to be affected by the plan, programme or strategy are identified. This has been presented in the following sections in the context of the environmental issues that can arise from the use and management of land. It has been presented in this way to add context and understanding of the tensions and opportunities that can arise and explore the potential impacts that environmental factors such as climate change can have on these.

4.1.2 The following paragraphs have been prepared to aid the SEA process in identifying key issues and should not be regarded as an exhaustive list. To complement this, a further detailed review of environmental baseline information has been undertaken. This is presented in Appendix 2 and summarised in boxes within this text.

4.2 Environmental Issues associated with land use

4.2.1 Ecosystem services, the benefits we derive from them and their importance in the natural environment is discussed under Section 1.3. Our use and management of the land influence and impact on the health of these ecosystem services therefore affecting their ability to provide the goods and services that we rely on. Further, how land is used and managed in Scotland can also make a significant contribution to meeting wider ambitions, such as meeting the ambitious GHG emission reductions targets set out in the 2009 Act³⁴.

4.2.2 Land, and the many varied ecosystems within it are already under pressure, and many of these pressures are predicted to continue alongside the development of new pressures expected to arise in the future. For example, climate change is predicted to alter the ability of the land to supply ecosystem services and meet our growing demands. Ecosystems in good condition should be able to cope with additional pressures, such as that from climate change and population growth, whilst at the same time, also playing a critical role in helping us to adapt to new and changing pressures into the future. Therefore, decisions about the way the land is managed today are important for balancing growing demands on the land and uncertain pressures on ecosystem services due to climate change³⁵.

4.2.3 Most of our land is used for more than one purpose. While agriculture is the predominant land use in Scotland, covering nearly 5.6 million hectares equating to around 73% of Scotland's land³⁶, within this is a mix of uses

³⁴ The Scottish Government has a statutory obligation to reduce greenhouse gas emissions by at least 80% by 2050 with an interim target of at least 42% by 2020.

³⁵ Committee on Climate Change (2013) Managing the land in a changing climate – Adaptation Sub-Committee progress report 2013 [online] Available at: <http://www.theccc.org.uk/publication/managing-the-land-in-a-changing-climate/> (accessed 26/10/2015)

³⁶ Scottish Government (2015) Statistics, Agricultural land use in Scotland [online] Available at: <http://www.gov.scot/Topics/Statistics/Browse/Agriculture-Fisheries/agritopics/LandUseAll> (accessed 26/10/2015)

such as rough grazing, crop production, crofting and woodland, amongst others. Agricultural land use has a strong influence on the landscape and environment; in particular, changes in land use can have an impact on wildlife habitats and water pollution. Agriculture also accounts for around 9% of the total GHG emissions in the UK, predominantly contributing nitrous oxide (NO_x) and methane (CH₄), with smaller amounts of carbon dioxide (CO₂)³⁷. Scottish farmland also sustains important habitats for biodiversity including unimproved grassland, cultivated fields, walls and hedges, watercourses, wetlands, moorland and upland grassland.

4.2.4 Intensive land management is one of the main challenges to farmland wildlife³⁸. A shift towards intensification of lowland farmland for food production, for people as well as livestock, has resulted in a change in biodiversity which could have major implications for food production³⁹. Increased field sizes and use of agricultural chemicals has led to a potentially serious decline in pollinators such as bees which are essential for crop production⁴⁰. This affects how much we are able to grow and therefore our ability to meet the demand for food⁴¹. Soil erosion by water or wind is a natural process that can be exacerbated by poor land management⁴². The consequences of soil erosion, such as the loss of fertile top soil, can damage soil function and affect food production, amongst others. It is estimated that in some arable areas of eastern Scotland, soil erosion rates caused by water are double that of natural rates⁴³.

Biodiversity

Scotland's biodiversity receives protection through a range of existing designations and conservation objectives.

While many habitats and species are classed as stable or improving, a third of habitats and a fifth of species are identified as being in decline.

4.2.5 Climate change is expected to raise further challenges for farm land and the agriculture sector. Changes in temperature and rainfall are expected to change the patterns of Scotland's agricultural land-uses, and could lead to more pressure on the land⁴⁴. Farming has an important role to play in increasing the resilience of biodiversity and assisting adaptation through the management of existing habitats and enhancing connectivity between areas through habitat networks⁴⁵. Conversely, increased connectivity may

³⁷ Houses of Parliament (2014) Post note No 453 Emissions from Livestock [online] Available at: <http://researchbriefings.files.parliament.uk/documents/POST-PN-453/POST-PN-453.pdf> (accessed 26/10/2015)

³⁸ Scotland's Environment (undated) Farmland [online] Available at: <http://www.environment.scotland.gov.uk/get-informed/land/farmland/> (accessed 26/10/2015)

³⁹ *ibid*

⁴⁰ *ibid*

⁴¹ *ibid*

⁴² Scotland's Environment (undated) Soils [online] Available at: <http://www.environment.scotland.gov.uk/get-informed/land/soils/> (accessed 26/10/2015)

⁴³ *ibid*

⁴⁴ SNH (2012) Farming and Climate Change [online] Available at: <http://www.snh.gov.uk/land-and-sea/managing-the-land/farming-crofting/farming-wildlife/farming-and-climate-change/> (accessed 26/10/2015)

⁴⁵ SNH (2009) Natural Heritage Futures Update [online] Available at: <http://www.snh.gov.uk/about-snh/what-we-do/nhf/nhf-downloads/> (accessed 26/10/2015)

also result in quicker spread of diseases and pests, including invasive non-native species⁴⁶.

- 4.2.6 Climate change impacts may also result in longer growing seasons which could placing further pressure on water quality as agriculture is a key source of diffuse pollutants. Agricultural activities can affect water, air quality and the climate, as well as the land itself and the biodiversity it supports⁴⁷. Increasingly there is a need to balance agricultural production with environmental protection⁴⁸.

Population and Human Health

Scotland's population is predicted to increase by 10% by 2035.

Some 70% of people live in urban settlements, covering just 2% of Scotland's land area.

Around a half of Scots visit the outdoors at least once a week, however, just one third of all scots use greenspace within a five minute walk from their home.

- 4.2.7 There is currently a suite of agricultural guidance for farmers and those involved in undertaking agricultural activities on minimising the risks of environmental pollution from these activities. These include guidance on how to comply with environmental legislation and protect the environment, reducing the risk of pollution from the management of manures and slurry, and the development of the Farm Soils Plan covering, amongst other issues, reducing soil erosion and protecting water quality⁴⁹.
- 4.2.8 Some of the main challenges facing Scotland's rivers, lochs and groundwater relate to agricultural inputs⁵⁰. Scotland's rivers are an important part of the landscape, providing water for drinking, industry and agriculture; attracting tourism and providing habitats for wildlife. Scotland has around 19,000 km of coastline which makes up 8% of Europe's coastline⁵¹. Collectively, our rivers, lochs, canals and ponds cover around 2% of Scotland's land area whilst equating to 70% of the UK's surface waters and providing a range of habitats for wildlife, such as otters and freshwater pearl mussels⁵². Despite improvements in water quality over several decades, some habitats and species are still affected by poor water quality. For example, water vole and freshwater pearl mussels continue to decline and high nutrient concentrations threaten plants like river jelly lichen and slender naiad⁵³.

⁴⁶ SNH (2012) Farming and Climate Change [online] Available at: <http://www.snh.gov.uk/land-and-sea/managing-the-land/farming-crofting/farming-wildlife/farming-and-climate-change/> (accessed 26/10/2015)

⁴⁷ Scotland's Environment (undated) Crops and Livestock [online] Available at: <http://www.environment.scotland.gov.uk/get-informed/land/crops-and-livestock/> (accessed 26/10/2015)

⁴⁸ ibid

⁴⁹ SEPA (undated) Agricultural regulation and guidance [online] Available at: <http://www.sepa.org.uk/regulations/land/agriculture/agricultural-regulation-and-guidance/> (accessed 26/10/2015)

⁵⁰ Scotland's environment (undated) water [online] Available at: <http://www.environment.scotland.gov.uk/get-informed/water/> (accessed 26/10/2015)

⁵¹ ibid

⁵² Scotland's Environment (undated) rivers and lochs [online] Available at: <http://www.environment.scotland.gov.uk/get-informed/water/rivers-and-lochs/> (accessed 26/10/2015)

⁵³ Scotland's Environment (undated) rivers and lochs [online] Available at: <http://www.environment.scotland.gov.uk/get-informed/water/rivers-and-lochs/> (accessed 26/10/2015)

- 4.2.9 High water quality is essential for some Scottish industries; for example, the quality of whisky production and fishing in Scotland is internationally renowned and both rely on the availability of high quality water. The continued reputation of Scotland's food and drink industry is identified in the SRDP as a key growth sector⁵⁴ and this is also supported by the Scottish Government National Food and Drink Policy⁵⁵. Our rivers also make a major contribution to the tourism industry, supporting activities such as bird watching, kayaking and rafting activities, amongst many others. One study noted that whilst natural heritage motivations for participating in water sports varied, clean water was identified as a key requirement for all water sports involving part or total immersion⁵⁶.
- 4.2.10 Renewable energy sources have a significant role to play in meeting Scottish Government's ambitious GHG emissions targets. However, individual technologies can have negative environmental impacts such as localised visual effects, changes in landscape and land use, and impacts on biodiversity, water and air quality, amongst others. For example, hydro power generation can affect water flows, in turn impacting on the habitats and species they support. There may also be implications from increased biomass uptake as forward estimates suggest that demand for wood fuel is set to continue to increase steadily over the next few years⁵⁷. If care is not taken during the production of biomass there is potential for adverse effects on biodiversity, landscape, soil and water quality. Guidance is available that sets out good practice such as SNH Position Statement on Bioenergy and the Natural Heritage⁵⁸.
- 4.2.11 In addition, Scottish Planning Policy sets out the important role of renewable energy sources and includes measures that should be considered during planning to reduce the potential for adverse effects⁵⁹. For example, it states that *"development plans should seek to ensure an area's full potential for electricity and heat from renewable sources is achieved, in line with national climate change targets,*

Climatic Factors

GHG emissions are having a detrimental impact upon the global atmosphere.

Between 1990 and 2013, there was a 34.3 % reduction in estimated Scottish GHG emissions, with net emissions from the agriculture sector falling by around 23% over the same period.

The role of forestry as a carbon sink has increased by 42.0% between 1990 and 2013.

⁵⁴ Scottish Government (2014) Scottish Rural Development Programme 2014-2020 [online] Available at: <http://www.scotland.gov.uk/topics/farmingrural/SRDP> (accessed 26/10/2015)

⁵⁵ Scottish Government (2012) National Food and Drink Policy for Scotland [online] Available at: <http://www.scotland.gov.uk/Topics/Business-Industry/food-industry/national-strategy> (accessed 26/10/2015)

⁵⁶ SNH (2010) Assessing the economic impacts of nature based tourism in Scotland [online] Available at: <http://www.snh.gov.uk/docs/B726802.pdf> (accessed 26/10/2015)

⁵⁷ Forestry Commission Scotland (2013) Woodfuel Demand and Usage in Scotland Report 2013 [online] Available at: <http://scotland.forestry.gov.uk/images/corporate/pdf/woodfuel-demand-and-usage-in-scotland-2013.pdf> (accessed 26/10/2015)

⁵⁸ SNH (2014) Position Statement on Bioenergy and the Natural Environment [online] Available at: <http://www.snh.gov.uk/planning-and-development/renewable-energy/bioenergy/> (accessed 26/10/2015)

⁵⁹ Scottish Government (2014) Scottish Planning Policy [online] Available at: <http://www.scotland.gov.uk/Topics/Built-Environment/planning/Policy> (accessed 26/10/2015)

giving due regard to relevant environmental, community and cumulative impact considerations”.

- 4.2.12 Woodland and forests deliver many benefits, both direct and indirect; the provision of timber being the most obvious direct benefit. However, they are also important to our ecological, economic and social wellbeing providing other benefits such as recreational opportunities and ecosystem services such as water and clean air. They are a key element of our landscape and our cultural heritage, support biodiversity, help to protect our soil and water quality whilst contributing to natural flood management and providing shelter for farmland and riparian habitats (i.e. buffer zones)⁶⁰. Inappropriately managed or located forestry can be a major land use pressure, and has the potential to have negative impacts on water, soil, biodiversity and cultural heritage, amongst others. As such, the location, design, management, and species composition of a woodland or forest are critical factors. For example, it's important to understand where riparian planting can be most effective in reducing diffuse pollution, ideally alongside the provision of other benefits such as mitigating flood risk, reducing thermal stress and supporting biodiversity⁶¹.
- 4.2.13 In 2013, Scotland's woodland and forest cover was 1.4 million hectares (18%) of the land area, with just one fifth of this being native woodland with the rest dominated by introduced species⁶². Around 11,000 hectares of new woodland were created in the UK in 2012-2013 consisting mostly of broadleaved species and some 13,000 hectares of woodland were restocked in the UK in 2012-2013, mostly with conifers⁶³. The Scottish Forestry Strategy sets out plans to increase woodland cover to 25%⁶⁴.

Air

While the quality of Scotland's air has improved considerably over the last few decades, air pollution is estimated to reduce life expectancy of every person in the UK by an average of 7–8 months.

Scotland's local authorities have established 35 Air Quality Management Areas (AQMAs); primarily a result of traffic emissions.

Since 1990, there have been decreases of 28% for Ammonia, 59% for Nitrous Oxides (NO_x), 65% for particulates (PM₁₀) and 78% for Sulphur dioxide (SO₂).

⁶⁰ Forestry Commission (2010) The right tree in the right place – planning for forestry & woodlands [online] Available at: [http://www.forestry.gov.uk/pdf/fcfc129.pdf/\\$FILE/fcfc129.pdf](http://www.forestry.gov.uk/pdf/fcfc129.pdf/$FILE/fcfc129.pdf) (accessed 26/10/2015)

⁶¹ *ibid*

⁶² Scotland's Environment (undated) Woodlands and forests [online] Available at: <http://www.environment.scotland.gov.uk/get-informed/land/woodlands-and-forests/> (accessed 26/10/2015)

⁶³ Forestry Commission (2013) Forestry Statistics 2013 woodland areas and planting [online] Available at: <http://www.forestry.gov.uk/website/forstats2013.nsf/LUContents/5BFAF7169C6D2E038025735D00349319> (accessed 26/10/2015)

⁶⁴ Forestry Commission Scotland (2006) The Scottish Forestry Strategy [online] Available at: <http://www.forestry.gov.uk/sfs> (accessed 26/10/2015)

4.2.14 Scotland's forests and woodlands also support a disproportionately high share of our biodiversity⁶⁵. For example, Scotland's mature native woodlands support a rich variety of species, and some native woodlands and the plants and animals that live there, are unique to Scotland and are at the limits of their worldwide distribution⁶⁶. In addition, ancient woodlands, ancient wood pasture and veteran trees also have cultural significance in their own right⁶⁷. Many woods also have archaeological remains located within them, and whilst many features are likely to be recorded, many other features are likely to be unrecorded⁶⁸.

Soil

Some 25% of Scotland's soils are cultivated for agriculture, 45% for rough grazing and 17% forested.

Scotland's soils contain approximately 3 billion tonnes of carbon, primarily in our peat soils, and making up over half of the UK's soil carbon.

In 2013, there were 11,114 hectares of derelict and urban vacant land in Scotland; a decrease of 187 hectares (1.7%) from 2012.

4.2.15 Woodlands and forests also contain substantial carbon in the soil and vegetation, and globally, are hugely important for carbon, water and energy cycles. In the UK, the amount of carbon held in woodlands and forests is estimated at approximately 880 million tonnes of carbon (Mt C)⁶⁹. In addition, harvesting trees for wood fuel or power generation instead of fossil fuels can cause a net emissions reduction, provided the rate of growth of replacement trees is sufficient to absorb the CO₂ released during fuel production and consumption⁷⁰. Forests can enhance the deposition of acid pollutants from the atmosphere, exacerbating the acidification of sensitive waters and contribute to the loss of sensitive aquatic life such as salmon⁷¹. Central and southwest Scotland are two areas identified as being vulnerable to acidification in Scotland⁷². Therefore the loss of these important features can have a negative impact on the environment.

4.2.16 Soils also have a significant role to play in terms of storing carbon. It is estimated that Scotland's soils contain 3,000 million tonnes of carbon⁷³,

⁶⁵ Forestry Commission (2012) Biodiversity [online] Available at: <http://www.forestry.gov.uk/woodsfornature> (accessed 26/10/2015)

⁶⁶ Scotland's Environment (undated) Woodlands and forests [online] Available at: <http://www.environment.scotland.gov.uk/get-informed/land/woodlands-and-forests/> (accessed 26/10/2015)

⁶⁷ Forestry Commission (2014) Woodland Grazing Toolbox, habitat condition, biodiversity and cultural heritage [online] Available at: <http://scotland.forestry.gov.uk/woodland-grazing-toolbox/habitat-condition/cultural-heritage> (accessed 26/10/2015)

⁶⁸ *ibid*

⁶⁹ Forestry Commission (undated) Forestry and climate change mitigation [online] Available at: <http://www.forestry.gov.uk/website/forestresearch.nsf/ByUnique/INFD-62HCJH> (accessed 26/10/2015)

⁷⁰ *ibid*

⁷¹ Forestry Commission (undated) Do forests acidify waters [online] Available at: <http://www.forestry.gov.uk/fr/INFD-6MVEN5> (accessed 26/10/2015)

⁷² Forestry Commission (2014) Forestry and surface water acidification research note [online] Available at: [http://www.forestry.gov.uk/pdf/FCRN016.pdf/\\$FILE/FCRN016.pdf](http://www.forestry.gov.uk/pdf/FCRN016.pdf/$FILE/FCRN016.pdf) (accessed 26/10/2015)

⁷³ Scottish Government (2009) Scottish Soil Framework. [online] Available at: <http://scotland.gov.uk/Publications/2009/05/20145602/4> (accessed 26/10/2015)

making up over 50% of the UK's soil carbon⁷⁴. Our peat soils, predominately located in the north of Scotland, hold over 70% of this soil carbon while only accounting for around 11% of its land area⁷⁵. Soil degradation, from loss of organic matter, soil sealing (e.g. covering the soil with an impermeable material such as tarmac) and erosion, amongst others, can also affect the wider environment. For example, the loss of organic matter in soils can increase the amount of GHG emissions into the atmosphere, contributing to climate change. There is so much carbon in Scottish soils that the loss of just 0.5% of soil carbon in one year could double Scotland's annual GHG emissions⁷⁶.

- 4.2.17 Supported by a series of guidelines, the UK Forestry Standard (UKFS) defines standards and requirements for the sustainable management of forests in the UK. It provides a basis for regulation and monitoring, and its guideline series covers a range of subject areas including biodiversity, climate change, historic environment, soil and water, amongst others⁷⁷.

- 4.2.18 The main pressures affecting woodland and forest wildlife include fragmentation and the loss of woodland habitat; the fragmentation and gradual loss of native and ancient woodland remains a serious problem in unenclosed uplands in particular. Economic and management pressures, climate change, tree pests and diseases, native deer, invasive non-native species, non-native trees in native woodlands, nutrient enrichment and deposition of pollutants and recreation are also key pressures⁷⁸.

- 4.2.19 Woodlands are becoming increasingly popular for recreational visitors with over 9 million visits made to the national forest estate each year⁷⁹. Almost 80% of adults in Scotland⁸⁰ take

Water

While most of Scotland's water resources are of good to high status, much work remains in improving the status of many of our rivers, canals, freshwater lochs and groundwater aquifers.

There have been significant reductions in pollution over the last 25 years.

It is estimated that 1 in 22 of all residential properties and 1 in 13 of all non-residential or business properties in Scotland are at risk from flooding, with annual costs of flooding estimated at between £720 million and £850 million.

⁷⁴ Scotland's Environment (2014) Scotland's soil – Key facts [online] Available at: <http://www.soils-scotland.gov.uk/about/key-fact#2> (accessed 26/10/2015)

⁷⁵ SNH (2012) The main soil types in Scotland [online] Available at: <http://www.snh.gov.uk/about-scotlands-nature/rocks-soils-and-landforms/scotlands-soils/soil-types/> (accessed 26/10/2015)

⁷⁶ Scotland's Environment (2014) Soils [online] Available at: <http://www.environment.scotland.gov.uk/get-informed/land/soils/> (accessed 26/10/2015)

⁷⁷ Forestry Commission (undated) The UK Forestry Standard [online] Available at: <http://www.forestry.gov.uk/ukfs> (accessed 26/10/2015)

⁷⁸ Scotland's Environment (undated) Woodland and forests [online] Available at: <http://www.environment.scotland.gov.uk/get-informed/land/woodlands-and-forests/> (accessed 26/10/2015)

⁷⁹ Scotland's Environment (undated) Timber and Forestry products [online] Available at: <http://www.environment.scotland.gov.uk/get-informed/land/timber-and-forestry-products/> (accessed 26/10/2015)

⁸⁰ Scotland's Environment (undated) People and the Environment, Recreation [online] Available at: <http://www.environment.scotland.gov.uk/get-informed/people-and-the-environment/recreation/> (accessed 26/10/2015)

part in some form of outdoor recreational activity, and some 50% do so on a weekly basis⁸¹. Around half of these outdoor visits are taken in the countryside, while just over one third are to parks and open spaces in urban areas⁸². The historic environment also remains a major contributor to the tourism industry attracting around 14 million tourists in 2012⁸³. Competing land use and climate change are two of the main pressures on the historic environment⁸⁴.

- 4.2.20 Outdoor recreation and Scotland's wide and ranging landscapes and historic environment underpin much of the tourism sector in Scotland. Research has identified the key motivators for Scottish tourism are to see the scenery/landscape (58%) and to learn more about the history/culture (31%)⁸⁵. In addition as being places to exercise and keep fit, reduce stress and anxiety, an estimated 95% of the Scottish adult population agree or strongly agree that woodlands in Scotland are an important part of the country's natural and cultural heritage⁸⁶. Our farmlands and lowlands also have cultural benefits. For example, our lowland heaths, hay meadows and machair are often described as 'cultural landscapes', and the loss of these habitats could have a negative effect on our culture⁸⁷.

Cultural Heritage and Landscape

While Scotland's cultural heritage is recognised through a wide range of designations, it is likely that there are many more unrecorded or undiscovered features throughout our lands and waters.

Scotland's unique and varied landscapes are recognised not just through the 40 National Scenic Areas (NSAs), covering around 13% of the total land area, but also through its National Parks, biosphere reserves, geoparks, wild land areas and local designations.

- 4.2.21 Climate change has the potential to impact on the quality of recreation for many people, and subsequently, impact on the businesses and communities that rely on these sectors. For example, increases in extreme weather events and flooding predicted to be associated with climate change, could affect the availability of outdoor activities and make them less enjoyable for some. Also the availability of some activities may change in the future, as climate conditions change. For example,

⁸¹ The Scottish Government (2015) Scotland's Outdoors, Current Status [online] Available at: <http://www.gov.scot/About/Performance/scotPerforms/indicator/outdoors> (accessed 26/10/2015)

⁸² Scotland's Environment (undated) People and the Environment, Recreation [online] Available at: <http://www.environment.scotland.gov.uk/get-informed/people-and-the-environment/recreation/> (accessed 26/10/2015)

⁸³ Historic Scotland (2014) Scotland's Historic Environmental Audit 2014, key facts and summary [online] Available at: <http://www.historic-scotland.gov.uk/shear-2014-summary.pdf> (accessed 26/10/2015)

⁸⁴ *ibid*

⁸⁵ Visit Scotland (2012) Research for Tourism Leadership Group, Trends and Markets Research Report [online] Available at: http://scottishtourismalliance.co.uk/wp-content/uploads/2012/06/2.2_TLG_report_of_trends_and_markets_research_final_-_updated_15_February_2012.pdf (accessed 26/10/2015)

⁸⁶ Forestry Commission (undated) A valuation of the economic and social contribution of Forestry for People in Scotland [online] Available at: <http://www.forestry.gov.uk/fr/INFD-6S8CSP> (accessed 26/10/2015)

⁸⁷ Scotland's Environment (undated) Farmland [online] Available at: <http://www.environment.scotland.gov.uk/get-informed/land/farmland/> (accessed 26/10/2015)

opportunities for summer tourism and outdoor physical activity could grow over time in line with increasing summer temperatures.

- 4.2.22 The health benefits of greenspace are well documented. It provides space for outdoor activities, a chance to connect with nature and a place for socialising. Research has found that this can have a positive effect on physical and mental health, including reducing stress, improving some behavioural and emotional problems in children and improving the ability to cope with problems⁸⁸. Around half of the urban population uses public local greenspace, private gardens, parks, woodlands and playing fields are also a highly valued part of the urban environment⁸⁹.
- 4.2.23 In addition to this, greenspace can deliver multiple benefits of goods and services environmentally, socially and economically. It can contribute towards climate change mitigation and adaptation and have a positive effect on air, soil and water quality, which in turn can be beneficial for biodiversity⁹⁰. Linking greenspaces together can also provide increased opportunity for species movement, particularly in an urban or industrial environment⁹¹.
- 4.2.24 Across Scotland, particularly in parts of the central belt, the closure of manufacturing industries has historically left degraded landscapes, poor quality environments and significant areas of vacant and derelict land, some of which is polluted by dangerous contaminants⁹². The regeneration of previously developed land to green infrastructure can reduce the human

Material Assets

Much of Scotland's agricultural land is given over to livestock, crops and fallow. Set-aside represents only 10% of the total agricultural area.

The quantity of timber harvested from Scotland's forests has increased relatively steadily over the past few decades, and is now around seven times the level of that in the late 1970s.

Renewable electricity generation in Scotland in 2013 was 17,011 GWh, an increase of 16.4% compared with that in 2012. Onshore and offshore wind generation was up some 35.7% from 2012, and while hydro generation was down by 9.8% from 2012, this was an increase of 3.3% since 2006.

Tourism generated some £4.6 billion in direct expenditure from overnight visitors in 2013 and provided employment to around 181,500 people.

⁸⁸ Greenspace Scotland (2008) Greenspace and quality of life: a critical literature review [online] Available at: <http://www.greenspacescotland.org.uk/SharedFiles/Download.aspx?pageid=133&mid=129&fileid=95> (accessed 26/10/2015)

⁸⁹ Scotland's Environment (undated) Cities, town and greenspace [online] Available at: <http://www.environment.scotland.gov.uk/get-informed/people-and-the-environment/cities-towns-and-greenspace/> (accessed 26/10/2015)

⁹⁰ Forest Research (2010) Benefits of green infrastructure [online] Available at: [http://www.forestry.gov.uk/pdf/urgp_benefits_of_green_infrastructure.pdf/\\$FILE/urgp_benefits_of_green_infrastructure.pdf](http://www.forestry.gov.uk/pdf/urgp_benefits_of_green_infrastructure.pdf/$FILE/urgp_benefits_of_green_infrastructure.pdf) (accessed 26/10/2015)

⁹¹ *ibid*

⁹² Scotland's Environment (undated) Cities, towns and greenspaces [online] Available at: <http://www.environment.scotland.gov.uk/get-informed/people-and-the-environment/cities-towns-and-greenspace/> (accessed 26/10/2015)

health risks associated with these sites, and can also help to improve the local environment⁹³.

- 4.2.25 One of the [CBD Aichi targets](#) set is that “by 2020, ecosystems and their services are maintained and enhanced by establishing Green Infrastructure and restoring at least 15% of degraded ecosystems”⁹⁴. The NPF3 stated that well designed green infrastructure can support regeneration efforts within our towns and cities, with improved attractiveness and environmental performance potentially acting as a catalyst for economic investment. It also noted that whilst the re-use of vacant land is a priority, in some instances greening initiatives could be the best permanent solution for sites where built development is unrealistic (e.g. due to costs)⁹⁵.
- 4.2.26 Almost 70% of Scotland’s people live in urban areas, accounting for just 2% of Scotland’s land surface⁹⁶. Our urban areas are significant and take up resources such as land, air and water; they are major sources of GHG and other emissions; and are centres for the consumption of goods and services such as food, energy and heat, and the generation of waste. Development pressure within urban areas can also threaten existing greenspace, and hence, the many benefits that it can provide⁹⁷.
- 4.2.27 Economic activity, inward investment, population change and demographic change can all influence the development of our towns and cities. This in turn can place pressure on our existing infrastructure (e.g. transport, waste) and have effects such as increased traffic volumes, which can have a range of associated effects on not only on air quality and human health, but also to the wider environment. As population is expected to continue to increase in the future, demand for the services that the natural environment provides will also likely increase (e.g. materials for further development, food, water, fuel). There will be a need for increased levels of infrastructure such as houses and roads, placing added pressure on resources such as land itself.
- 4.2.28 Further, the predicted effects of climate change are likely to increase these pressures further, and could reduce the availability of resources. The frequency and severity of extreme events is predicted to increase with flooding, heat waves and periods of drought expected to become more common⁹⁸. Whilst the most important response to climate change is the

⁹³ Forest Research (2010) Benefits of green infrastructure [online] Available at: [http://www.forestry.gov.uk/pdf/urgp_benefits_of_green_infrastructure.pdf/\\$FILE/urgp_benefits_of_green_infrastructure.pdf](http://www.forestry.gov.uk/pdf/urgp_benefits_of_green_infrastructure.pdf/$FILE/urgp_benefits_of_green_infrastructure.pdf) (accessed 26/10/2015)

⁹⁴ European Commission (2015) EU Biodiversity Strategy to 2020 – towards implementation [online] Available at: <http://ec.europa.eu/environment/nature/biodiversity/comm2006/2020.htm> (accessed 26/10/2015)

⁹⁵ Scottish Government (2014) National Planning Framework 3: A Plan for Scotland: Ambition, Opportunity, Place and Scottish Planning Policy [online] Available at: <http://www.scotland.gov.uk/Topics/Built-Environment/planning/NPF3-SPP-Review/NPF3> (accessed 26/10/2015)

⁹⁶ Scotland’s Environment (undated) Cities, towns and greenspace [online] Available at: <http://www.environment.scotland.gov.uk/get-informed/people-and-the-environment/cities-towns-and-greenspace/> (accessed 26/10/2015)

⁹⁷ ibid

⁹⁸ Committee on Climate Change (2015) Progress in preparing for climate change 2015 report to parliament [online] Available at: https://www.theccc.org.uk/wp-content/uploads/2015/06/6.736_CCC_ASC_Adaptation-Progress-Report_2015_FINAL_WEB_250615_RFS.pdf (accessed 26/10/2015)

reduction of GHG emissions, it is thought that some further changes in the climate are inevitable; therefore it is critical that steps are taken to prepare and adapt the country to climate change⁹⁹. A recent report on progress of climate change adaptation listed four key areas of climate risk as water scarcity, flood risk, heat stress and impacts on natural capital and agriculture. These risks are also set out in Climate Change Ready Scotland: Scottish Climate Change Adaptation Programme (2014)¹⁰⁰. This notes that some of the key consequences for Scotland that may occur as a result of climate change are impacts on the productivity of our agriculture and forests and food security, the health of our natural environment, increased risk of flooding and the availability and quality of water¹⁰¹.

- 4.2.29 Both of these reports note the importance of setting out adaptation measures alongside actions to reduce GHG emissions and environmental issues and that adaptation should build broader resilience.

⁹⁹ Committee on Climate Change (2015) Progress in preparing for climate change 2015 report to parliament [online] Available at: https://www.theccc.org.uk/wp-content/uploads/2015/06/6.736_CCC_ASC_Adaptation-Progress-Report_2015_FINAL_WEB_250615_RFS.pdf (accessed 26/10/2015)

¹⁰⁰ Scottish Government (2014) Climate Ready Scotland Scottish Climate Change Adaptation Programme [online] Available at: <http://www.scotland.gov.uk/Publications/2014/05/4669> (accessed 26/10/2015)

¹⁰¹ *ibid*

5. Findings of the Assessment

5.1 Introduction

5.1.1 As discussed previously under Assessment Methodology (Section 3.2), an assessment was undertaken for each of the three groupings of policies and proposals. The findings of these are set out in the Detailed Assessment Tables presented in Appendix 3 with the Summary Assessment Tables from each assessment included in the following sections.

5.1.2 In addition, the assessment considered the potential impact of the implementation of all the policies and proposals set out in the draft Strategy. The following section presents the findings of the assessment of the draft Strategy and its constituent policies and proposals. They also set out the findings of the assessment of the three groups of policies and proposals with regard to their cumulative effects within the wider policy context.

5.2 Findings of the assessment

5.2.1 The management and use of land is fundamental in contributing to our obligations in meeting our greenhouse gas reduction targets and how we adapt to the predicted impacts. It is also a major consideration in how we meet other objectives such as our planning aspirations, the protection of water quality, woodland and forest management, and the protection and enhancement of biodiversity, amongst many others. In seeking to clarify and highlight commonalities between the themes and ambitions that the draft Strategy sets out with those in wider Scottish Government policy, there is the potential to further draw attention to how the application of the Principles of the draft Strategy can be applied across this wide range of policy areas.

5.2.2 The importance of the natural environment, the benefits we attain from it, and the importance of ecosystem health is currently acknowledged in a range of policy documents. This can be seen from the review of relevant plans, programmes and strategies undertaken as part of the SEA process. For example, the NPF3 and SPP acknowledge the overarching principles of the LUS and the 2020 Challenge for Scotland's Biodiversity (the 2020 Challenge) and set out the importance that these are considerations in the planning process. The role of green space in driving economic development is also noted in several policies including the Scottish Forest Strategy and the NPF3. The NPF3 states that "well-designed green infrastructure can support regeneration efforts within our towns and cities, and improved attractiveness and environmental performance can act as a catalyst for economic investment". This demonstrates the common threads running through multiple policy areas.

GROUP 1: POLICY ALIGNMENT

The policies and proposal seek to provide further clarity on the status and context of the draft Strategy within current Scottish Government policy, and in doing so, aim to highlight a consistent message across the policy spectrum. Through the inclusion of a policy that reiterates the relationship of the draft Strategy with planning, this grouping seeks to improve awareness of the draft Strategy and the issues that it raises; particularly amongst planners, by demonstrating the potential benefits in taking an ecosystems approach and the role of SEA in the planning process.

There is clear cross-over with other groupings, particularly in relation to raising awareness and seeking opportunities for enhanced and more useful consultation between land owners/managers, decision makers and other stakeholders.

Legend:

■	Positive effects	■	Negative effects
■	Mixed effects	■	No significant effects

Policy/Proposals:

Develop a policy statement regarding the importance, use and management of natural resources ; ownership and use of land and policy position of the draft Strategy relative to other PPS.

Commit to review of Scottish Forestry Strategy.

Provide detail and clarity on the relationship between the draft Strategy and the statutory planning system.

Raise awareness on the use of ecosystems approach in SEA and the added value it can provide to development planning.

Consider the relationship between current land related policies and the potential advantages of a single policy statement about land which deals with ownership, use and management.

Opportunities:

Greater clarity on land use policy in Scotland, including the relationship between the draft Strategy, other PPS and the statutory planning system.

Potential for improved awareness on demonstrating the benefits to planning of the ecosystems approach and SEA

Further alignment of the Scottish Forestry Strategy with current policy.

Environmental Context:

National policy such as SPP, NPF3, NMP and the 2020 Challenge for Scotland's Biodiversity promote the importance of our natural resources, and highlight the importance that they are used and managed sustainably.

Scottish SEA Guidance sets out benefits of SEA, supports an ecosystems approach as one option to undertake SEA within PPS development and development planning, and outlines the requirements of the 2005 Act.

The Scottish Forestry Strategy sets out the direction of travel for Scotland's forestry sector for 2015 – 2018.

See Section 2 and Appendix 1.

Constraints:

Uncertainty in delivery of specific environmental benefits as a consequence of these policies and reliance on stakeholder 'buy in'.

Uncertainty in scope of review of Scottish Forestry Strategy.

SEA Topics	Biodiversity, flora and fauna	Population and Human Health	Soil	Water	Air	Climatic factors	Material Assets	Cultural Heritage and Landscape
Potential for Likely Significant Effects	■	■	■	■	■	■	■	■

Summary of Findings

This group of policies and proposal primarily seek to align land use policy with the ambitions and objectives set out in wider Scottish policy (e.g. NPF3, National Marine Plan (NMP) and Government Economic Strategy (GES) and reflecting those set out in other overarching documents (i.e. EU Directives), whilst also improving the consistency and efficiency of the decision making process. In general terms, they have the potential to improve efficiency in the decision making process and enhance the role of stakeholders in the decision making process; both of which have the potential to have overall positive effects; particularly in relation to population and human health and material assets. For example, providing further clarity and informing stakeholders on the current policy context and providing consistent messages on Scotland's ambitions and expectations are likely to help foster community involvement and aid participatory approaches to decision making, whilst potentially, helping to facilitate debate and scrutiny over the reasoning and assumptions made in this process. This is likely to provide greater value in this process, notably in how decision making is undertaken, and providing greater clarity over Scotland's aims and ambitions should give land owners/manager and other stakeholders greater understanding and certainty of their roles in the process.

The inclusion of Policies 1 and 3 should also provide further focus to the important role that ecosystem services play and the inter-relationship with land use, particularly in how our soils, water, biodiversity and cultural heritage play in facilitating how land is used (i.e. **supporting, regulating, provisioning and cultural services**), and the importance that these resources are used responsibly and sustainably in ensuring longevity of use. As noted above, there is the potential for this and the other policies to facilitate greater discussion and consideration of environmental issues in the decision making process, and potentially help to bring about further consistency in how potential issues are managed and addressed. However, it is also noted that a range of existing mechanisms and legislation are in place relating to the protection of the environment, particularly in the context of development proposals and proposed changes to land use. For example, the current planning system and suite of protective measures and designations across the environmental topic areas (e.g. Listed Buildings, Scheduled Monuments, biodiversity designations (i.e. SPAs, SACs, SSSIs), nationally and regionally recognised landscapes (i.e. NSAs)).

However, it is also noted that Group 1 largely consists of enabling measures rather than specific actions. As such, they are unlikely to deliver significant impacts on many of the topic areas in isolation. Rather, it is considered that they will aid the delivery of environmental benefits through enabling the opportunities presented in other policies and proposals in the draft Strategy.

Key Points:

- Continued support for the use of an ecosystem services approach, coupled with promotion of the benefits of SEA, may improve the effectiveness of the policies and have a positive environmental effect.
- Continued commitment for the on-going review and monitoring of the established indicators to evaluate effectiveness of policies.
- Potential for further policy alignment through the review of the Scottish Forestry Strategy.

GROUP 2: INFORMED DECISION MAKING

The two policies and two proposals seek to underpin decision-making with improved data, by improving the availability of information and how data is used, and making it more accessible and useful (e.g. mapping). The inclusion of proposals and policies such as the Regional Land Use Partnerships and Frameworks are aimed at fostering engagement and empowerment of stakeholders in how land is, and can be, used, and constructively involving stakeholders in the decision making process.

There is clear cross-over with other groupings, particularly in informing the Policy context and future iterations, and in applying the Principles at the regional and local levels.

Legend:



Positive effects

Negative effects

Mixed effects

No significant effects

Policy/Proposals:

Commit to continuing to develop freely available data services for ecosystem services.

Build these into a national online mapping platform, and explore the development of models and GIS to enable assessments of land use management/change.

Encourage establishment of regional land use partnerships.

Explore the development of regional land use frameworks in rural areas.

Explore the need for facilitation/mediation services between land owners/ managers and communities.

Environmental Context:

National policy such as SPP and the 2020 Challenge for Scotland's Biodiversity set out principles supporting community involvement and consultation, and the benefits that can be associated with this.

A range of policies such as the Scottish Soil Framework and Land Reform (Scotland) Bill extend this to allow for active involvement of communities, including right to buy, amongst others.

See Section 2 and Appendix 1.

Opportunities:

Improved use and availability of data.

Increased awareness of data sources amongst stakeholders.

Potential for more informed consultation and engagement on land use issues.

Opportunity for improved consideration of issues, including environmental issues and ecosystem health.

Constraints:

Cost implications.

Conflicting demands for data and information, including level and detail of data.

Uncertainty in delivery of specific environmental benefits as a consequence of these policies and the proposal.

"Buy in" will be voluntary.

SEA Topics	Biodiversity, flora and fauna	Population and Human Health	Soil	Water	Air	Climatic factors	Material Assets	Cultural Heritage and Landscape
Potential for Likely Significant Effects	Positive effects	Positive effects	Positive effects	Positive effects	Positive effects	Positive effects	Positive effects	Positive effects
Summary of Findings								
<p>Making informed decisions and using the relevant information in decision making is a fundamental component of good policy making, and one that is a common thread running through overarching Scottish policy. Similarly, the involvement of stakeholders in the decision making process, particularly at the community level, is also a clear ambition of the Scottish Government; most recently evidenced via the development of the Community Empowerment (Scotland) Bill. This group of proposals strongly reflects the ambitions of those set out in overarching policies and legislation such as this, in seeking to ensure that relevant information is accessible and used to inform decision making, whilst also supporting and enabling the role of stakeholders in the process through the establishment of regional partnerships and frameworks.</p> <p>Improving accessibility to relevant information and promoting its use amongst stakeholders and decision makers has the potential to foster more informed consultation and participatory engagement at the regional and/or local levels. Encouraging the establishment of regional land use partnerships and exploring the facilitation of mediation services between land owners/managers and communities could build upon this, and potentially help to facilitate debate and scrutiny over proposals for land use change, and the reasoning and assumptions made in the decision making process. There is the potential to achieve more value in this process and more meaningful community involvement in land use decision making, with the potential for positive effects for population in particular.</p> <p>Improving the availability and enabling the use of relevant information to inform discussions between stakeholders and the decision making process also has the potential to deliver for overall positive environmental effects. This could help to increase the consideration of environmental issues such as the roles of ecosystem services in decision making, and could help to steer decision making towards pursuing those options that are less likely to have significant environmental consequences or present opportunities for enhancement (i.e. on biodiversity, soil, cultural heritage, climatic factors, landscape and water). The assessment emphasised the clear links between many topic areas, and as a consequence, the likelihood of a range of secondary or indirect effects broadly related to the provision of supporting, regulating, provisioning and cultural ecosystem services. Included in this is the potential for benefits for many land users (i.e. material assets), particularly in agriculture where the role of soil, water and biodiversity features play a key role in providing resources for facilitating industries such as this, and the potential for mutual benefits that may be associated with sustainable resource use (provisioning services).</p>								

Key points:

- Continued promotion and enabling of community engagement in land use decision making process, including the use of stakeholder consultation to identify potential concerns and to seek solutions to these.
- Improved provision of information, including ensuring that there is adequate opportunity to progressively identify and review the information that will be made available under these policies and proposals.

GROUP 3: APPLYING THE PRINCIPLES

This group of policies and proposals are a combination of direct actions and supporting measures seeking to build upon previous and current work in the urban, agri-environment and uplands environment areas. There is clear cross-over with the 'Informed Decision Making' theme, particularly in the use of spatial approaches; and the 'Policy Alignment' theme in relation to wider policy on issues such as peatland conservation (and potentially regional planting targets). For example, these measures are also aimed at underpinning and informing future work in these areas.

Legend:

<div></div>	Positive effects	<div></div>	Negative effects
<div></div>	Mixed effects	<div></div>	No significant effects

Policy/Proposals:

Commit to develop and implement a package of measures to facilitate the step change to climate friendly farming.

The consideration of ecosystem services and more localised mapping-based assessments to inform SRDP funding decisions.

Explore the feasibility of establishing an urban land use pilot project.

Commit to scoping the potential to develop a strategic vision for Scotland's uplands.

Opportunities:

Greater consideration of ecosystem services and the potential benefits derived from them.

Targeted funding to provide maximum benefits to the natural environment.

Facilitate greater awareness of the complexities of land use and the opportunities and constraints that exist.

Constraints:

Conflicting and competing land uses.

Lack of clarity on how best to consider ecosystem services in the decision making process.

Conflicting demands for the goods we derive from the natural environment.

Diversity in viewpoints, perceptions and sectoral interests.

Environmental Context:

National policies such as NPF3, SPP and the 2020 Challenge for Scotland's Biodiversity set out policy on the importance of ecosystem health, the benefits of the services they provide and the need to maintain and restore them at catchment or landscape scale.

See Section 2 and Appendix 1

SEA Topics	Biodiversity, flora and fauna	Population and Human Health	Soil	Water	Air	Climatic factors	Material Assets	Cultural Heritage and Landscape
Potential for Likely Significant Effects								
Summary of Findings								
<p>A number of national policies currently set out the importance of ecosystem health. For example, the NPF3, SPP and the 2020 Challenge, set out the role and importance of our natural environment for our social, economic and environmental prosperity, and that ecosystem health underpins this. They elaborate by stating a need to restore and maintain good ecosystem health to ensure that the many benefits that our ecosystems provide can be continued to be felt by all. These, and other relevant documents, also note that the consideration of ecosystem health needs to be undertaken at catchment or landscape scale, taking full account of land use impacts on the ecosystem services that underpin social, economic and environmental health. The role of river basin management planning and the SRDP in land management are also discussed as delivery mechanisms to co-ordinate and support action across catchment areas.</p> <p>How we use and manage land in Scotland has significant influence over a range of topics. Habitat change, mainly due to increased intensive land management, urban development, pollution and nutrient enrichment and over-exploitation of resources, have all been identified as pressures which have caused a decline in biodiversity. Therefore, it is likely that this group of proposals will have a significantly beneficial impact on not only biodiversity, but also have additional secondary or indirect benefits on all other topic areas. With some 80% of land used for agriculture, the benefits from proposals to move towards more sustainable land use and low emissions farming have the potential to be significant in a number of ways. For example, this has the potential to influence how our land looks (cultural services), the food and other materials we gain from it (provisioning services), the air we breathe and the water we drink (regulating services), and the opportunities for access and closeness to nature and the benefits we get from this, such as physical and mental well-being (cultural services). The consideration of green infrastructure in the urban environment can provide additional socio-economic benefits such as increased community cohesion and reduced anti-social behaviour (cultural services). In addition to reducing the contribution of land use practices in terms of GHG emissions, the natural environment itself and our careful use and management of it can also play a significant role in managing the effects of climate change. For example, the use of mitigation and enhancement measures such as natural flood defences can provide a range of additional positive effects for biodiversity, soil, water quality (supporting, regulation and provisioning services) and visual amenity (cultural services), amongst others.</p> <p>The consideration of ecosystem health and the services they provide at the catchment or landscape scale could positively influence our understanding of the connections and interactions between the many different aspects of the environment. In the future, this could also help to identify opportunities for additional benefits, opportunities to optimise these, and identify areas of possible conflict. An example of this is the Aberdeenshire LUS Pilot, developed to "consider existing and future land uses in a collective way, with a view to optimising the use of land and to establish a mechanism to prioritise or guide decisions about possible competing or conflicting uses". While the findings of the pilot acknowledged that rural land use issues are complex, they reported that there is strong support for more integrated; holistic and rural land use planning.</p>								

Key points:

- Increased awareness of the services we get from nature and how these underpin our economic prosperity and social wellbeing, including increased understanding of the fundamental role this plays in the ability of wider Government policy to meet their objectives.
- Greater consideration of the role of land use and land use management, in terms of mitigation and adaptation to climate change e.g. encouraging the prioritisation of multi-functionality in land use.
- Further promotion of how natural systems deliver wider policy objectives, such as the role of woodlands or upland management in reducing the risk of flooding.
- Continued support for community engagement in the decision making process through on ground application of the Principles of the draft Strategy, i.e. creation of urban greenspace, Central Green Scotland Network.

- 5.2.3 There is likely to be a beneficial effect from highlighting this consistent message. There may also be additional opportunities for this group of policies and proposal (Group 1) to raise awareness of not only the importance of ecosystem health in being able to deliver wider policy objectives, such as the human health benefits from access to green space, but how wider policy can also impact on ecosystem health. For example, considering the natural environment in policy development and understanding and managing the impacts of a policy on the ability of the natural systems to function will not only help to increase long term resilience and reduce the risk to the objectives from failing natural systems, but should also lead to the greater consideration of potential negative effects the policy may have. This presents an opportunity to give greater consideration to not only the natural environments ability to function and how they may change over time, but also any adaptive measures that may need to be considered.
- 5.2.4 The policies and proposals in Group 2 (Informed Decision Making) in particular have the potential to strengthen and streamline the decision making and engagement processes. Together, they could also help to further demonstrate how land use can help implement wider health, sustainable transport, economic recovery and cultural policy objectives. For example, the development of greenspace and natural drainage solutions in the urban environment, advocated in the Group 3 policies (Applying the Principles), has the potential to deliver benefits across a range of topics. Positive effects in improving urban biodiversity and benefits for soil, water and air quality through the creation and conservation of urban habitats, alongside physical and mental health benefits from improved access to outdoor recreation and availability for urban greenspace could occur. With the ‘buy in’ and engagement of communities, in particular through the establishment of regional land use partnerships, there is also the potential to for these policies and proposals to contribute to the delivery of other secondary and less measureable benefits; for example, the delivery of social benefits and improved community cohesion.
- 5.2.5 The SEA identified potential beneficial effects from the draft Strategy by highlighting interconnections between land use management and ecosystem services, particularly where conflict may arise between land uses. Conflict can be a significant constraint to applying the Principles on the ground, particularly when there are conflicting resource demands. Greater consideration of the differing needs of different land users at the catchment or landscape level, alongside needs of ecosystem health and its services, has the potential to positively influence our understanding of the connections and interactions between the many different aspects of the environment. This is also noted in other policy areas, such as NPF3, SPP and the 2020 Challenge which state the importance that ecosystem health needs to be a consideration at the catchment or landscape scale in order to take full account of land use impacts on the ecosystem services that underpin social, economic and environmental health. The role of river basin management planning and the SRDP in land management are also

discussed as delivery mechanisms to co-ordinate and support action across catchment areas. Facilitating the resolution of conflicts (Proposal 3 – Land use mediation/facilitation) also has the potential for positive effects, and with the ‘buy in’ of stakeholders, could help to enable more efficient use of land and the services that it can provide.

- 5.2.6 Helping to inform the decision making process by improving the availability and the use of data (e.g. the use of mapping tools), seeking to form regional partnerships and foster stakeholder engagement in this process, are likely to have beneficial impacts. In particular, the SEA identified the potential for improved stakeholder engagement, and more meaningful consultation with the ‘buy in’ of land owners/managers, stakeholders and decision makers. This is likely to be especially important in applying the Principles of the draft Strategy on the ground at the local and regional levels, in particular. An example of this is the recent Aberdeenshire LUS Pilot that was developed to “consider existing and future land uses in a collective way, with a view to optimising the use of land, and to establish a mechanism to prioritise or guide decisions about possible competing or conflicting uses”. While the findings of the pilot acknowledged that rural land use issues are complex, they reported that there is strong support for more integrated holistic and rural land use planning.
- 5.2.7 As a consequence, the SEA considered that there may also be additional benefits through enhanced stakeholder engagement, including improved community cohesion, reduced anti-social behaviour and possible regeneration potential. However, the SEA also noted that the delivery of any such benefits was likely to be contingent on having ‘buy in’ at the community level. As discussed previously, community engagement, and the benefits that can be attained from this, is also reflected in wider policy objectives, including those set out in the NPF3, SPP and the Scottish Forestry Strategy.
- 5.2.8 In order to ensure that decision making takes into account the potential for impacts on the natural environment, there needs to be clear understanding of the relevant aspects of the environment and access to relevant information to underpin these decisions. Information gathering processes such as SEA and the development of the evidence base set out in the draft Strategy can help to provide this information, to identify and evaluate the potential for impacts, develop mitigation or avoidance where possible. Applying an ecosystems approach can also be used to assess the potential for impacts and demonstrate linkages between aspects of the natural environment; many of which can sometimes be thought of in isolation.
- 5.2.9 There are also likely to be a number of benefits from the policies and proposals set out in the draft Strategy relating to action in Group 3 (Applying the Principles). The SEA noted that these policies and proposals largely relate to sectors and areas that can have significant environmental impacts through land use; for example, sectors such as agriculture and forestry due to the extent of land that is used for these purposes, upland management and the rural environment. The primary benefit of these policies is likely to be through contributing to positive action on climate

change, including adaptation. For example, helping to move towards a low emissions agriculture sector could significantly reduce the GHG emissions associated with the sector, whilst also helping to improve the carbon sequestration of agricultural and rural land. As noted earlier, there is also the potential for secondary or indirect benefits to other environmental topics, particularly for biodiversity (e.g. reduced habitat fragmentation) and improved water, soil and air quality. Farmed and forest land also have important roles to play in visual amenity at the local and regional levels, and improved management of land use and land use change is likely to also reduce the risk of negative effects on landscape and cultural heritage. Improved management of uplands and consideration of urban land use through the development of urban land use pilots also have the potential to deliver a similar range of benefits, if adopted.

- 5.2.10 The inclusion of specific policies in Group 3 (Applying the Principles), such as the consideration of targeting payments that directly relate to how land is farmed and the consideration of ecosystems, is also likely to have the potential for positive effects. In particular, this could enable these to be focused towards areas and activities where there are likely to be more 'optimal' results.

5.3 Conclusion

- 5.3.1 Overall, there are likely to be significant benefits from the implementation of the proposals and policies set out in the draft Strategy. It is acknowledged that many of these are enabling measures that seek to inform and increase awareness and align the ambitions of the draft Strategy across Government policy and facilitate discussion and encourage partnership working. However, it is together that the suite of policies and proposals are likely to have the potential for primarily positive effects. Combined, they have the potential to complement existing proposals and should help to facilitate further action on the ground.
- 5.3.2 Potential benefits include increased understanding of the environmental implications of land use management and greater consideration of ecosystem health in the decision making process. Greater availability and confidence of sound and relevant data to underpin this process, increased awareness of the need to sustainably use resources across a range of sectors and enabling stakeholder engagement to facilitate this process, are also potential benefits from the policies and proposals set out in the draft Strategy. Combining these with actions aimed at informing future work, for example in the urban, agri-environment, forestry and uplands environment areas, also has the potential to deliver positive effects on how land in these areas is used and managed.
- 5.3.3 The promotion of healthy and robust ecosystems and reinforcing these considerations in the decision making process is fundamental to our ability to adapt to the predicted impacts of climate change. Whilst these benefits have the potential to have significant positive effects in terms of climatic factors, there are likely to be a number of other associated benefits. This includes the potential for additional benefits for biodiversity, water, soil, air,

cultural heritage and landscape, amongst others, through improved land use and management. Furthermore, by aligning the principles of the draft Strategy with those in overarching and wider Government policy, there is also the potential for significant benefits in the wider context of meeting these policy objectives.

5.4 Recommendations/Opportunities

- 5.4.1 The following paragraphs set out a summary of recommendations and opportunities identified in the SEA of the draft Strategy. More detail on these can be found in the Assessment Tables (Appendix 3).
- 5.4.2 The SEA supported the alignment of the ambitions and objectives of the draft Strategy with those of wider policy. It also supported and recommended promoting the greater consideration of ecosystems in decision making, whilst noting that this is already an important consideration in many policy documents. The SEA identified the potential for further awareness of the importance of ecosystem services and ecosystem health to contributing to meeting the ambitions and objectives of other policy areas; for example, the promotion of health and wellbeing benefits that can be attained through access to healthy and resilient green infrastructure. The SEA also noted that alignment of the principles of the draft Strategy with those in marine planning (e.g. in the National Marine Plan (NMP)) could facilitate greater consideration of interactions between the terrestrial and marine environments. For example, this could potentially contribute by providing consistency in managing coastal issues, such as the implications of diffuse pollution from terrestrial land use on coastal and marine environments.
- 5.4.3 The SEA also supported the provision of relevant information and tools such as data mapping, and identified this as being a vital component in underpinning a robust decision making process. It also identified that this could help to inform stakeholders and foster engagement in the decision making process, in addition to measures such as those set out in the draft Strategy to facilitate partnership and stakeholder working groups. In particular, the SEA identified an opportunity for using this data to help to inform community stakeholders and fostering meaningful community engagement; particularly where the potential benefits are not just environmental, but also socio-economic in nature.
- 5.4.4 Land use and management can have a significant impact on GHG emissions and adaptation to the predicted impacts of a changing climate. As such, the SEA set out support for measures aimed at reducing GHG emissions generated as a consequence of land management practices; for example, the inclusion of proposals aimed at moving towards a more climate friendly agricultural sector and reviewing the Scottish Forestry Strategy. However, the SEA also considered that any potential benefits should be optimised where possible at landscape or catchment level.
- 5.4.5 The SEA also supported the importance of the ambitions of the draft Strategy in the urban environment, particularly in relation to the use and management of green infrastructure and the clear links in other

environmental topic areas (e.g. population and human health, biodiversity, air). As such, the SEA recommended that where possible, the draft Strategy should encourage urban land use to be multifunctional to maximise the realisation of any benefits.

- 5.4.6 The SEA supported measures in the draft Strategy to increase understanding of the importance of climate change adaptation and that these measures should not be considered in isolation. It also considered that this was a key message that required greater emphasis across all the groups of policies and proposals and that there were opportunities to increase the awareness of this. For example, there is a need to increase awareness of adaptation in all decision making from wider Government policy to actions applied on the ground. The SEA supported the view that increased understanding of principles and importance of adaptation were as important as addressing actions to reduce GHG emissions, and the draft Strategy should seek to strengthen this message, both at wider Government policy level and within stakeholder frameworks considering potential management implications at catchment level.

6. Monitoring

- 6.1.1 The use and availability of appropriate and relevant information in decision making is a central component of the draft Strategy. As a consequence, ensuring the collection of appropriate information and data is also likely to be a key factor in the delivery of this ambition. This is likely to draw primarily on a range of existing monitoring programmes and the progressive development or refinement of programmes at the local and national level. Primarily, the 10 strategic indicators developed to monitor progress of the first Land Use Strategy will continue to be used to monitor progress of the new Strategy¹⁰². Other monitoring programmes such as local air quality monitoring of AQMAs; specialised biodiversity monitoring works undertaken in Scotland by both Government and external bodies (e.g. academia, non-government organisations (NGOs)); soil monitoring programmes such as the Soil Monitoring Action Programme; and water quality monitoring programmes such as those feeding into Water Framework Directive (WFD) and RBMP, are just several examples. Many sector-specific programmes, such as the Native Woodland Survey of Scotland, the Woods for Nature: Our Biodiversity Programmes and the Next Steps programme, and monitoring and evaluation programmes undertaken for the SRDP, amongst others, are likely to also aid in providing information for stakeholders and decision makers alike in the future.
- 6.1.2 Local environmental monitoring programmes, such as those required under planning conditions, licence conditions (e.g. Controlled Activities Regulations (CAR)) or undertaken for development of infrastructure construction works (e.g. Environmental Impact Assessment (EIA), Habitat Regulation Appraisal (HRA)), should also enable the identification of environmental impacts and trends at the local level. It is expected that in some aspects, these project specific programmes would likely complement existing programmes focusing at the local and national levels; however, they could aid in identifying impacts and trends associated with the management of land use and directly inform local level engagement.
- 6.1.3 In the development of the draft Strategy, many stakeholders felt that the inclusion of climate change and, in particular, the measurement and monitoring of climate change in the draft Strategy was important; adding that this was not featured strongly enough in the last LUS. It was suggested by stakeholders that monitoring/auditing of carbon losses, carbon footprints, identifying where carbon gains could be made and carbon storage, amongst others, could be beneficial. Existing monitoring and data collection programmes are currently in place looking at climate change issues such as these, either in Scotland or at the UK level. However, at present, climate change monitoring is largely focused on measuring progress in reducing GHG emissions including sectoral progress in contributing to meeting set targets, and the generation of low carbon energy (i.e. renewable energy and heat generation).

¹⁰² Indicators are: Land use, land use change and forestry greenhouse gas emissions; Gross Value Added in agriculture and forestry; Scottish tourism visits; High nature value farming and forestry; Natural capital asset index; Water ecological status; Terrestrial breeding birds; Volunteering in nature; Visits to the outdoors; and Community inclusion in land use decision making.

- 6.1.4 Under the 2009 Act, the Climate Change Delivery Board has responsibility for monitoring the Scottish Government's progress on both climate change mitigation and adaptation. In terms of mitigation, its purpose is to ensure delivery of the Low Carbon Scotland – Meeting our Emissions Reduction Targets programme of policies and proposals and reporting on progress in meeting the statutory GHG emissions reductions targets. The Reports of Policies and Programmes for 2010–2022 (RPP1) and the Second Report for the period 2013–2027 (RPP2) set out this progress across a diverse range of sectors, including transport, energy and rural land use. The development of RPP3 in upcoming years is expected to continue to report on progress and collate the wide range of measures proposed or being undertaken to meet the targets. Monitoring undertaken at the sectoral level is collated to prepare these reports.

7. Next Steps

7.1 Consultation Timescales

7.1.1 The consultation on “Getting the best from our land, consultation on a draft Land Use Strategy 2016-2021 and this Environmental Report runs until 29th January 2016. Comments on the Draft Strategy and the Environmental Report can be submitted via:

- online on the Scottish Government website
- by email and sending your response to the Land Use and Biodiversity Team at LandUseStrategy@gov.scot
- in writing, by sending your responses to Land Use and Biodiversity Team, The Scottish Government, 1C-North Victoria Quay, Edinburgh, EH6 6QQ

7.2 Questions for Consultees

7.2.1 Consultees may find the following questions helpful to provide a focus for their responses on the Environmental Report.

7.2.2 Please note that responses do not need to be confined to these questions, and more general comments on the Environmental Report and the draft Strategy are also invited.

Consultation Questions on the Environmental Report:

Q 1a: Do you consider that the Environmental Report set out an accurate description of the current environmental issues/baseline? Agree/Disagree/Partially/Don't know.

Q 1b: Please give reasons for your answer.

Q 2a: Do you consider that the predicted environmental effects as set out in the Environmental Report are accurate? Agree/Disagree/Partially/Don't know.

Q 2b: Please provide reasons for your answer including further information you feel should be considered in the assessment.

Q 3a: Do you consider that the recommendations and opportunities for mitigation and enhancement are accurate? Agree/Disagree/Partially/Don't know.

Q 3b: Please provide reasons for your answer.

Q 4: Are you aware of alternatives to the proposed policies that should be considered as part of the Strategic Environmental Assessment (SEA) process conducted for the draft Strategy?

7.3 Analysis and Use of Responses

7.3.1 Following the conclusion of the consultation period, the responses received on both the draft Strategy and this Environmental Report will be analysed and reported. Key messages from respondents, including those of the

various stakeholder groups, will be highlighted and the findings of the analysis will be taken into account in the preparation of the final Strategy.

- 7.3.2 Upon adoption of the draft Strategy, a Post-adoption SEA Statement will be prepared. This Statement will reflect on the findings of the SEA assessment and the views expressed in the consultation, and outline how the issues raised have been considered in the finalisation of the Strategy.

Appendix 1:

Policy Context for the Draft Scotland's Land Use Strategy 2016-2021

The National Planning Framework (NPF3) has a vision of a successful, sustainable place; a low carbon place; a natural, resilient place and a connected place. Scottish Planning Policy (SPP) sets out how the visions presented in the NPF3 should be delivered on the ground. These are discussed in greater detail below under the four headings:

- **A successful, sustainable place:** NPF3 sets out a vision of “we have a growing low carbon economy which provides opportunities that are more fairly distributed between, and within, all our communities. We live in high quality, vibrant and sustainable places with enough good quality homes. Our living environments foster better health and we have reduced spatial inequalities in well-being. There is a fair distribution of opportunities in cities, towns and rural areas, reflecting the diversity and strengths of our unique people and places”. This chapter discusses the need to make best use of our assets to build a sustainable future, both in the urban and rural context. SPP sets out policy principles for promoting town centres, such as encouraging a mix of uses in town centres and qualities of character and identity that create a sense of place and well-being of communities. Policy principles relating to promotion of rural development, such as encouraging rural development that supports prosperous and sustainable communities and business whilst protecting and enhancing environmental quality, and the importance of the historic environment and its care and protection are also noted.
- **A low carbon place:** NPF3 sets out the vision that “we have seized the opportunities arising from our ambition to be a world leader in low carbon energy generation, both offshore and onshore. Our built environment is more energy efficient and produces less waste and we have largely decarbonised our travel”. Whilst the SPP notes the clear direction set out in the NPF3 that planning must facilitate a transition to a low carbon economy, it also sets out that the planning system should guide development to appropriate locations.
- **A natural, resilient place:** NPF3 sets a vision of “natural and cultural assets are respected, they are improving in condition and represent a sustainable economic, environmental and social resource for the nation. Our environment and infrastructure have become more resilient to the impacts of climate change”. This chapter discusses the need to respect, enhance and make responsible use of our natural assets and cultural assets. It sets out the varied and important aspects of our natural environment, such as landscapes, iconic lochs and river networks and the importance of our land. It also notes that the rich and varied biodiversity in Scotland is not just confined to rural areas, and that our built environment and key infrastructure corridors and green spaces within our cities and towns also provide important habitats. Together, these contribute to a wider national ecological network. Spatial priorities for change include that quality of life and resilience in city regions will be supported by green infrastructure, that rural areas will provide important ecosystem services, and the coast and islands will capitalise on their world-class environment. Much of this discussion centres on the key role our natural and cultural assets, both urban and rural, play in supporting sustainable growth, maintaining their distinctiveness and promoting the quality of life and benefits that are attained from them. It further discusses the key role that the sustainable use of our natural assets

¹⁰³ Scottish Government (2014) National Planning Framework 3: A Plan for Scotland: Ambition, Opportunity, Place and Scottish Planning Policy [online] Available at: <http://www.scotland.gov.uk/Topics/Built-Environment/planning/NPF3-SPP-Review/NPF3> (accessed 26/10/2015)

¹⁰⁴ Scottish Government (2014) Scottish Planning Policy [online] Available at: <http://www.gov.scot/Publications/2014/06/5823> (accessed 26/10/2015)

and importance of healthy, well maintained ecosystems in maintaining and enhancing the environmental quality of the natural environment which underpins this, to ensure that these benefits can continue to be felt by all. SPP notes the LUS and the Principles within it and the 2020 Challenge for Scotland's Biodiversity, amongst others, are key documents for consideration in the planning process. Further, principles such as improving soil and the water environment and protecting and enhancing ancient semi-natural woodland, seek to provide benefits for biodiversity and avoid fragmentation, whilst supporting opportunities for all to enjoy and learn about the natural environment.

- **A connected place:** NPF3 sets out a vision that “the whole country has access to high-speed fixed and mobile digital networks. We make better use of our existing infrastructure, and have improved internal and international transport links to facilitate our ambition for growth and our commitment to an inclusive society. This chapter includes discussion regarding the important role that planning can play in improving connectivity, promoting more sustainable patterns of transport and travel as part of the transition to a low carbon economy. This additionally links with the ambitions of “a natural, resilient place” through the role that green infrastructure can play in delivering this; for example, the Central Green Scotland Network (CGSN), a designated National Development in the NPF3.

The 2020 Challenge for Scotland's Biodiversity¹⁰⁵

The 2020 Challenge for Scotland's Biodiversity is Scotland's response to the 20 [Aichi Targets](#) set by the United Nations Convention on Biological Diversity (CBD), and the European Union's Biodiversity Strategy for 2020. The 2020 Challenge supplements the 2004 Scottish Biodiversity Strategy¹⁰⁶ and focuses on the importance of healthy ecosystems and an outcome that “Scotland's ecosystems are restored to good ecological health so that they provide robust ecosystem services and build on our natural capital”.

The main chapters of the Strategy are summarised below:

- **Chapter 1:** makes the case that **ecosystems need to be protected** and where necessary, restored and enhanced, to ensure that they continue to support nature, wellbeing and a thriving economy. The need to maintain nature's capacity to provide vital services and broad scale action across landscapes, river catchments and marine areas is discussed. Key messages include encouraging and supporting ecosystem restoration and management, considering ecosystem health and restoration and catchment scale, and taking full account of land use impacts on the ecosystem services that underpin social, economic and environmental health.
- **Chapter 2:** central to this chapter is **growing our natural capital**. It sets out the importance of resource efficiency, making the most of our natural assets and notes that one of the three Objectives of the first Land Use Strategy (and subsequently carried forward in this revised version) is “Responsible stewardship of Scotland's natural resources delivering more benefits to more people”. Key messages include that nature supports Scotland's prosperity and delivers real value in ways that are not always visible, that we need to make the most of our natural assets to support sustainable economic growth, and that the economy and wider wellbeing of Scotland's people will benefit from action that enhances nature and ecosystem

¹⁰⁵ Scottish Government (2013) 2020 Challenge for Scotland's Biodiversity – A Strategy for the conservation and enhancement of biodiversity in Scotland [online] Available at: <http://www.scotland.gov.uk/Publications/2013/06/5538> (accessed 26/10/2015)

¹⁰⁶ Scottish Government (2004) Scottish Biodiversity Strategy – It's in your hands [online] Available at: <http://www.scotland.gov.uk/Publications/2004/05/19366/37239> (accessed 26/10/2015)

services.

- **Chapter 3:** describes the key **health, wellbeing and education** benefits that can be provided by the natural environment. This includes mental and physical wellbeing from outdoor access and regular contact with nature, the role of good quality green space in this and in place making and regeneration. This chapter also discusses the need for local communities to have greater opportunities to be involved in managing “their” green spaces. Greater enhancement of these benefits attained from these natural assets is also discussed; such as better planning, design and management of accessible high quality green spaces located close to where people live, work and learn; and encouraging greater physical activity and contact with nature.
- **Chapter 4:** considers the vital roles of **protected places and actions for wildlife and habitats** in helping nature itself, as well as supporting our prosperity, health and wellbeing. This chapter discusses the need to conserve not just those species and habitats that are protected, but also to recognise and increase understanding of other less spectacular plants, animals and organisms that provide vital services such as recycling nutrients in soils and purifying water. This chapter identifies changing land use and land management practices resulting in varying degrees of habitat fragmentation and loss, in addition to climate change, as key drivers for change. It also includes the need to improve ecosystem health at catchment or landscape scale, and integration of action for wider habitats to combat fragmentation and restore key habitats.
- **Chapter 5:** considers the case for a more **integrated approach to land and freshwater use and management**, and that the pressures on the natural environment from habitat loss, nutrient enrichment and climate change require action at the landscape scale. This chapter builds on the approach set out in the first Land Use Strategy and proposes an ecosystem approach to planning and decision making, aimed at securing multiple benefits for nature, people and business. The role of river basin management planning, the Scottish Rural Development Programme (SRDP) and Common Agricultural Policy (CAP) in land management are discussed as delivery mechanisms to coordinate and support action across catchment areas. Key messages include support for “high nature value” farming and forestry and promoting an ecosystems approach to land management that fosters sustainable use of nature resources and puts biodiversity at the heart of land-use planning and decision making.
- **Chapter 6:** features the **marine and coastal environment** and notes its importance for jobs and tourism, particularly in remote parts of the country. The reliance of certain industries, for example fishing, aquaculture, tourism and recreation, are identified as having a reliance on clean, healthy, safe, productive and biologically diverse marine and coastal environments. It also notes that impacts of climate change on the marine environment, such as changing sea temperatures and rising sea levels, are already affecting marine species and coastal habitats.
- **Chapter 7:** Considers how progress will be tracked, what indicators will be established and the importance of establishing a clear method of tracking progress and identifying challenges.

The Scottish Forestry Strategy (SFS) sets the framework for taking forestry forward through the first half of this century and beyond. It sets a vision that “by the second half of this century, people are benefiting widely from Scotland’s trees, woodlands and forests, actively engaging with and looking after them for use and enjoyment of generations to come. The forestry resource has become a central part of our culture, economy and environment”. The SFS makes it clear that this vision and the strategies, principles and objectives are relevant in urban areas as well as rural.

There are seven key themes which are set out to help achieve this vision, these are summarised below:

- **Climate change:** considers the use of forestry, and adapting forestry practices, to help reduce the impact of climate change and help adapt to its changing climate. This chapter sets out the threat posed by climate change and the contribution that forestry makes to reducing atmospheric carbon dioxide (CO₂) through carbon uptake in growing biomass, and through vegetation and soils. Further to this, the use of wood fuel in displacing fossil fuels, and the use of timber and wood products as substitutes for more energy intensive materials such as concrete and steel in further reducing CO₂ contributions is noted. Further actions include increasing awareness of the forestry sectors contribution to climate change targets, adaptation (for example, the use of forestry in sustainable flood management), mitigation measures and increasing carbon sequestration.
- **Timber:** discusses getting the most from Scotland’s increasing and sustainable timber resource and the use of timber as a renewable and versatile raw material.
- **Community development:** focuses on the role of forestry in improving the quality of life and well-being of people by supporting community development across Scotland. This chapter discusses the potential benefits that well designed and well managed woodlands can bring to degraded surroundings and brownfield sites into community assets by “greening and screening”, improving environmental quality, increasing attractiveness to inward investment, and providing a landscape framework for new development. Actions include the promotion of welcoming and well managed woodlands in and around communities, encouraging the education sector to make greater use of woodlands for outdoor learning and encouraging community ownership and management.
- **Access and health:** discusses making access to, and the enjoyment of, woodlands easier for all to help improve physical and mental health in Scotland. It discusses the role of woodlands and street trees in helping to mitigate air pollution and climatic extremes in urban environments (see environmental quality), and also the physical and mental health benefits that can be gained from access to woodlands.
- **Environmental quality:** focuses on protecting the environmental quality of our natural resources (water, soil and air) and the contribution of forestry and woodlands to Scotland’s landscapes and the historic environment. Actions include ensuring the implementation of the relevant Forest Guidelines to avoid point source and diffuse pollution, promoting the role of forestry and street trees in ameliorating air pollution in priority urban areas and the contribution of high standards of forest design in improving landscapes.

¹⁰⁷ Forestry Commission Scotland (undated) The Scottish Forestry Strategy [online] Available at: <http://scotland.forestry.gov.uk/supporting/strategy-policy-guidance/forestry-strategy> (accessed 26/10/2015)

- **Biodiversity:** looks at helping to restore, maintain and enhance Scotland's biodiversity, and increasing awareness and enjoyment of it. The chapter sets out actions to restore and improve the condition of native woodlands, reverse biodiversity decline by broader actions such as collaborative deer management, and increased awareness, understanding and enjoyment of the biodiversity value of all woodland types.
- **Business development:** focuses on strengthening forestry through business development to underpin sustainable forest management and support growth and employment across Scotland. This includes an action to raise knowledge and awareness of the contribution that woodlands can make to the economic regeneration of industrial areas through the creation of green infrastructure and promote a joined up approach to land management.

Scotland's River Basin Management Plans¹⁰⁸

The River Basin Management Plans (RBMPs) are a requirement of the Water Framework Directive and aim to both protect water resources and achieve an improvement in their ecological quality, where appropriate. The first plans for the Scotland and River Tweed river basin districts were published in 2009, and included targets for improving river water quality, impacts on flow and levels and the physical condition of the water environment, including preventing deterioration of Scotland's waters. They also discuss groundwater condition and set out planned improvements for protected areas within the river basin districts (i.e. Bathing Waters, conservation of habitats and species). Work is currently underway to produce the second set of RBMPs later in 2015.

The existing Plans identify a number of key pressures to water quality, including a wide range of pressures associated with man-made activities and land uses. In particular, issues such as diffuse source pollution, changes to physical condition, and alterations to beds, banks and shores will be a key focus of their development, including the identification of appropriate mechanisms to tackle these pressures. Further, many of the improvements needed to achieve the plan's objectives for the water environment, and those identified in the upcoming second set of Plans, will also help deliver other benefits, including sustainable flood management, biodiversity conservation and improved fisheries, amongst others.

Adopting an integrated approach and co-operation amongst stakeholders was identified as a key component of the Plans, including the work of the National Advisory Group and eight Area Advisory Groups in the Scotland river basin district, and the establishment of other specific advisory groups to advise on specific issues (e.g. Diffuse Pollution Management, Fisheries).

¹⁰⁸ SEPA (2015) First cycle plans and actions, First river basin management plans [online] Available at: <http://www.sepa.org.uk/environment/water/river-basin-management-planning/first-cycle-plans-and-actions/> (accessed 26/10/2015)

Scottish Soil Framework¹⁰⁹

The Scottish Soil Framework aims to promote the sustainable management and protection of soils. It acknowledges the multiple functions of soils, particularly its role in providing the basis for production, controlling and regulating environmental interactions and providing valued habitats and sustaining biodiversity. It also includes a vision for soils to be recognised as a vital part of our economy, environment and heritage, and to be safeguarded for existing and future generations. The framework notes that Scotland's soils are generally in good health; however it acknowledges significant pressures to soils including climate change, loss of organic matter and changes to land use (i.e. soil sealing associated with construction, erosion, loss of structure and compaction at the local level associated with cultivation).

The Framework does not set out new policy but seeks to integrate soil protection into existing and emerging policies such as land use and management, water quality and flooding, planning, amongst others. Improving the availability of soil data and highlighting the knowledge gaps and research needs in Scotland are also considered important. As a consequence, many of the issues discussed in the framework have a clear interaction with land use, and hence are likely to influence the development of the draft Strategy.

A key to all future efforts set out in the Framework is the need for close and continual engagement with land managers and stakeholders to improve the level of awareness of soil, and the research community to ensure that all efforts are underpinned by sound evidence.

Land Reform (Scotland) Act 2003¹¹⁰ and Land Reform (Scotland) Bill 2015¹¹¹

The Land Reform (Scotland) Act 2003 was passed by the Scottish Parliament in 2003. The Act established a statutory right of responsible access to land and inland waters for outdoor recreation, crossing land and access for some educational and commercial purposes. It sets out where and when access rights apply, and provided additional allowances for the right to buy land. The Act is set out in three parts:

- **Part 1** establishes a right to be on land for recreational, educational and certain other purposes and a right to cross land. It also sets out the statutory duties, responsibilities and powers of local authorities and national park authorities in relation to the provision and promotion of rights of access.
- **Part 2** confers on local bodies representing rural communities a right to buy land with which the community has a connection and defines the land which can be bought and procedures to do this.
- **Part 3** gives bodies representing crofting communities a right to buy certain land, defining the land that can be bought, who can buy it and how it is to be acquired.

The 2003 Act also placed a duty on SNH to develop a Scottish Outdoor Access Code. The Code and associated advice for land managers, sets out the rights and responsibilities of individuals and owners of land regarding allowing responsible access, where and when

¹⁰⁹ Scottish Government (2009) Scottish Soil Framework [online] Available at: <http://scotland.gov.uk/Publications/2009/05/20145602/0> (accessed 26/10/2015)

¹¹⁰ Land Reform (Scotland) Act 2003 [online] Available at: <http://www.legislation.gov.uk/asp/2003/2/contents> (accessed 26/10/2015)

¹¹¹ Land Reform (Scotland) Bill 2015 [online] Available at: [http://www.scottish.parliament.uk/S4_Bills/Land%20Reform%20\(Scotland\)%20Bill/b76s4-introd.pdf](http://www.scottish.parliament.uk/S4_Bills/Land%20Reform%20(Scotland)%20Bill/b76s4-introd.pdf) (accessed 26/10/2015)

access rights apply, and how land should be managed with regard to access. It also sets out three principles for responsible access applicable to both the public and land managers:

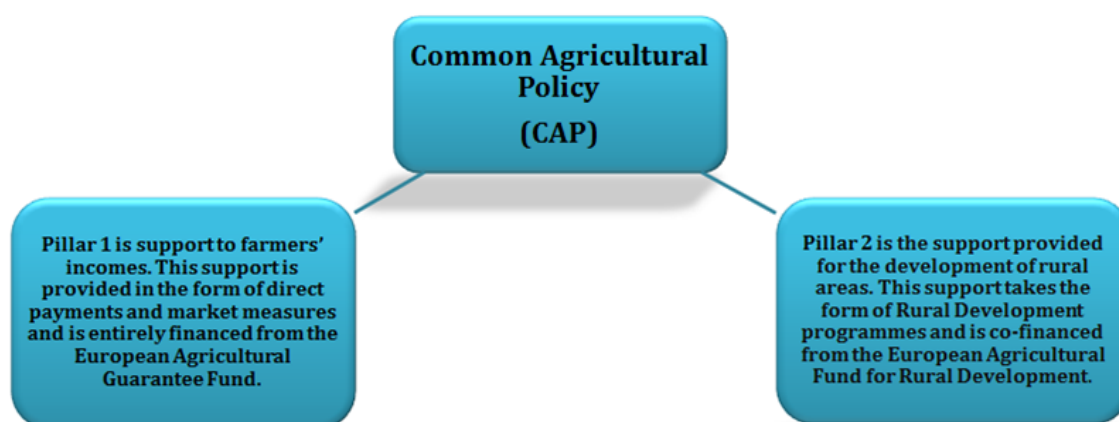
- Respect the interests of other people.
- Care for the environment, including wildlife and historic sites.
- Take responsibility for your own actions.

In June 2015, the Land Reform (Scotland) Bill was introduced in the Scottish Parliament. The development of the Bill is the next step in this Government's programme of ambitious land reform. It contains provisions that aim to ensure the development of an effective system of land governance and on-going commitment to land reform in Scotland, address barriers to furthering sustainable development in relation to land and improve the transparency and accountability of land ownership, and demonstrate commitment to effectively manage land and rights in land for the common good, through modernising and improving specific aspects of land ownership and rights over land.

The Bill is set out in 10 main parts:

- **Parts 1 and 2** of the Bill relate to a statement of land rights and responsibilities, and establishment of a Scottish Land and Property Commission. – These aim to set up a framework and process that ensure on-going consideration of the balance of rights and responsibilities over land in Scotland, which will in turn ensure a continuing and effective modern model of land governance.
- **Part 3** relates to transparency of landownership in Scotland – involving better information on control, interest and ownership of land in Scotland, a clear understanding of patterns of land ownership, and a better understanding of the influences on the use, ownership, transfer and control of land.
- **Parts 4 and 5** seek to further the sustainable development of land – engaging communities in decisions relating to land and seeking communities and land owners to work together to identify mutually beneficial solutions to local barriers to sustainable development. Part 5 also includes the right for communities to buy land to further sustainable development.
- **Parts 6 to 10** relate to rights and responsibilities over land – Provisions address specific issues relating to the balance of rights and responsibilities over land, such as changing exemptions in business rates and valuation of shootings and deer forests, change of use of land forming part of the common good, deer management, clarifying the core paths planning process in relation to public access, and changes to tenancy requirements for agricultural holdings.

Scottish Rural Development Programme (SRDP)¹¹² and EU Common Agricultural Policy (CAP)¹¹³



Source: The Scottish Rural Development Programme (2014)¹¹⁴

The Common Agricultural Policy (CAP) has been regularly updated and reformed since it began in 1957. It aims primarily “to improve agricultural productivity so that consumers have a stable supply of affordable food and to ensure that farmers can make a reasonable living”.

The Scottish Rural Development Programme (SRDP) 2014-2020 delivers Pillar 2 of the EU CAP and funds economic, environmental and social measures for the benefit of rural Scotland. The specific priorities of the new 2014 – 2020 programme include enhancing the rural economy, supporting agricultural businesses, protecting and improving the natural environment, addressing the impact of climate change, and supporting rural communities.

The SRDP also focuses on a broad range of environmental issues. In particular, it seeks to reduce GHG emissions from agriculture, enhance the quality of Scotland’s soils and peatlands and protection of soil carbon sinks and woodland creation; demonstrating similar climate change adaptation threads that run through wider Scottish and EU policy. Further, the SRDP also looks at many wider aspects of the many benefits that can be gained from Scotland’s natural resources; for example, benefits such as the reputation of our food and drink industry.

The SRDP also sets out a range of additional specific targeted funding schemes, including, amongst others:

- **Forestry Grant Scheme:** Involving a range of grants for woodland creation, agroforestry, tree health, woodland improvement, processing and marketing and sustainable management of forests; seeking to build upon the Scottish Government’s efforts to reduce Scotland’s carbon footprint.
- **Agri-Environment Climate Scheme:** Aimed at supporting environmental actions to

¹¹² Scottish Government (2014) Scottish Rural Development Programme 2014-2020 [online] Available at: <http://www.scotland.gov.uk/topics/farmingrural/SRDP> (accessed 26/10/2015)

¹¹³ EU Common Agricultural Policy 2014 – 2020 [online] Available at: <http://ec.europa.eu/agriculture/cap-post-2013/> (accessed 26/10/2015)

¹¹⁴ The Scottish Government (2014) Scottish Rural Development Programme [online] Available at: <http://www.gov.scot/Topics/farmingrural/SRDP> (accessed 26/10/2015)

maintain and enhance Scotland's rich and varied natural environment via a targeted support for land managers to undertake management and capital work for environmental purposes (i.e. support for footpaths and works to support access management).

- **Environmental Co-operation Action Fund**: Providing facilitation for land managers to work together to deliver collaborative environmental projects.
- **Support for Co-operative Action**: Helping rural businesses to work together to deliver larger environmental benefits than could be achieved by businesses on their own.
- **Advisory Service**: Establishment of an expanded Advisory Service which will provide advice and assistance to farmers, crofters, forest holders and other land managers.
- **Scottish Rural Network**: Supporting and promoting rural development through the sharing of ideas and best practice.

Climate Ready Scotland: Scottish Climate Change Adaptation Programme¹¹⁵

This Scottish Climate Change Adaptation Programme (CCAP) is the Scottish Government's first step towards ensuring that existing and future Scottish Government policy helps drive and support adaptation activity in Scotland. The Programme was developed as part of an iterative process, with subsequent programmes required to address impacts and opportunities identified in progressive CCRA's.

The Programme details Scottish Ministers' objectives, policies and proposals to address the predicted impacts from climate change facing Scotland as set out in the UK Climate Change Risk Assessment (CCRA). It set out an approach of sustainability that builds the resilience of our communities and the long-term prosperity of our environment and our economy. It collated a wide range of policies and actions set out in wider policy documentation under the climate change banner. It also clearly expressed the collaborative nature of adapting to climate change, and advocated plans for the public sector to work with local, national, international and strategic partners, including organisations that deliver public services, that manage Scotland's natural environment, that develop social and economic policy and that work in our communities.

However, the Programme does not directly address matters which are expressly reserved to the UK Government; rather, such matters dealt with under the UK Government's National Adaptation Programme.

The Programme was structured around an overarching aim and three themes ("Climate Ready Natural Environment", "Climate Ready Buildings and Infrastructure Networks Theme" and "Climate Ready Society Theme") with important interactions clearly visible between each:

- **Climate Ready Natural Environment Theme**: The Programme set out a wide range of policies and ambitions within this theme, collating both a range of existing actions and new policies building upon the foundations laid by the wider policy context. The key objectives related to improving understanding of the effects resulting from climate change and their impacts on the natural environment, supporting a healthy and diverse natural environment with the capacity to adapt, and sustaining and enhancing the benefits, goods and services that Scotland's natural environment provides. The inclusion of policies relating to the management of designated sites, a national

¹¹⁵ The Scottish Government (2014) Climate Ready Scotland: Scottish Climate Change Adaptation Programme [online] Available at: <http://www.gov.scot/Resource/0045/00451392.pdf> (accessed 26/10/2015)

approach for the management of wildlife (including deer), a commitment to implement the LUS, improving the connectivity of natural woodlands, integrated land management and its role in tackling climate change, and support for the protection of Scotland's peatlands, amongst many others, demonstrate close links to the development of the draft Strategy.

- **Climate Ready Buildings and Infrastructure Networks Theme**: The Programme set out policies and ambitions focused on improving understanding of the effects of climate change and their impacts on buildings and infrastructure networks; providing the knowledge, skills and tools to manage climate change impacts on buildings and infrastructure; and increasing the resilience of buildings and infrastructure networks to sustain and enhance the benefits and services provided. Key considerations in the context of the draft Strategy include cross-referencing to ambitions set out in related policy documents (i.e. SPP and RBMPs) and raising awareness of sustainability, amongst others.
- **Climate Ready Society Theme**: The Programme set out policies and ambitions focused on understanding the effects of climate change and their impacts on people, homes and communities; increasing awareness of the impacts of climate change to enable people to adapt to future extreme weather events; and providing support our health service and emergency responders to enable them to respond effectively to the increased pressures associated with a changing climate. Key considerations in the context of the draft Strategy include ambitions for improved education and awareness amongst stakeholders and communities, particularly relating to flood risk and resilience amongst the general public.

Appendix 2:

Additional Environmental Baseline Information

1 Introduction

- 1.1 The following sections of this Appendix provide additional environmental baseline information that has been collated to inform the SEA and the development of Scotland's Land Use Strategy 2016-2021 (the draft Strategy). While this information is presented under separate SEA topic headings, the key environmental issues relating to land use and management in Scotland, and the interactions between them, are discussed further in Section 4 of the Environmental Report.

2 Biodiversity

- 2.1 Biodiversity plays a key role in both the functioning of ecosystems and in supporting our lives through the provision of crucial resources like fresh air, clean water and food¹¹⁶. It is commonly used as a measure of the health of ecosystems, and provides the ecosystems services that are the basis of life through the regulation of air and water, soil formation, nutrient cycling, flood regulation and pollination, amongst many others¹¹⁷. Biodiversity is closely linked with other environmental topics, particularly soil and water, which also help to support an incredible diversity of life across Scotland and in our surrounding waters. However, there are a wide range of pressures on biodiversity; climate change in particular has the potential to greatly impact on biodiversity on a global scale¹¹⁸ and on the many species and habitats unique to Scotland.
- 2.2 Scotland is rich in biodiversity, with many species and habitats of international, European or International importance. There are 449 internationally designated sites, including Special Areas of Conservation (SAC), Special Protection Areas (SPAs), Ramsar sites, Nature Conservation Marine Protected Areas (MPAs), Biosphere Reserves and World Heritage Sites (WHS), amongst others. In addition, there are many nationally recognised sites, including just over 1,425 Sites of Special Scientific Interest (SSSI)¹¹⁹, two National Parks¹²⁰ and 47 National Nature Reserves (NNR)¹²¹. By the end of March 2015, 79.3% of natural features on nationally protected nature sites were assessed as being in 'favourable'

¹¹⁶ SNH (2012) Safeguarding Biodiversity [online] Available at: <http://www.snh.gov.uk/protecting-scotlands-nature/safeguarding-biodiversity/> (accessed 26/10/2015)

¹¹⁷ Mackey E.C. and Mudge G.P. (2010) Scotland's Wildlife: An assessment of biodiversity in 2010, Scottish Natural Heritage, Inverness [online] Available at: <http://www.snh.gov.uk/docs/B811968.pdf> (accessed 26/10/2015)

¹¹⁸ Convention on Biological Diversity (undated) Climate Change and Biodiversity – Introduction [online] Available at: <http://www.cbd.int/climate/intro.shtml> (accessed 26/10/2015)

¹¹⁹ SNH (2014) Sites of Special Scientific Interest [online] Available at: <http://www.snh.gov.uk/protecting-scotlands-nature/protected-areas/national-designations/sssis/> (accessed 26/10/2015)

¹²⁰ SNH (2014) National Parks [online] Available at: <http://www.snh.gov.uk/protecting-scotlands-nature/protected-areas/national-designations/national-parks/> (accessed 26/10/2015)

¹²¹ SNH (2013) National Nature Reserves in Scotland [online] Available at: <http://www.snh.gov.uk/protecting-scotlands-nature/protected-areas/national-designations/nnr/in-scotland/> (accessed 26/10/2015)

condition, an increase from 78.8% in the previous year and from 76% since the use of the indicator started in 2007¹²².

- 2.3 Of the UK Biodiversity Action Plan (UK BAP) priority habitats and species found in Scotland, 43% of habitats and 38% of species in 2008 were stable or improving, whilst 33% of habitats and 21% of species were in decline. A further 23% of habitats and 39% of species showed no clear or unknown trend¹²³. By definition, these habitats and species were classed as priorities due to their vulnerable and/or declining status.
- 2.4 Areas of biodiversity value are not only contained within designated sites, with many undesignated areas of Scotland also providing a wide range of habitats and species that have important functions and roles. For example, urban greenspace such as public and private gardens, parks, woodlands, recreational grounds, green corridors, allotments and community growing spaces can also provide a range of habitats and ecosystems which are valuable to a variety of wildlife¹²⁴. Greenspace can also provide opportunities to connect people with nature and provide recreational opportunities, both of which can have positive human health benefits (this is discussed further under Population and Human Health).
- 2.5 There are a range of pressures that have been identified as having contributed to the decline in biodiversity and the current trends observed in Scotland. These broadly include habitat change, due mainly to increased and more intensive land management, urban development, pollution and nutrient enrichment, and over exploitation of natural resources. Invasive non-native species are also a known pressure on local biodiversity, and this may be exacerbated by the impacts of climate change¹²⁵.
- 2.6 Changes in our climate has been demonstrated to impact on biodiversity, particularly in the marine environment, and has the potential to result in the further loss of habitats and species, lead to changes in species migration, impact on breeding cycles and have indirect effects, such as affecting food supplies (e.g. predator-prey relationships). Risks from pests and diseases also have the potential to increase. Similarly, there will likely be many other indirect impacts on biodiversity as sectors like agriculture, forestry, planning, water and coastal management adapt in the face of climate change¹²⁶.

¹²² Scottish Government (2014) Protected Nature Sites, Current Status [online] Available at: <http://www.gov.scot/About/Performance/scotPerforms/indicator/naturesites> (accessed 26/10/2015)

¹²³ Scottish Government (2014) Key Scottish Environmental Statistics [online] Available at: <http://www.scotland.gov.uk/Topics/Statistics/Browse/Environment/TrendBAP> (accessed 26/10/2015)

¹²⁴ SNH (2013) Urban greenspace and gardens [online] Available at: <http://www.snh.gov.uk/about-scotlands-nature/habitats-and-ecosystems/greenspaces-and-gardens/> (accessed 26/10/2015)

¹²⁵ Biodiversity Scotland (2013) Key pressures on biodiversity [online] Available at: <http://www.biodiversityscotland.gov.uk/biodiversity/pressures/> (accessed 26/10/2015)

¹²⁶ MONARCH (undated), Modelling Natural Resource Responses to Climate Change, A synthesis for biodiversity conservation [online] Available at: <http://www.eci.ox.ac.uk/research/biodiversity/monarch.php> (accessed 26/10/2015)

3 Population and Human Health

- 3.1 Amongst many other services, the natural environment provides climate regulating and air filtering services, both of which can have significant effects on human health and supports the production of goods such as food, water and fuel. However, the natural environment also provides a range of cultural services for us, such as opportunities for education and recreation which can prove beneficial for our wellbeing, our sense of place and human health.
- 3.2 In 2013, Scotland's population was estimated at over 5.3 million people, an increase of 14,100 from the previous year¹²⁷. By 2020, Scotland's population is projected to increase by 5% to around 5.4 million, and by 2035, is expected to increase by 10% to around 5.8 million¹²⁸, with the potential to increase pressures on the natural environment and on the vital services that it provides. The Scottish Government has set a target of matching the average European (EU-15) population growth over the period from 2007 to 2017¹²⁹.
- 3.3 Almost 70% of Scotland's people live in urban areas in settlements of more than 10,000 people, covering just 2% of Scotland's land area. Most of the population and industry is concentrated in highly urbanised areas in the Central Belt and on the East Coast, primarily in the four key city regions (Aberdeen, Dundee, Edinburgh, and Glasgow), and in smaller cities and towns (i.e. Ayr, Inverness, Perth and Stirling). Around 8.7% of the population live in small towns of less than 10,000 people, either accessible to larger urban centres or more remote, covering some 0.6% of Scotland's land area¹³⁰.
- 3.4 The quality of the environment in which we live can greatly affect our quality of life. Access to the outdoors can provide benefits for physical and mental health well-being, and also provide cultural benefits, and through the provision of urban greenspace, also provide social benefits. For example, vacant, derelict or contaminated land can become a haunt for anti-social behaviour and in some instances, also become known as a blight on the urban landscape. The provision of readily accessible greenspace has potential to encourage sociability, enhance social cohesion, can bring

¹²⁷ The Scottish Government (2015) Population, Current status [online] Available at: <http://www.gov.scot/About/Performance/scotPerforms/purpose/population#Chart> (accessed 26/10/2015)

¹²⁸ Office for National Statistics (2011) Summary: UK Population Projected to Reach 70 Million by Mid-2027, Part of National Population Projections, 2010-Based Projections Release,[online] Available at: <http://www.ons.gov.uk/ons/rel/npp/national-population-projections/2010-based-projections/sum-2010-based-national-population-projections.html> (accessed 26/10/2015)

¹²⁹ Scottish Government (2011) National Performance Framework [online] Available at: <http://www.scotland.gov.uk/About/Performance/scotPerforms/purposes/population> (accessed 26/10/2015)

¹³⁰ Scotland's Environment (undated) Cities, towns and greenspace [online] Available at: <http://www.environment.scotland.gov.uk/get-informed/people-and-the-environment/cities-towns-and-greenspace/> (accessed 26/10/2015)

people together, and create community cohesion and cultural diversity as different social groups engage with each other¹³¹.

- 3.5 It also provides opportunities for people to come into contact with, and increase their understanding of, the natural environment. Some 48% of adults made one or more visits to the outdoors per week in 2014, an increase of 2% from the previous year, and 4% since the baseline year (2006)¹³². A Scottish Household Survey from 2013 reported that over two-thirds of adults in Scotland had access to greenspace within a five minute walk from their home. However, just a third admitted to using their local greenspace more than once a week, with just a quarter admitting that they did not use it at all. The frequency of use of local greenspace was also found to differ considerably with the deprivation level of an area. For example, adults in the most deprived areas were reportedly less likely to use their local greenspace more than once a week compared to the Scottish average. Further, some 31% of adults in the 20% most deprived areas in Scotland were reported to have never used their local greenspace, compared to 18% of people in the 20% least deprived areas¹³³.
- 3.6 Even so, people have shown that they have a clear interest in how land is used, particularly locally. A recent survey showed that people had a considerable interest in how land is used in Scotland, with 86% stating an interest in local land and 78% interested in the use of other land. However, it was reported in the same survey that whilst interest was significant, there was a lower level of knowledge with 40–50% of people saying they either knew “not very much” or “nothing at all” about land¹³⁴.

4 Climatic factors

- 4.1 Over the last 50 years it has become increasingly apparent that the world’s climate is changing at an unprecedented rate. Evidence of an increase in average global temperatures, along with an increase in GHG in the atmosphere, has led to the conclusion that human activities such as the use of carbon based fuels is the main reason for this increase¹³⁵.
- 4.2 GHG emissions are having a detrimental impact upon the global atmosphere, and increased GHG emissions are widely acknowledged as the main cause of climate change, such as extreme weather conditions that are becoming increasingly common. Modelled predictions support the

¹³¹ Forest Research (2010) Benefits of green infrastructure [online] Available at: [http://www.forestry.gov.uk/pdf/urgp_benefits_of_green_infrastructure.pdf/\\$FILE/urgp_benefits_of_green_infrastructure.pdf](http://www.forestry.gov.uk/pdf/urgp_benefits_of_green_infrastructure.pdf/$FILE/urgp_benefits_of_green_infrastructure.pdf) (accessed 26/10/2015)

¹³² The Scottish Government (2015) Scotland’s Outdoors, Current Status [online] Available at: <http://www.gov.scot/About/Performance/scotPerforms/indicator/outdoors> (accessed 26/10/2015)

¹³³ Greenspace Scotland (2015) Scottish Household Survey 2013 [online] Available at: <http://greenspacescotland.org.uk/scottish-household-survey-shs-2012.aspx> (accessed 26/10/2015)

¹³⁴ Scottish Government (2014) Getting the best from our land, A land use strategy for Scotland, Progress Statement and Refreshed Action Plan [online] Available at: <http://www.scotland.gov.uk/Resource/0045/00450035.pdf> (accessed 26/10/2015)

¹³⁵ Scotland’s Environment (undated) climate change [online] Available at: http://www.environment.scotland.gov.uk/our_environment/air_and_climate/climate_change.aspx (accessed 26/10/2015)

belief that there is 'a high likelihood that [global] warming will lead to an increase in the risk of many extreme events, including floods, droughts, heat waves and fires' with significant changes in 'precipitation, snowfall, seasonality, cloud cover, humidity, wind speeds, soil moisture, extreme weather and rising sea levels as a result of [predicted] climate change'¹³⁶. The effects of climate change on the different aspects of the environment are further discussed in the relevant sections of this environmental baseline and in Section 4 of the Environmental Report.

- 4.3 The main GHG include water vapour, Carbon dioxide (CO₂); Nitrogen dioxide (NO₂); methane (CH₄) and ozone (O₃) formed as a result of both natural and human activities. Increases in CO₂ concentrations are primarily due to using fossil fuels and changes in land use, while those of methane and NO₂ are mainly due to agriculture¹³⁷.
- 4.4 In 2013, 53.0 million tonnes carbon dioxide equivalent (Mt CO₂e) of GHG emissions were emitted¹³⁸ compared to 56.9 Mt CO₂e reported in the SEA¹³⁹ of the first LUS. Between 1990 and 2013, there was a 34.3 % reduction in estimated Scottish emissions, with the main contributors to this reduction being a fall in waste management and in energy supply emissions, such as in the production of electricity). Energy generation was identified as the largest emitter of net emissions (16.0 Mt CO₂e) with transport including international aviation and shipping (12.9 Mt CO₂e) and agriculture and related land use the next highest sources of net emissions of GHG emissions (12.4 Mt CO₂e).
- 4.5 Net emissions of GHG from the agriculture sector fell by 3.7 MtCO₂e (23.1%) between those 1990 and 2013, largely due to a reduction in CO₂, methane and NO₂ emissions. This reduction in emissions is thought to be a result of a decline in livestock numbers and nitrogen fertilizer use¹⁴⁰, and the effects of historic land use changes. For example, there have been changes in area associated with land being converted from other uses to cropland. Forestry sequestered 10.0 Mt CO₂e compared to 10.1 Mt CO₂e reported in the SEA¹⁴¹ of the first Land Use Strategy. The role of forestry as a carbon sink has increased by 42.0% (3.0 Mt CO₂e) between 1990 and 2013. The majority of the sink arises from the large areas of conifer plantations, which is subject to forest management such as thinning and varying harvesting rotations. The increase in carbon sequestration has been due to an increase in area of forest land, although it is also noted that

¹³⁶ IPCC (2007) Fourth Assessment Report: Climate Change 2007 [online] Available at: http://www.ipcc.ch/publications_and_data/publications_and_data_reports.shtml (accessed 26/10/2015)

¹³⁷ Scotland's Environment (undated) Climate [online] Available at: <http://www.environment.scotland.gov.uk/get-informed/climate/climate/> (accessed 26/10/2015)

¹³⁸ Scottish Government (2014) Scottish Greenhouse Gas Emissions 2013 [online] Available at: <http://www.gov.scot/Resource/0047/00478796.pdf> (accessed 26/10/2015)

¹³⁹ Scottish Government (2010) Land Use Strategy – Strategic Environmental Assessment [online] Available at: <http://www.scotland.gov.uk/Topics/Environment/Countryside/Landusestrategy/sea> (accessed 26/10/2015)

¹⁴⁰ Scottish Government (2014) Scottish Greenhouse Gas Emissions 2013 [online] Available at: <http://www.gov.scot/Resource/0047/00478796.pdf> (accessed 26/10/2015)

¹⁴¹ Scottish Government (2010) Land Use Strategy – Strategic Environmental Assessment [online] Available at: <http://www.scotland.gov.uk/Topics/Environment/Countryside/Landusestrategy/sea> (accessed 26/10/2015)

the area of land converted to forest from other land uses has been decreasing over time¹⁴².

- 4.6 The importance of managing agricultural soils sustainably, improving the condition and increasing the size of wildlife habitats and restoring carbon-rich soils in the uplands, amongst others, have been identified as priorities in adaptation to the predicted effects of climate change¹⁴³. The potential for benefits in other measures such as enhancing the means for species dispersal, genetic adaptation through improving connectivity and habitat availability, taking an adaptive approach to land and conservation management, and flexibility in changing objectives and management measures to respond to new information and in anticipation of effects are also noted¹⁴⁴.

5 Air

- 5.1 Air quality is important for long and short term human health, and poor air quality can have impacts on people with existing health issues, in particular. In general, healthy people may not suffer from any serious health effects term exposed to the levels of pollution commonly experienced in urban environments such as those found in Scotland. However, continual exposure can cause harm over the long term, and those with pre-existing health conditions such as heart disease, lung conditions and asthma can be adversely impacted by day-to-day exposure to air pollutants¹⁴⁵.
- 5.2 Air pollution can also cause adverse effects in the wider environment. It can cause the acidification of soils and water, damaging plant and animal life in forests, lakes and rivers. It can also add nutrients to water and soils, potentially damaging biodiversity, and can damage the fabric of buildings and monuments.
- 5.3 The quality of the air around us is affected by the pollutants released into the atmosphere through human activities, such as transport and industry (including agriculture), as well as from natural sources. The pollutants generally considered to be of most importance in relation to land use, human health and the environment include Sulphur dioxide (SO₂), Nitrogen dioxide (NO₂) and particulate emissions (PM₁₀). Ammonia (NH₃) is also

¹⁴² Scottish Government (2014) Greenhouse Gas Emissions 2012 [online] Available at: <http://www.scotland.gov.uk/Publications/2014/06/5527/3> (accessed 26/10/2015)

¹⁴³ Committee on Climate Change (2013) Managing the land in a changing climate – Adaptation Sub-Committee progress report 2013 [online] Available at: <http://www.theccc.org.uk/publication/managing-the-land-in-a-changing-climate/> (accessed 26/10/2015)

¹⁴⁴ Scottish Government (2013) 2020 Challenge for Scotland's Biodiversity – A Strategy for the conservation and enhancement of biodiversity in Scotland [online] Available at: <http://www.scotland.gov.uk/Publications/2013/06/5538> (accessed 26/10/2015)

¹⁴⁵ Scotland's Environment (undated) Air Quality [online] Available at: http://www.environment.scotland.gov.uk/our_environment/air_and_climate/air_quality.aspx (accessed 26/10/2015)

- produced, mainly from agricultural activities, including emissions from livestock farming, manure handling and the use of nitrogen fertilisers¹⁴⁶.
- 5.4 Air quality in urban areas has improved significantly but there are still some towns and cities where air quality is of concern¹⁴⁷. While the quality of Scotland's air has improved considerably over the last few decades, air pollution is still estimated to reduce life expectancy of every person in the UK by an average of 7–8 months¹⁴⁸. Over the long term there have been reductions on all the pollutants. Since 1990, there have been decreases of 28% for NH₃, 59% for NO_x, 65% for PM₁₀ and 78% for SO₂¹⁴⁹.
- 5.5 Where air quality objectives¹⁵⁰ are not being met, local authorities have set up Air Quality Management Areas (AQMAs). Of the 32 local authorities in Scotland, there are currently AQMAs declared in Aberdeen, Edinburgh, Dundee, East Dunbartonshire, East Lothian, Falkirk, Fife, Glasgow, Highland, Midlothian, North Lanarkshire, Perth and Kinross, Renfrewshire, South Lanarkshire and West Lothian. The majority of these are declared as a result of NO_x alone, or in combination with PM₁₀ levels, as a result of traffic emissions¹⁵¹.
- 5.6 While the air quality in rural areas is of generally much better quality of that in towns and cities, the rural environment can still be affected by air quality issues. Agricultural activity is one of the main sources of air pollution in rural areas, with emissions from cattle, pigs and poultry known to be prominent rural sources of air pollutants¹⁵². Land use can play a major role in managing the generation and removal of air pollutants. For example, vegetated ecosystems such as forestry and woodland in particular can provide air regulating services and aid in the interception, deposition and removal of pollutants from the air.

¹⁴⁶ Scotland's Environment (undated) Air Quality [online] Available at: http://www.environment.scotland.gov.uk/our_environment/air_and_climate/air_quality.aspx (accessed 26/10/2015)

¹⁴⁷ Scotland's Environment (undated) Air [online] Available at: <http://www.environment.scotland.gov.uk/get-informed/air/> (accessed 26/10/2015)

¹⁴⁸ Scottish Government (2015) High Level summary of Statistics Trend Air pollutant emissions [online] Available at: <http://www.scotland.gov.uk/Topics/Statistics/Browse/Environment/trendairpollutants> (accessed 26/10/2015)

¹⁴⁹ Scottish Government (2015) High Level summary of Statistics Trend Air pollutant emissions [online] Available at: <http://www.scotland.gov.uk/Topics/Statistics/Browse/Environment/trendairpollutants> (accessed 26/10/2015)

¹⁵⁰ As included within DEFRA (2007) The Air Quality Strategy for England, Scotland, Wales and Northern Ireland

¹⁵¹ Air Quality in Scotland (undated) Air quality management areas [online] Available at: <http://www.scottishairquality.co.uk/laqm/aqma> (accessed 26/10/2015)

¹⁵² Scotland's Environment (undated) Air Quality [online] Available at: <http://www.environment.scotland.gov.uk/get-informed/air/air-quality/> (accessed 26/10/2015)

6 Soil

- 6.1 Soil is essentially a non-renewable resource and is fundamentally one of Scotland's most important assets¹⁵³. The soils of Scotland provide a wide range of environmental, economic and societal benefits.
- 6.2 The term soil quality is defined in the Scottish Soil Framework as "the ability or fitness of a specific kind of soil to carry out one or several of the following functions:
- Providing the basis for food, forestry and other biomass production;
 - Controlling and regulating environmental interactions – regulating water flow and quality;
 - Storing carbon and maintaining the balance of gases in the air;
 - Providing valued habitats and sustaining biodiversity;
 - Preserving cultural and archaeological heritage;
 - Providing raw material; and
 - Providing a platform for buildings and roads".
- 6.3 Around 25% of our soils are cultivated for agriculture (including improved grassland), with 45% used for rough grazing and 17% of soils forested¹⁵⁴. It is estimated that Scotland's soils contain approximately 3,000 million tonnes of carbon, making up over 50% of the UK's soil carbon¹⁵⁵, with our peat soils holding over 70% of Scotland's soil carbon while only accounting for around 11% of its land area¹⁵⁶. Semi-natural vegetation, such as heather moorland, native woodland, blanket bog and montane habitats are dominant in upland Scotland. Many of these have soils that are classed as rare in the UK, European, and in some cases, global context¹⁵⁷.
- 6.4 While Scotland's soils are generally in good health, there is a lack of national trend data from which evidence of change or damage to soils might be determined. Soil biodiversity has an inherent value as a component of our ecosystems and any loss detracts from this function¹⁵⁸. There is also a lack of information on threats to soil functions, including the extent of soil sealing, changes in soil biodiversity and compaction. Estimates of soil sealing vary, although SNH figures suggest that the rate of soil sealing between 2005 and 2008 was "nearer to 1000 hectares per year". The status and change in the soil organic matter stock, as an

¹⁵³ Scottish Government (2006) Scotland's Soil Resource Current State and Threats [online] Available at: <http://www.scotland.gov.uk/publications/2006/09/21115639/7> (accessed 26/10/2015)

¹⁵⁴ Scottish Government (2009) Scottish Soil Framework
<http://www.scotland.gov.uk/Publications/2009/05/20145602/0> (accessed 26/10/2015)

¹⁵⁵ *ibid*

¹⁵⁶ SNH (2012) The main soil types in Scotland [online] Available at: <http://www.snh.gov.uk/about-scotlands-nature/rocks-soils-and-landforms/scotlands-soils/soil-types/> (accessed 26/10/2015)

¹⁵⁷ The Scottish Government (2009) Scottish Soil Framework. [online] Available at: <http://scotland.gov.uk/Publications/2009/05/20145602/4> (accessed 26/10/2015)

¹⁵⁸ Scottish Government (2006) Scotland's Soil Resource Current State and Threats [online] Available at: <http://www.scotland.gov.uk/publications/2006/09/21115639/7> (accessed 26/10/2015)

important carbon store is also uncertain, and at present, data on the extent and nature of soil contamination is also limited¹⁵⁹.

- 6.5 Climate change is also expected to impact on soils, and has the potential for wider associated effects. A change in climate may lead to a gradual or sudden loss of soil organic matter, changes in soil biodiversity, increased rates of erosion and landslides, and increased soil compaction¹⁶⁰. As such, climate change and loss of organic matter pose the most significant threat to Scottish soils, with both affecting most soil functions and having the potential for national impacts which will be difficult to reverse. In the case of GHG emissions, the impacts are expected to be global¹⁶¹. Other threats include the addition of contaminants or loss of essential nutrients and compaction.
- 6.6 Development (e.g. new houses and roads), cultivation of soils for agriculture or forestry (e.g. use of fertilisers, pesticides etc.), expansion of agriculture or forestry, and changes in grazing are all pressures on soils caused by changes in land use and land-management practices¹⁶². These pressures can directly influence the state of our soil by changing its properties, and as noted above, can have the potential for other environmental effects.
- 6.7 In 2013, there were 11,114 hectares of derelict and urban vacant land in Scotland; a decrease of 187 hectares (1.7%) from 2012. This reflects a continuation of a longer trend; between 2007 and 2013, there has been a decrease of 265 hectares in recorded derelict and urban vacant land. The Highlands had the highest recorded amount of 1,376 hectares (12% of Scotland's total), followed by North Ayrshire with 1,333 hectares (12%), North Lanarkshire with 1,300 hectares (12%) and Glasgow with 1,195 hectares (11%)¹⁶³.

7 Water

Quality

- 7.1 The wellbeing we derive from the water environment and our water economy depends primarily on the health and availability of our waters, particularly their ecological quality and biodiversity. A healthy water ecosystem underpins our way of life and enables us to enjoy a wide range of benefits from its use. These include providing potable drinking water, providing water for use in industry (e.g. distilling whisky and supporting fisheries), producing energy (e.g. hydro power) and tourism and

¹⁵⁹ The State of Scotland's Soil, 2011, Dobbie, K.E, Burneau, P.M.C, Towers, W. [online] Available at: <http://www.sepa.org.uk/media/138741/state-of-soil-report-final.pdf> (accessed 26/10/2015)

¹⁶⁰ Scotland's Environment (2014) Soil [online] Available at; <http://www.environment.scotland.gov.uk/get-informed/land/soils/> (accessed 26/10/2015)

¹⁶¹ Scottish Government (2009) Scottish Soil Framework <http://www.scotland.gov.uk/Publications/2009/05/20145602/0> (accessed 26/10/2015)

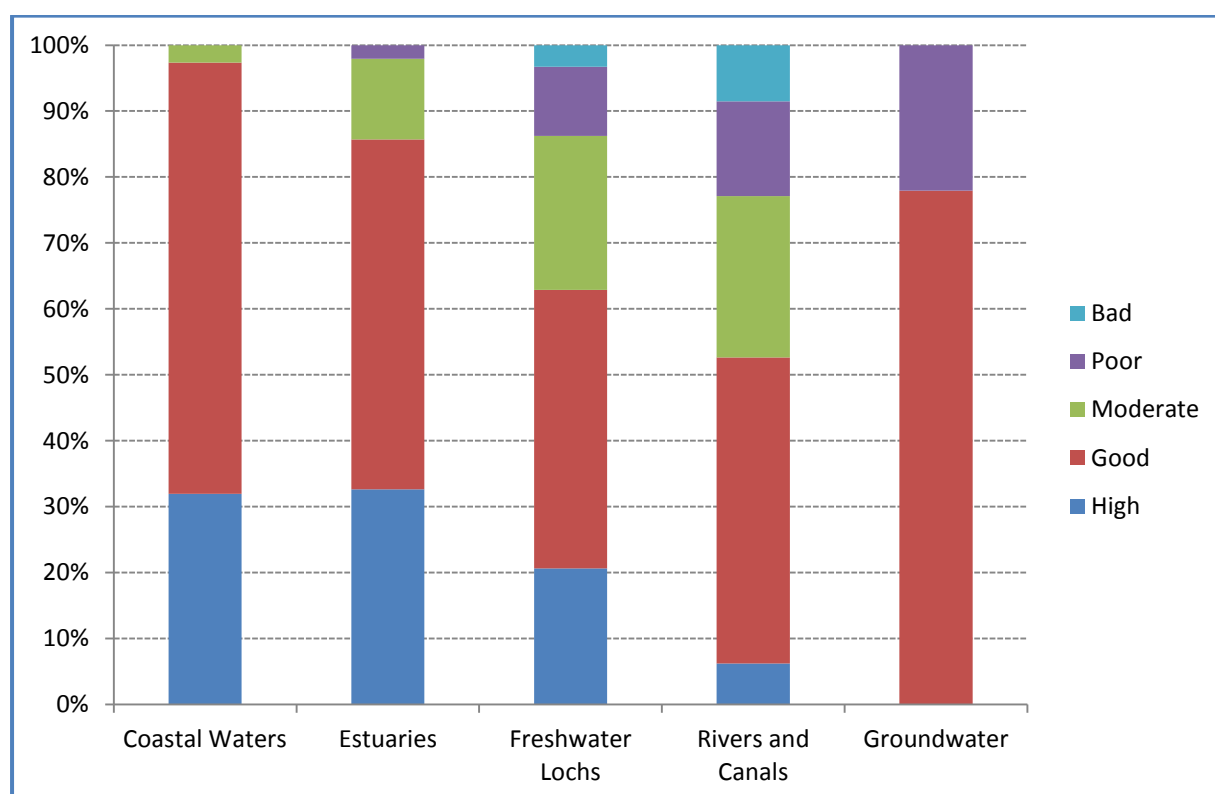
¹⁶² Scotland's Environment (2014) Soil [online] Available at; <http://www.environment.scotland.gov.uk/get-informed/land/soils/> (accessed 26/10/2015)

¹⁶³ Scottish Government (2014) Scottish Vacant and Derelict Land Survey 2013 [online] Available at: <http://www.scotland.gov.uk/Publications/2014/02/7170> (accessed 26/10/2015)

recreational activities (e.g. bird-watching, angling and water sports). Our many inland, coastal and marine water environments support an array of habitats and contain nationally and internationally important populations of some species (e.g. diadromous fish, mussels, birds).

- 7.2 Scotland's water bodies are monitored and classified in accordance with the Water Framework Directive (WFD). This monitoring has shown that our water is generally in good condition, and there have been significant reductions in pollution over the last 25 years. As shown in Table 3.1 below, most of our coastal waters, estuaries, rivers and freshwater lochs bodies have been classified as being in good or high condition¹⁶⁴. Our groundwater bodies are subject to a slightly different classification scheme, the overwhelming majority of bedrock and superficial aquifers are in good condition.

Table 7.1: Overall Status of Scotland's Water Bodies 2012^{165, 166}



¹⁶⁴ Scotland's Environment (2013) Water [online] Available at: <http://www.environment.scotland.gov.uk/get-informed/water/> (accessed 26/10/2015)

¹⁶⁵ Scotland's Environment (2013) Water [online] Available at: <http://www.environment.scotland.gov.uk/get-informed/water/> (accessed 26/10/2015)

¹⁶⁶ SEPA (2013) State of Scotland's Water Environment 2013 [online] Available at: http://www.sepa.org.uk/media/125696/state_of_scotlands_water_environment_2013_summary_report.pdf (accessed 26/10/2015)

- 7.3 However, our water resources remain subject to a wide range of pressures. For rivers and lochs, the main issues are loss of habitat as a consequence of development¹⁶⁷ such as alterations to beds and shores from urban land uses and flood protection¹⁶⁸, agriculture leading to nutrient enrichment and habitat loss, and energy production, such as hydro schemes, disrupting the natural movement of water. In the marine context, commercial fishing and aquaculture are known pressures through damage to the sea bed, marine species and/or localised pollution, loss of coastal and estuary habitats to development, and inflow of diffuse pollutants into estuaries and coastal areas in particular.
- 7.4 The quality of our groundwater resources can be pressured by agricultural inputs and pollution from historic industrial and mining activities, evidenced by the congregation of poor quality resources beneath Scotland's industrialised central belt. The availability of groundwater can also be pressured by abstraction, which can cause water-table levels to drop¹⁶⁹.

Water (flooding)

- 7.5 Flooding can have significant environmental impacts and also affect people, communities and businesses. When floods occur, they disrupt day-to-day lives and their impacts can be long lasting, and climate change is expected to increase the risk of flooding in coming years.
- 7.6 There are many areas in Scotland identified as being at risk from flooding. It is estimated that 1 in 22 of all residential properties and 1 in 13 of all non-residential or business properties in Scotland are at risk from flooding. The average annual cost of damages from flooding is estimated to be between £720 million and £850 million¹⁷⁰.
- 7.7 In addition to engineered flood defence works, natural flood management involving the use of natural features such as woodlands to store or slow down the flow of water is also a key aspect of a more sustainable approach to tackling flooding in Scotland. This can also provide other benefits for biodiversity, water quality and recreation, amongst others¹⁷¹. For example, one established pilot project on restoring natural habitats to reduce the risk of flooding and benefit wildlife is co-ordinated by the Tweed Forum and is focused on Eddleston and Peebles in the Scottish Borders¹⁷².

¹⁶⁷ Scotland's Environment (undated) Water [online] Available at: <http://www.environment.scotland.gov.uk/get-informed/water/> (accessed 26/10/2015)

¹⁶⁸ SEPA (2009) Summary The river basin management plan for the Scotland river basin district 2009–2015 http://www.sepa.org.uk/water/river_basin_planning.aspx (accessed 26/10/2015)

¹⁶⁹ Scotland's Environment (undated) Water [online] Available at: <http://www.environment.scotland.gov.uk/get-informed/water/> (accessed 26/10/2015)

¹⁷⁰ SEPA (2011) National Flood Risk Assessment [online] Available at: http://www.sepa.org.uk/flooding/flood_risk_management/national_flood_risk_assessment.aspx (accessed 26/10/2015)

¹⁷¹ SEPA (undated) Natural Flood Management [online] Available at: <http://www.sepa.org.uk/environment/water/flooding/flood-risk-management/> (accessed 26/10/2015)

¹⁷² Forestry Commission Scotland (2014) Flood Risk Management [online] Available at: <http://scotland.forestry.gov.uk/supporting/strategy-policy-guidance/soil-and-water-management/flood-risk-management> (accessed 26/10/2015)

8 Cultural Heritage and Landscape

- 8.1 Scotland's diverse and distinctive landscapes are a significant part of the country's natural and cultural heritage, making an important and positive contribution to the economic, cultural and social wellbeing of the nation. The scenic quality and character of Scotland's landscapes are internationally renowned, in addition to being recognised through several tiers of recognition at the national and regional levels.
- 8.2 Scotland has 40 National Scenic Areas (NSAs), covering around 13% of the total land area, widely distributed across the country¹⁷³. The Loch Lomond and the Trossachs and Cairngorms National Parks are both also recognised for their special landscape qualities. Scotland's other designations include its two biosphere reserves¹⁷⁴ and three Geoparks¹⁷⁵ also recognise landscapes/seascapes, and Scottish Natural Heritage (SNH) has developed a map of wild land areas, recognising "understanding of wildness as a particular quality reflected in our landscapes"¹⁷⁶.
- 8.3 Climate change, land use and its intensification and management, and incremental and on-going development are all pressures with the potential to affect our landscapes and seascapes¹⁷⁷. Research into the potential effects of climate change identified the most significant direct effects on landscape and seascape are likely to include the loss of land to the sea, increased risk of flooding and erosion, and potential for an increase in pests and disease on biodiversity, particularly forests and trees. It also found that many mitigation and adaptation measures can have a greater influence on the Scottish landscape than the direct effects of climate change. For example, some types of renewable energy development, increasing the amount of carbon locked up in soils and vegetation (woodland expansion and peatland restoration), and engineered responses to the threat of coastal and riparian flooding were all identified as having the potential to impact on landscape and visual amenity¹⁷⁸.
- 8.4 Scotland's many and varied historical sites are unique and irreplaceable. They define its sense of place and time at both the national and local levels, and also make a valuable contribution to our quality of life, cultural identity, education and economy. The range of designations includes five world heritage sites, 47,672 listed buildings, 645 conservation areas, a further 390 sites identified in the Inventory of Gardens and Designed

¹⁷³ SNH (2014) National Scenic Areas [online] Available at: <http://www.snh.gov.uk/protecting-scotlands-nature/protected-areas/national-designations/nsa/> (accessed 26/10/2015)

¹⁷⁴ SNH (2014) Biosphere Reserve [online] Available at: <http://www.snh.gov.uk/protecting-scotlands-nature/protected-areas/international-designations/biosphere/> (accessed 26/10/2015)

¹⁷⁵ SNH (2011) International Designations Geoparks [online] Available at: <http://www.snh.gov.uk/protecting-scotlands-nature/protected-areas/international-designations/geoparks/> (accessed 26/10/2015)

¹⁷⁶ SNH (2014) Core Areas of Wild Land 2013 Map, Scottish Natural Heritage's Advice to Government – 16th June 2014 [online] Available at: <http://www.snh.gov.uk/docs/A1323989.pdf> (accessed 26/10/2015)

¹⁷⁷ Scotland's Environment (undated) Landscape [online] Available at: <http://www.environment.scotland.gov.uk/get-informed/land/landscape/> (accessed 26/10/2015)

¹⁷⁸ Scottish Natural Heritage (2011) Summary of the effects of climate change on landscape and quality of life in Scotland [online] Available at: <http://www.snh.gov.uk/docs/B988942.pdf> (accessed 26/10/2015)

Landscapes¹⁷⁹, and 28 sites listed in the Inventory of Historic Battlefields¹⁸⁰. A further 9,967 Scheduled Ancient Monuments represent only a small proportion of the 125,685 archaeological monuments recorded by the Royal Commission on the Ancient and Historical Monuments of Scotland (RCAHMS)¹⁸¹. Beyond this, it is likely that many more unrecorded sites and unknown resources remain throughout the country. The protection and conservation of the historic environment is set out in a wide range of legislative and policy documents; including the SPP which sets out the requirement for planning to consider the impacts of development on landscape and promotes the care and protection of the historic environment (both designated and non-designated)¹⁸².

- 8.5 The historic environment can be pressured by a range of natural and man-made factors, including both land use and the effects of climate change. For example, grazing can have a positive impact on the historic environment by keeping monuments in good condition. By contrast, ploughing activities can have a detrimental effect¹⁸³, particularly in relation to the potential for damage to undiscovered and/or submerged features. Predicted climate change effects such as rising sea levels expected to exacerbate existing wave and storm surges, and increases in the frequency of extreme weather events are predicted¹⁸⁴ (e.g. storms and flooding) and may increase coastal flooding and erosion, endangering our historic landscapes and structures¹⁸⁵.

9 Material assets

- 9.1 Material assets cover a wide range of topics relating to infrastructure, resources and production, all of which are relevant to the draft Strategy. As such, many of these topics have been discussed under other headings within this baseline, and in the previous paragraphs which set out the environmental issues associated with land uses (Section 4.2). The following paragraphs therefore provide a broad overview of some key material assets in Scotland.

¹⁷⁹ Scotland's Environment (2012) Historic Environment [online] Available at: http://www.environment.scotland.gov.uk/our_environment/built_environment/historic_environment.aspx (accessed 26/10/2015)

¹⁸⁰ SHEA (2012) Historic environment Audit [online] Available at: <http://www.heritageaudit.org.uk/> (accessed 26/10/2015)

¹⁸¹ Scotland's Environment (2014) Historic Environment [online] Available at: <http://www.environment.scotland.gov.uk/get-informed/people-and-the-environment/historic-environment/> (accessed 26/10/2015)

¹⁸² Scottish Government (2014) Scottish Planning Policy [online] Available at: <http://www.scotland.gov.uk/Topics/Built-Environment/planning/Policy> (accessed 26/10/2015)

¹⁸³ Scotland's Environment (2014) Historic Environment [online] Available at: <http://www.environment.scotland.gov.uk/get-informed/people-and-the-environment/historic-environment/> (accessed 26/10/2015)

¹⁸⁴ Defra (2012) UK Climate Change Risk Assessment: Government Report, January 2013 [online] Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69487/pb13698-climate-risk-assessment.pdf (accessed 26/10/2015)

¹⁸⁵ Scotland's Environment (2014) Historic Environment [online] Available at: <http://www.environment.scotland.gov.uk/get-informed/people-and-the-environment/historic-environment/> (accessed 26/10/2015)

Agriculture

- 9.2 Agricultural land is a key material asset in Scotland, and as discussed above, soil is an important component of this. Most of Scotland's agricultural land is used for rough grazing, with 85% classified as Less Favoured Areas (LFA).
- 9.3 Much of Scotland's agricultural land is given over to livestock; crops, fallow and set-aside represents only 10% of the total agriculture area¹⁸⁶. Livestock numbers have decreased between 1982 and present day whilst cereal production has been relatively stable over the last 20 years¹⁸⁷.

Forestry

- 9.4 Scotland's forests are the most productive in the UK and the quantity of timber harvested has increased relatively steadily over the past 35 years. It is now around seven times the level of that in the late 1970s¹⁸⁸. The Gross Value Added (GVA) of the forest industries in Scotland, including forest related tourism is around £670 million, and the sector is estimated to support 31,000 jobs, located mostly in rural areas¹⁸⁹.
- 9.5 Woodfuel is also identified as contributing significantly to Scotland's renewable heat capacity, and is suitable for a wide range of domestic, commercial, community and industrial uses¹⁹⁰.

Low Carbon Energy

- 9.6 The Scottish Government has a statutory obligation under the Climate Change (Scotland) Act 2009 to meet an ambitious target of reducing GHG emissions by at least 80% by 2050, with an interim target of a reduction of at least 42% by 2020. Achieving these outcomes will require ambitious changes in energy generation and use, and these are supported by additional targets for an increase in renewable energy generation. The contribution of renewables to the electricity generation mix in Scotland in the past decade has increased rapidly, and is higher than in the rest of the UK. This is expected to continue to increase, with significant potential from onshore wind generation, amongst other sources¹⁹¹.
- 9.7 In 2013, renewable electricity generation in Scotland was 17,011 Gigawatt hours (GWh), an increase of 16.4% compared with that in 2012. Onshore

¹⁸⁶ HR Wallingford, AMEC Environment & Infrastructure UK Ltd, The Met Office, Collingwood Environmental Planning, Alexander Ballard Ltd, Paul Watkiss Associates, Metroeconomica (2012) A Climate Change Risk Assessment for Scotland, DEFRA.

¹⁸⁷ Scotland's Environment (undated) Crops and livestock [online] Available at: <http://www.environment.scotland.gov.uk/get-informed/land/crops-and-livestock/> (accessed 26/10/2015)

¹⁸⁸ Scottish Government (2015) Key statistical trends for forestry timber harvested [online] Available at: <http://www.scotland.gov.uk/Topics/Statistics/Browse/Agriculture-Fisheries/TrendTimberHarvested> (accessed 26/10/2015)

¹⁸⁹ Scotland's Environment (undated) Woodlands and forests [online] Available at: <http://www.environment.scotland.gov.uk/get-informed/land/woodlands-and-forests/> (accessed 26/10/2015)

¹⁹⁰ Forestry Commission Scotland (undated) Use Wood Fuel Scotland [online] Available at: <http://www.usewoodfuel.co.uk/using-woodfuel/what-type-of-user-are-you.aspx> (accessed 26/10/2015)

¹⁹¹ The Scottish Government (2014) Energy in Scotland 2014, A compendium of Scottish Energy Statistics and Information [online] Available at: <http://www.scotland.gov.uk/Resource/0044/00444530.pdf> (accessed 26/10/2015)

and offshore wind generation was at a record high level in 2013, up some 35.7% from 2012. While hydro generation was down by 9.8% from 2012, this equated to an increase of 3.3% since 2006¹⁹².

Tourism

- 9.8 Tourism is one of Scotland's largest business sectors. It is an important element in our social, economic, environmental and cultural well-being, with many major cities and rural areas dependent on the sector for jobs and infrastructure¹⁹³. Tourism generated some £4.6 billion in direct expenditure from overnight visitors (2013) and provided employment to around 181,500 people within the tourism growth sector (2012)¹⁹⁴.

¹⁹² Scottish Government (2014) Renewable Electricity Statistics for Scotland [online] Available at: <http://www.scotland.gov.uk/Resource/0044/00447302.pdf> (accessed 26/10/2015)

¹⁹³ Scottish Government (2012) Tourism – Expenditure and Visits: High Level Summary of Statistics [online] Available at: <http://www.scotland.gov.uk/Resource/0040/00400720.pdf> (accessed 26/10/2015)

¹⁹⁴ Scottish Government (2014) Tourism [online] Available at: <http://www.scotland.gov.uk/Topics/Business-Industry/Tourism> (accessed 26/10/2015)

Appendix 3

Detailed Assessment Tables for the Groups of Policies and Proposals

GROUP 1: POLICY ALIGNMENT

These policies and proposal seek to provide further clarity on the status and context of the draft Strategy within current Scottish Government policy, and in doing so, aim to highlight a consistent message that exists across the policy spectrum. Through the inclusion of a policy that reiterates the relationship of the draft Strategy with the statutory planning system, this grouping seeks to improve awareness of the draft Strategy and the issues that it raises; particularly amongst planners by demonstrating the potential benefits in taking an ecosystems approach and the role of SEA in the planning process.

There is clear cross-over with other groupings, particularly in relation to raising awareness and seeking opportunities for enhanced and more useful consultation between land owners/managers, decision makers and other stakeholders.

SEA Topic	Effect	Summary of potential environmental effects, including on ecosystems, and likely significance.
Biodiversity, flora and fauna		<p>Changes to land use, including inappropriate development, can be a pressure for many environmental factors; particularly biodiversity, flora and fauna. Both positive and negative impacts can be wider reaching and can create indirect or secondary effects on other topic areas; for example soil and water (supporting and regulating services).</p> <p>This group of policies and proposal has the potential to highlight the alignment of the ambitions of the draft Strategy with those set out in the wider policy context, such as the 2020 Challenge for Biodiversity (the 2020 Challenge), which seeks to conserve, protect and enhance biodiversity and considers the importance of ecosystem health to achieve this. Greater understanding of the functions of the natural environment and the benefits we obtain from it also has the potential to increase awareness of how our natural assets can deliver services that a wider range of Government policy aims rely on, such as public health, sustainable transport and climate change.</p> <p>This is therefore relevant to wider policy context, such as NPF3, NMP and Government Economic Strategy (GES) and has the potential for positive effects with the ‘buy in’ of all stakeholders. For example, this may lead to greater understanding in the decision making process of the role of ecosystem services in underpinning our social, economic and environmental health. This could include the greater recognition of the many benefits we obtain from biodiversity including photosynthesis and nutrient cycling (supporting services), carbon sequestration (regulating services), the provision of timber and food (provisioning services) and our iconic landscapes and species (cultural services) which amongst others; all of which can influence how the objectives of wider Government policy can be met.</p> <p>Increased awareness of the ambitions and Principles set out in the draft Strategy, alongside improved understanding of adopting an ecosystems approach to decision making, can therefore potentially have a positive effect on not only biodiversity, but across a range of topics. SEA, and the promotion of SEA as an effective tool to draw out the interconnections that exist from adopting an ecosystems approach to decision making, can therefore have a beneficial impact. However, these policies and proposal are largely enabling measures and are unlikely to deliver significant impacts on this topic area in isolation. Rather, it is considered that they will enable the delivery of other policies and proposals in the Strategy, and aid in the delivery of any associated benefits.</p>
Population and Human Health		<p>Scotland’s natural environment can provide a wide range of benefits for population and human health. Benefits include mental and physical benefits through access to outdoor recreation and providing a sense of connection with the natural environment (cultural services). They can also help to increase awareness of the benefits we get from the natural environment and foster community engagement in the decision making process. An example of this is community green space, which in addition to straightforward environmental improvement can have socio economic benefits, such as less anti-social behaviour, community sense of involvement, and regeneration potential (cultural services). These benefits can help meet wider policy objectives, such as those set out in the NPF3 and how land management and adaptive measures can help meet climate change targets (regulating services). In providing clarity on the policy context of land use and management, particularly regarding relationships with wider policy and the statutory planning system, the policies have the potential to better inform stakeholders and help to achieve greater community participation in decision making. With the ‘buy in’ of all parties, this has the potential to foster community involvement and participation in decision making, whilst also helping to facilitate debate and scrutiny over the reasoning and assumptions made in this process. This has the potential to provide greater value in the process, and deliver more appropriate outcomes to future land use for all parties. The policies are also likely to provide further focus to the role of ecosystem services in supporting land use and communities, whilst also contributing to improving human health and wellbeing.</p> <p>Additional clarity on objectives and expectations for land owners/manager and decision makers, supported by alignment with wider policy objectives, could help to improve the transparency and efficiency of the decision making process. There is the potential for greater consistency in how potential issues are managed and addressed, and greater certainty for land owners/managers, decision makers and communities alike in ensuring that land is used and managed appropriately.</p>

SEA Topic	Effect	Summary of potential environmental effects, including on ecosystems, and likely significance.
Soil		<p>Good soil quality provides a number of environmental benefits. It facilitates nutrient recycling (supporting services), controlling and regulating water quality and quantity (regulating services) and provides the basis for raw materials (provisioning services), all of which can have a wide range of positive effects for ecosystems and the land uses that they help to support. This group of policies and proposal seek to raise awareness of the importance of our natural assets and how this aligns with other relevant policies. This is particularly relevant to soils as this is a non-renewable resource and considered one of our greatest assets. The importance of soil is set out in the Scottish Soil Framework, and its protection and management is fundamental in meeting wider policy objectives such as those in NPF3, GES and climate change targets and proposals for mitigation.</p> <p>Primarily, these policies and proposal should enable the alignment of the Strategy's ambitions with those set out in the wider Policy context and highlight the importance of ecosystem health in meeting these wider objectives. Increased awareness of the ambitions and Principles set out in the draft Strategy, the benefit and value of adopting an ecosystems approach in decision making, including through the assessment of likely environmental effects such as in SEA, therefore has potential for beneficial impacts, on not only soils, but across a range of topics such as biodiversity, water and climate change.</p>
Water		<p>Land use, and changes to land use in particular, can have negative effects on water quality and quantity. Urban development and population increases can provide pressures on both water quality and quantity, such as pollution when water runs off roads and other sealed surfaces and changes in land use and development resulting in changes to hydrology and erosion potentially leading to localised water quality impacts such as nutrient increases. In addition, increased water consumption can put pressure on both water supplies and the services that provide and maintain supply to consumers.</p> <p>The group of policies and proposal should reflect and support ambitions for the protection of water quality advocated by documents such as the Water Framework Directive (WFD) and provide greater recognition for its role in supporting biodiversity, flora and fauna (regulating services) and providing fresh water supplies (provisioning services). In doing so, there is the potential for the policies to enable greater consideration of water issues in the decision making process, and greater consistency in how any potential issues and associated environmental impacts are managed and addressed in the decision making process. This could include the consideration of the wider benefits of good water quality for not only soils, biodiversity and human health, but wider economic considerations, for example, much of Scotland's food and drink reputation is reliant on water that is of high quality.</p>
Air		<p>Poor air quality can harm people's health and reduce their quality of life as well as damaging the environment. For example, particulate air pollution (PM_{2.5})¹⁹⁵ can lead to or exacerbate respiratory illness with a reported 1 in 26 deaths in Scotland being attributable to particulate air pollution¹⁹⁶. The settlement of airborne substances such as dust from land disturbance, has the potential to create nuisance for human and biodiversity receptors, adversely affect biodiversity, for example through the smothering of flora, and introduce airborne contaminants to soil and water resources.</p> <p>These policies and proposal should primarily enable alignment of the how the ambitions of the Strategy can have a number of benefits and the direct linkages between these and other policy objectives, such as those that seek to improve air quality or those related to human health. Together, these should reflect and support overarching ambitions for the protection of air quality advocated by documents such as the Air Quality Directive (AQD) and Air Quality Standards (Scotland) Regulations 2010, amongst others. In doing so, there is the potential for this group of policies and proposal to enable greater consideration of air quality issues in the decision making process, help to create further consistency in how any potential issues and associated environmental impact are managed and addressed in the decision making process, further highlighting the likely benefits across a range of policy issues.</p>
Climatic factors		<p>Many habitats, including urban green space, woodlands, forests and peatlands, can act as carbon sinks and help to regulate climate (regulating services). Many also assist in trapping atmospheric pollution, and together with other measures to reduce GHG emissions in sectors such as transport and the commercial and residential building sectors, can help us to adapt to our changing climate and reduce our contribution to its causes.</p> <p>Together, this group of policies and proposal can seek to clarify how the ambition of the Strategy aligns with wider Government ambitions and objectives for reducing greenhouse gas (GHG) emissions and moving towards a low carbon economy. In doing so, there is also the potential for the policies and proposal to enable greater consideration of climate change issues in the decision making process, and greater consistency in how any potential issues such as adaptation to the predicted effects of climate change and the importance of resilience in a changing climate are managed and addressed in the decision making process. Clear links to the air quality topic were also identified, as well as a number of other topic areas particularly in relation to the provision of ecosystem services such as nutrient cycling and carbon sequestration from vegetation and soils (supporting and regulating services), improved biodiversity, flora and fauna and benefits to population and human health.</p>

¹⁹⁵ Particulate Matter less than 2.5µm in diameter (PM2.5)

¹⁹⁶ SNH (2014) Urban Green Infrastructure benefits factsheets (online) Available at: <http://www.snh.gov.uk/docs/A1413427.pdf> (accessed 14/08/2015)

SEA Topic	Effect	Summary of potential environmental effects, including on ecosystems, and likely significance.
Material assets.		<p>In providing clarity on the context of land use and management, particularly in relation to the relationship with wider policy (i.e. NMP, NPF3, GES) and the statutory planning system, the policies and proposal in this group have the potential to have overall positive effects for stakeholders, land owners/managers and decision makers. Primarily, they have the potential to improve efficiency in the consultation and decision making processes, enable more consistent decision making and aid in streamlining engagement between land owners/managers, stakeholders and decision makers.</p> <p>Additional clarity should help to inform all parties on current policy context, and in doing so, provide greater certainty in the decision making process and also consistent messages to all stakeholders on Scotland's ambitions and expectations. In terms of material assets, greater certainty and clarity for land owners, managers and other land users is likely to be positive overall, and alongside current sustainability ambitions set out in wider policy, this has the potential to help in facilitating the appropriate and sustainable use of our natural resources.</p> <p>The policies and proposal are also likely to provide further focus to the role of ecosystem services in supporting productive land use. For example, the role of our soils in facilitating primary production (supporting services) and our soils and waters in providing resources such as wild species diversity, timber and fresh water (provisioning services) that benefit many land users is likely to receive greater recognition. With the 'buy in' of all stakeholders, this could have the potential for positive effects.</p>
Cultural Heritage and Landscape		<p>Maintaining or visually improving the aesthetic values of an area, and increasing awareness and understanding of the importance our cultural heritage can play a significant role in developing social and community cohesion (cultural services). Both can contribute positively to a community's sense of place, and if adversely impacted upon, can have negative effects on a range of SEA topics, such as population and human health (cultural services). Our cultural heritage assets and landscapes additionally play a significant and positive contribution to economic, culture and social well-being.</p> <p>This group of policies and proposal should highlight where there are common themes, such as those relating to the conservation and protection of Scotland's cultural heritage, historic environment and landscape value, and where there are potential opportunities for mutual benefits in meeting their objectives. For example, NPF3 notes the need to respect, enhance and make use of our natural assets and their key role they play in supporting sustainable growth, both in the urban and rural environment. Further setting out the importance of well-maintained and healthy ecosystems which underpin them. Another relevant policy is the Scottish Historic Environment Policy¹⁹⁷ (SHEP) which notes that "there are close links between the historic environment and wider land use and nature conservation policies that sustain healthy landscape, diverse ecosystems and vigorous communities". Combined, there is the potential for benefits through the consideration of the role of ecosystem services in order to meet common objectives and ambitions.</p> <p>In doing so, there is also the potential for the policies and proposal to enable greater discussion and consideration of cultural heritage and historic environment issues in the decision making process, and greater consistency in how any potential issues are managed and addressed. This could also aid in further recognising the role that our cultural heritage and historic environment features and our vast and varied landscapes play in contributing to our sense of place and history (cultural services) and clear links to other topic areas, for example population and human health. However, it is also noted that existing mechanisms and legislation are both currently in place relating to the protection of designated features in the context of development and changing land use, such as that set out to protect Listed Buildings, Scheduled Monuments, battlefields, National Scenic Areas (NSAs) and wild land areas.</p>

¹⁹⁷Historic Scotland (2011) Scottish Historic Environment Policy December 2011 [online] Available at: <http://www.historic-scotland.gov.uk/shep-dec2011.pdf> (accessed 27/08/2015)

SEA Topic	Effect	Summary of potential environmental effects, including on ecosystems, and likely significance.
Summary		<p>This group of policies and proposal primarily seeks to align land use policy with the ambitions and objectives set out in wider Scottish policy (e.g. NPF3, National Marine Plan (NMP) and Government Economic Strategy (GES)) and reflecting those set out in other overarching documents (i.e. EU Directives), whilst also and improving the consistency and efficiency of the decision making process.</p> <p>In general terms, they have the potential to improve efficiency in the decision making process and enhance the role of stakeholders in the decision making process; both of which have the potential to have overall positive effects, particularly in relation to population and human health and material assets. For example, providing further clarity and informing stakeholders on the current policy context and providing consistent messages on Scotland's ambitions and expectations are likely to help foster community involvement and aid participatory approaches to decision making, whilst potentially, helping to facilitate debate and scrutiny over the reasoning and assumptions made in this process. This is likely to provide greater value in this process, notably in how decision making is undertaken, and providing greater clarity over Scotland's aims and ambitions should give land owners/managers and other stakeholders greater understanding and certainty of their roles in the process.</p> <p>The inclusion of the consideration of how our natural resources are used should also provide further focus to the important role that ecosystem services play and the inter-relationship with land use, particularly in how our soils, water, biodiversity and cultural heritage play in facilitating how land is used (supporting, regulating, provisioning and cultural services), and the importance that these resources are used responsibly and sustainably in ensuring longevity of use. As explained above, there is the potential for this and the other policies to facilitate greater discussion and consideration of environmental issues in the decision making process, and potentially help to bring about further consistency in how potential issues are managed and addressed. However, it is also noted that a range of existing mechanisms and legislation are in place relating to the protection of the environment, particularly in the context of development proposals and proposed changes to land use. For example, the current planning system and suite of protective measures and designations across the environmental topic areas (e.g. Listed Buildings, Scheduled Monuments, biodiversity designations (i.e. SPAs, SACs, SSSIs), nationally and regionally recognised landscapes (i.e. NSAs)).</p> <p>However, it is also noted that this group of policies and proposal largely consist of enabling measures rather than auctioning measures. As such, they are unlikely to deliver significant impacts on many topic areas in isolation. Rather, it is considered that they will aid the delivery of environmental benefits through enabling the opportunities presented through other policies and proposals in the Strategy.</p>

GROUP 2: INFORMED DECISION MAKING

The three policies and one proposal seek to underpin decision-making through improving the availability of information, improving how data is used, and making it more accessible and useful (e.g. mapping). The proposals and policies such as the Regional Land Use Partnerships and Frameworks are aimed at fostering engagement and empowerment of stakeholders in how land is, and can be, used, and constructively involving stakeholders in the decision making process.

There is clear cross-over with other groupings, particularly in informing the Policy context and future iterations, and in applying the Principles at the regional and local levels.

SEA Topic	Effect	Summary of potential environmental effects, including on ecosystems, and likely significance.
Biodiversity, flora and fauna		<p>Changes to land use, including inappropriate development, can be a pressure for many environmental factors; particularly biodiversity, flora and fauna. Both positive and negative impacts can be wide reaching and can create indirect or secondary effects on other SEA topic areas; for example, air, soil and water quality (supporting and regulating services).</p> <p>The importance of making decisions using accurate and relevant information is seen as a vital component in minimising the potential for adverse environmental effects. Making information on ecosystem services, through mediums such as GIS, more useful and available, for example via a free downloadable mapping tool, should aid stakeholders and decision makers alike at the regional and local level in sourcing and using relevant information. Coupled with policies and proposals seeking to improve engagement (e.g. the establishment of regional land use partnerships and frameworks) there is the potential for significant benefits in taking a proactive approach to improving consultation, sharing information and making informed decisions on land use issues.</p> <p>In many instances, this could also provide opportunities for enhancement of existing land use and identify opportunities to preserve or enhance biodiversity, particularly in working alongside sustainability objectives in wider Scottish policy. This in turn may present further opportunities for food production and wild species diversity (provisioning services) and opportunities for people to enjoy and be close to the environment (cultural services).</p>
Population and Human Health		<p>Whether in rural environments, remote wild land areas or in urban areas, Scotland's natural environment provides a wide range of benefits for population and human health. In particular, access to urban greenspace can have positive effects for health and wellbeing (e.g. exercise, contributing to sense of place), whilst in more remote locations, these areas can contribute to a sense of place and cultural identity as well as providing resources for recreational pursuits such as hiking and mountain biking. (cultural services).</p> <p>Improving the availability of information and fostering community involvement in decision making has the potential to deliver overall positive effects, particularly if this was to influence the retention of existing, or creation of new, cultural services or areas to promote health and wellbeing. For example, community involvement could help to identify opportunities such as the regeneration of unused or derelict land, or facilitate improved access to or expansion of existing recreational sites. Additional benefits such as community empowerment through formal involvement in the decision making process, greater understanding and enjoyment of the environment (cultural services) and formal processes for the resolution of disputes between communities and land owners/managers have also been identified, provided they have the 'buy in' of all parties. This theme is also reflected in wider Scottish Government policy. For example, the NPF3 notes that "Green infrastructure and improved access and education have a key role to play in building stronger communities" and in the Scottish Forestry Strategy which states that "local people need to be at the heart of this process because they have the greatest stake in their neighbourhoods".</p> <p>There is potential for secondary benefits for all land users associated with positive effects to other environmental topic areas. For example, a productive and diverse environment, good soil condition and species diversity (provisioning services) will provide benefits for the population.</p>
Soil		<p>Good soil quality provides a number of environmental benefits. It facilitates nutrient recycling (supporting services), controlling and regulating water quality and quantity (regulating services) and provides the basis for raw materials (provisioning services), all of which can have a wide range of positive effects for ecosystems and the land uses that they help to support.</p> <p>This group of policies in the draft Strategy will inform decision makers and those with an interest in land use and as a result has the potential for overall positive effects for soil. With the buy in of stakeholders, it could improve consideration of soil issues in decision making, raise the profile of its role in ecosystem services, and help to inform stakeholders whilst enhancing meaningful engagement and consultation in how land is to be used (cultural services). More informed decision making has the potential to contribute to preserving and enhancing soil condition, and the potential to deliver secondary or indirect effects in other environmental topic areas. For example, actions which support and enhance soil quality are also likely to have a beneficial positive impact on biodiversity, water and population and human health through the role that soil plays in ecosystems. The potential for associated benefits for many land users, particularly in agriculture were also noted, demonstrating clear links between soil and material assets (supporting, regulating and provisioning services).</p>

SEA Topic	Effect	Summary of potential environmental effects, including on ecosystems, and likely significance.
Water		<p>Many land uses, and changes to land use in particular, can have negative effects on water quality and quantity. For example, urban development and population increase can place pressures on both water quality and quantity. For example, water pollution can occur when water runs off roads and other sealed surfaces (e.g. car parks, industrial sites) and changes in land use and development can result in changes to hydrology and erosion, which can lead to localised water quality impacts, such as turbidity and nutrient increases. Similarly, increased water consumption can put pressure on both water supplies and the services that provide and maintain supply to consumers.</p> <p>Informing land users and decision makers has the potential for overall positive effects for water quality. It could improve the consideration of potential water issues in decision making, raise the profile of ecosystem services and the role that water can play, highlight links between the various environmental aspects (i.e. water, soil, biodiversity, human health), and help to inform stakeholders whilst enhancing meaningful engagement and consultation (cultural services). With the buy in of stakeholders and decision makers, there may be the potential for reduced direct adverse impacts on water quality at the local level, and the potential for secondary or indirect effects in other environmental topic areas (supporting, regulating and provisioning services).</p>
Air		<p>Poor air quality can harm people's health and reduce their quality of life as well as damaging the environment. For example, particulate air pollution (PM_{2.5})¹⁹⁸ can lead to or exacerbate respiratory illness with a reported 1 in 26 deaths in Scotland being attributable to particulate air pollution¹⁹⁹. The settlement of airborne substances such as dust from land disturbance, has the potential to create nuisance for human and biodiversity receptors, adversely affect biodiversity (i.e. smothering of flora) and introduce airborne contaminants to soil and water resources.</p> <p>While the policies and proposals are unlikely to significantly impact on air quality directly, the establishment of regional land use partnerships in particular could introduce a platform for land owners/managers and community stakeholders to express environmental concerns; including those relating to air quality issues. This may help to identify potential concerns and issues at an early stage, and help to guide decision makers in making decisions that do not adversely affect local air quality. In some instances, there may be the potential to improve air quality at the local level and contribute to improving other known concerns such as air quality issues in built up and urban areas which can result in an Air Quality Management Areas designation (AQMA). The potential for improved air quality also has the potential to deliver associated benefits in other topic areas, notably climatic factors in the context of greenhouse gas (GHG) emissions and human health.</p> <p>Conversely, the potential for environmental benefits through actions in other areas can also have the potential to provide benefits for air quality. For example, vegetation aids in the regulation of air quality by removing pollutants from the atmosphere (regulating services).</p>
Climatic factors		<p>Many habitats, including urban greenspace, woodlands, forests and peatlands, can act as carbon sinks and help to regulate climate (regulating services). Many also assist in trapping atmospheric pollution, and together with other measures to reduce GHG emissions in sectors such as transport and the commercial and residential building sectors, can help us to adapt to our changing climate and reduce our contribution to its causes.</p> <p>As with the air quality assessment, the proposals and policies within this group are unlikely to significantly benefit climate change directly. However, the establishment of partnerships could introduce a platform for land owners/managers and community stakeholders to express concerns over climate change, air quality and carbon sequestration issues. This may help in guiding decision makers towards making decisions focused on the reducing GHG emissions, pursuing low carbon alternatives, and infusing adaptation and resilience into decisions at the local or regional levels.</p> <p>Furthermore, there is the potential for wider beneficial effects across a range of topics such as biodiversity, soil, water and air quality through not only reducing the impacts of climate change, but also seeking to help nature adapt to a changing climate. Similarly, the potential for improved air quality and improved biodiversity (e.g. creation of greenspace, restoration of peatlands) also have the potential to deliver benefits for climatic factors through reducing emissions and promoting carbon sequestration respectively. In general terms, maintaining and restoring healthy and multifunctioning ecosystems are more able to adapt to the impacts of a changing climate.</p>
Material assets.		<p>Improved access to more relevant information can aid business sectors and help decision-makers alike. This can have a beneficial effect through improved soil quality, species diversity, habitat creation, pollination (supporting and regulating services) through improved and more informed decision making, in addition to having human health benefits from the creation of outdoor spaces, improved environmental setting, and community engagement (cultural services).</p> <p>Many of these potential environmental benefits are also likely to aid the many land users, owners and managers that rely on the supporting, regulating and provisioning services that our ecosystems can provide. For example, providing useful and relevant information can improve how our land is used and managed, and enable further consideration of sustainability in the many uses and industries that utilise its resources. The use of regional land use partnerships, frameworks and mediation of disputes is also likely to contribute to these ambitions. As a consequence, there is the potential for benefits in maximising the potential of land for not just now, but also ensuring that this is maintaining into the future; particularly for sectors such as agriculture, wildlife tourism and those with links to urban land use (e.g. aquaculture), amongst many others.</p>

¹⁹⁸ Particulate Matter 2.5 (PM2.5)

¹⁹⁹ SNH (2014) Urban Green Infrastructure benefits factsheets (online) Available at: <http://www.snh.gov.uk/docs/A1413427.pdf> (accessed 14/08/2015)

SEA Topic	Effect	Summary of potential environmental effects, including on ecosystems, and likely significance.
Cultural Heritage and Landscape		<p>Maintaining or visually improving the aesthetic values of an area, and increasing awareness and understanding of the importance our cultural heritage can play a significant role in developing social and community cohesion (cultural services). Both can contribute positively to a community's sense of place, and if adversely impacted upon, can have negative effects on a range of environmental topic areas (e.g. population and human health) (cultural services).</p> <p>Improving community engagement and encouraging involvement in the decision making process has the potential to provide greater focus on how cultural heritage and landscape values are considered at the local level. Improving the availability of information and fostering community involvement in decision making has the potential to deliver overall positive effects, particularly if this was to influence the retention of existing or creation of new cultural services or areas to promote health and wellbeing. For example, community involvement could help to preserve valued areas or sites, and maintain the sense of place and cultural identity that many Scottish communities place a high value on. Additional benefits such as community empowerment through this could help to further enshrine these values amongst those in the community and in the decision making process, demonstrating close links between this topic area and population and human health in particular. Further, there is the potential for this involvement to lead to a greater understanding of their importance (cultural services) and, subject to having the 'buy in' of all stakeholders, set the framework for managing the resolution of disputes over land use.</p>
Summary		<p>Making informed decisions and using the relevant information in decision making is a fundamental component of good policy making, and one that is a common thread running through overarching Scottish policy. Similarly, the involvement of stakeholders into the decision making process, particularly at the community level, is also a clear ambition of the Scottish Government; most recently evidenced via the development of the Community Empowerment (Scotland) Bill. This group of proposals strongly reflects the ambitions of those set out in overarching policy in that they seek to ensure that relevant information is accessible and used to inform decision making, whilst also providing support for the role of stakeholders in the process through the establishment of regional partnerships and frameworks.</p> <p>It is likely that improving the accessibility to relevant information and promoting its use amongst stakeholders and decision makers is likely to foster more informed consultation and engagement at the regional and/or local levels. Together with the possible establishment of regional land use partnerships and facilitation of mediation services between land owners/managers and communities, this is likely to have a particularly positive effects for population, and potentially, help to foster greater and more meaningful community involvement in land use decision making.</p> <p>Enabling the use of relevant information to inform discussions between stakeholders and inform the decision making process, has the potential to deliver for overall positive environmental effects. Increasing the consideration of environmental issues such as the roles of ecosystem services, could help to steer decision making towards reducing potential impacts (i.e. on biodiversity, soil, cultural heritage, climatic factors, landscape and water) whilst also providing opportunities for enhancement. The assessment emphasised the clear links between many topic areas, and as a consequence, the likelihood of a range of secondary or indirect effects broadly related to the provision of supporting, regulating, provisioning and cultural ecosystem services. Included in this is the potential for benefits for many land users (i.e. material assets), particularly in agriculture, where the role of soil, water and biodiversity features play a key role in providing resources for facilitating industries such as this, and the potential for mutual benefits that that may be associated with sustainable resource use (provisioning services).</p> <p>Creation of interconnected, multifunctioning ecosystems will be more adaptive to the impacts of climate change. They can also act as carbon sinks reducing greenhouse gas emissions in the first instance where planting has been undertaken with sequestration in mind.</p>

GROUP 3: APPLYING THE PRINCIPLES

This group of policies and proposals are a combination of direct actions and supporting measures seeking to build upon previous and current work in the urban, agri-environment and uplands environment areas. There is clear cross-over with the 'Informed Decision Making' theme, particularly in the use of spatial approaches; and the 'Policy Alignment' theme in relation to wider policy on issues such as peatland conservation (and potentially regional planting targets). For example, these measures are also aimed at underpinning and informing future work in these areas.

SEA Topic	Effect	Summary of potential environmental effects, including on ecosystems, and likely significance.
Biodiversity, flora and fauna		<p>Biodiversity plays a key role in healthy functioning ecosystems, and as such, it is commonly used as a measure of ecosystem health. Habitat change, mainly due to increased intensive land management, urban development, pollution and nutrient enrichment and over exploitation have all been identified as pressures which have caused a decline in biodiversity²⁰⁰. The benefits from this group of policies and proposals have the potential to be significant; for example, a move towards low emissions or high nature value (HNV) farming and forestry, greater focus on the impacts of land use and management at catchment scale and consideration of green space in the urban environment. The main characteristics of HNV farming is its low intensity, presence of semi-natural vegetation and diversity of land cover²⁰¹. As such, the application of measures such as reducing the use of fertilisers and grazing, and increased creation of semi-natural habitat such as woodlands, uncultivated patches, field margins and hedges, and creating a “mosaic” of land use and cover, should have multiple benefits. Whilst there is likely to be significant benefits to biodiversity from less intensively managed farmland, there should also be benefits for the adaptation of species to the impacts of climate change through increased interconnections of habitats. Further to this, additional benefits such as improved water and soil quality and carbon sequestration through the role of soil and vegetation acting as carbon sinks (regulating and supporting services) are also likely. The raw materials we derive from land, such as food and timber, rely on the health of the ecosystems (provisioning services), and soil function is known to be a fundamental factor in this. The conservation of soil, including peat and moorland, is especially relevant in upland Scotland where there are areas of internationally important wildlife habitats. Therefore, proposals to consider the management of upland areas have the potential to deliver multiple benefits for biodiversity, climatic factors, water and soil quality and landscape and cultural heritage through supporting the preservation of these habitats and supporting the industries that rely on their good ecosystem health (supporting, regulating, provisioning and cultural services).</p> <p>The importance of biodiversity is not just limited to rural areas and this is noted in the National Planning Framework 3 (NPF3) and Scottish Planning Policy (SPP). The NPF3 states that “our built environment and the key infrastructure corridors and green spaces within our cities and towns also provide important habitats”. Therefore, actions which seek to promote the creation and enhancement of urban green infrastructure also have the potential to have a beneficial effect. This has the potential to be of particular relevance in urban areas of low biodiversity value, such as some derelict and vacant lands, and where there are opportunities to improve interconnections between existing urban green space. As noted above, urban green space can help to deliver benefits in other topic areas, such as improved soil, air and water quality (regulating and supporting services), and opportunities for outdoor recreation (cultural services). Green space can also play an important role in fostering community engagement and help to reduce instances of anti-social behaviour and activities, with the potential to lead to further benefits to population and human health (cultural services). Whilst on a smaller scale and depending on species promoted and habitats supported, there may also be opportunities for developing food production and enhancing wild species diversity (provisioning services).</p> <p>Climate change is also another known pressure on biodiversity and how the land is managed and used can influence the ability of ecosystems to mitigate and adapt to these pressures. Whilst this is discussed further under the topic of Climatic Factors, the importance of how land management can support biodiversity to adapt to these pressures is likely to be critical. This could include increasing the resilience of ecosystems and assisting adaptation through the management of habitats, and enhancing connections between areas through habitat networks.</p>

²⁰⁰ Biodiversity Scotland (2013) Key pressures on biodiversity [online] Available at: <http://www.biodiversityscotland.gov.uk/biodiversity/pressures/> (accessed 07/09/2015)

²⁰¹ European Commission Agriculture and Rural Development (2007-2013) The Application of the High Nature Value Impact Indicator [online] Available at: http://ec.europa.eu/agriculture/rurdev/eval/hnv/guidance_en.pdf (accessed 24/08/2015)

SEA Topic	Effect	Summary of potential environmental effects, including on ecosystems, and likely significance.
Population and Human Health		<p>The natural environment can provide a wide range of services, such as regulating our climate and water and filter pollutants from the atmosphere (regulating services). Access to outdoor spaces and opportunities to connect with the natural environment can have both physical and mental benefits for wellbeing, and can also provide a sense of identity and place, increase our awareness of the goods we derive from it, and increase awareness of the importance of maintaining good ecosystem health (cultural services). In some instances, there can also be social benefits such as the potential of green space and green infrastructure in urban environments in reducing antisocial behaviour that can be associated in areas of low biodiversity value; for example, in areas such as derelict or vacant land. The potential for social benefits such as these is acknowledged in the NPF3 and SPP. Both documents note that green infrastructure and improved access to open space can help to build stronger and healthier communities²⁰². The potential benefits for population and human health associated with the natural environment is considered in a wealth of documents beyond the NPF3 and SPP, including the Scottish Forestry Strategy and the 2020 Challenge, all highlight that this relies on healthy and robust ecosystems to be able to provide the services that we rely on. For example, the health of our soils to support the provision of food and raw materials (supporting and provisioning services), the regulation and flow of water and climate (regulating services) how our landscapes are shaped and the sense of place we derive from them (cultural services).</p> <p>There are therefore likely to be beneficial impacts from implementation of this set of proposals; for example, the consideration of the range of interactions and ecosystem services that occur in a catchment area and how these interact with other land uses, such as the impact of diffuse pollution from farming and forestry on water quality and quantity, and the biodiversity it supports. Good water quality is essential for some of our iconic industries such as fishing and our rivers make a major contribution to the Scottish tourism industry. Diffuse pollution has the potential to impact negatively on these industries and also on other aspects, such as the reputation of Scotland's food and drink industry which has been identified in the Scottish Rural Development Programme (SRDP) as a key growth sector.</p> <p>The ability of the natural environment to regulate soil, water and the climate (regulating services) can also provide human health benefits in relation to the predicted impacts of climate change in two main ways: firstly, through the sequestration of carbon in soils and vegetation, and secondly, they can regulate the flow of water and can be an effective means of mitigating and adapting to flooding which is predicted to increase as a result of a changing climate.</p>
Soil		<p>Soil is essentially a non-renewable resource, and is fundamentally one of Scotland's most important assets²⁰³. Good soil quality provides a number of benefits; for example, it provides for nutrient recycling (supporting services), aids in controlling and regulating water quality and quantity (regulating services) and provides the basis for raw materials (provisioning services). Soil also plays a vital role in both the emissions of CO₂ and sequestration of carbon, and the careful management of these resources can affect the amount of CO₂ that is held or released²⁰⁴ (this is discussed further under the topic of Climatic Factors). The Scottish Soil Framework aims to promote the sustainable management and protection of soils.</p> <p>The actions set out in this group of proposals are likely to have a significant beneficial impact on soil quality. For example, the support and promotion of less intensive farming practices, such as reduced use of fertilisers, uncultivated patches of land, the creation or enhancement of new habitats and restoration and enhancement of peat and moorland have the potential for positive effects. These actions will be particularly relevant in areas such as upland Scotland where many of these soils are classed as rare in a UK, European and in some cases, a global context²⁰⁵, and in urban environments where there are areas of derelict and vacant land. Our upland peatlands are also some of our most iconic landscapes and are culturally significant, serving as a valuable archive of our past²⁰⁶ (cultural services). Actions which support and enhance soil quality and reduce erosion are also likely to have additional positive impacts on a number of associated topics, such as biodiversity, water and population and human health.</p>

²⁰² Scottish Government (2014) Scottish Planning Policy [online] Available at: <http://www.scotland.gov.uk/Topics/Built-Environment/planning/Policy> (accessed 07/09/2015)

²⁰³ Scottish Government (2006) Scotland's Soil Resource Current State and Threats [online] Available at: <http://www.scotland.gov.uk/publications/2006/09/21115639/7> (accessed 07/09/2015)

²⁰⁴ Soil Association (2015) Low Carbon Farming Technical Information Soil and Grassland Management [online] Available at: <http://www.soilassociation.org/innovativefarming/lowcarbonfarming/technicalinformation> (accessed 21/08/2015)

²⁰⁵ The Scottish Government (2009) Scottish Soil Framework. [online] Available at: <http://scotland.gov.uk/Publications/2009/05/20145602/4> (accessed 07/09/2015)

²⁰⁶ SNH (2015) why are peatlands important [online] Available at: <http://www.snh.gov.uk/climate-change/taking-action/carbon-management/peatland-action/why-are-healthy-peatlands-important/> (accessed 24/08/2015)

SEA Topic	Effect	Summary of potential environmental effects, including on ecosystems, and likely significance.
Water		<p>Water resources can be impacted by land use and management in a number of ways. Pressures include increased nutrients from activities such as the use of fertilisers, pollutants in run-off from car parks and other sealed surfaces in urban areas, increased abstraction associated with population growth and increased intensification of agriculture that leads to greater water requirements have all been identified. There is the potential for benefits to the water environment from the implementation of this group of policies and proposals, particularly in helping to reduce diffuse pollution through the consideration of low intensity agricultural production methods potentially leading to reduced or more efficient use of fertilisers. Some of the main challenges facing rivers, lochs and groundwater are from agricultural inputs²⁰⁷. The creation or enhancement of semi-natural habitats, including green spaces in the urban environment, also has the potential to be beneficial in aiding their role in filtering and removal of pollution (regulating services). This is particularly relevant to the management of upland areas. It is estimated that between 70-80% of our drinking water comes from surface water, the majority gathered in the uplands, therefore how they are managed can affect raw water quality in addition to influencing the risk of downstream flooding²⁰⁸.</p> <p>The natural environment can provide sustainable solutions to the predicted impacts of climate change, such as increased flood risk. For example, forestry planting or use of green infrastructure in urban areas can aid communities in managing and improving resilience to these events. Sustainable urban drainage systems (SUDS) such as Metropolitan Glasgow Strategic Drainage Partnership (a National Development in NPF3) are a further example of where the natural environment can be used to assist in sustainable water management and help to deliver multiple benefits. For example, improved water management through utilisation of systems such as this could help to improve the regulation of water flows and improve water quality (regulating services), help to support biodiversity through the creation of habitats such as ponds and wetlands, and create visually attractive vegetated water corridors (supporting, regulating and cultural services).</p> <p>As such, implementing successful sustainable drainage solutions can also provide a number of benefits across other SEA topics including biodiversity, soil, population and human health. This is reinforced in the 2020 Challenge which also noted the role of the SRDP and river basin management planning as a means of co-ordinating action across catchment areas for land and freshwater use, particularly through promoting and using an ecosystem approach. The RBMPs note that many of the improvements needed to meet the plans objectives will help deliver other benefits, such as sustainable flood management, biodiversity conservation and improved fisheries, amongst others. It is also noted in the 2020 Challenge for Scotland's Biodiversity that schemes such as these can provide benefits for both nature and people at a fraction of the cost of hard engineered solutions²⁰⁹. This is mirrored in other research that reports that green infrastructure is generally cheaper to install and maintain than engineered solutions, and can also reduce energy use²¹⁰.</p>
Air		<p>Poor air quality can harm people's health and reduce their quality of life as well as damaging the environment. A reported 1 in 26 deaths in Scotland are attributable to particulate²¹¹ air pollution²¹² and pollutants such as particulate matter, Sulphur Dioxide (SO₂), Nitrogen Dioxide (NO₂) and Ammonia (NH₃) can contribute to health conditions such as contributing to and/or increasing the symptoms of chronic lung disease and heart disease²¹³. Particulate air pollution can be an issue in some urban areas and it can lead to or exacerbate respiratory illness.</p> <p>The inclusion of ambitions in the policies for Scottish agriculture to move towards becoming a low emissions industry has the potential to deliver positive effects for air quality, particularly if this involves reduced generation of emissions from fertiliser use. Benefits may also be of particular relevance through the proposal to establish a land use urban project as air pollution can be significant in some built up areas, demonstrated through the designation of Air Quality Management Areas (AQMAS) in predominantly urban areas. Secondary benefits on air quality are also expected through the role that vegetation, such as trees, has in regulating air quality by removing pollutants from the atmosphere (regulating services). It is estimated that urban vegetation could contribute to 9.1% of suspended particles removal, 5.3% of SO₂ removal and 2.6% NO₂ removal²¹⁴. Coupled with the role of woodlands and street trees in helping to mitigate air pollution, as noted in other PPS such as the Scottish Forestry Strategy which includes an action to promote this role in priority urban areas, this has the potential to have benefits for climatic factors, and also importantly, beneficial impacts with regard population and human health.</p>

²⁰⁷ Scotland's environment (undated) water [online] Available at: <http://www.environment.scotland.gov.uk/get-informed/water/> (accessed 07/09/2015)

²⁰⁸ RSPB (undated) The Uplands time for change? [online] Available at: https://www.rspb.org.uk/Images/uplands_tcm9-166286.pdf (accessed 31/08/2015)

²⁰⁹ Scottish Government (2004) Scottish Biodiversity Strategy – It's in your hands [online] Available at: <http://www.scotland.gov.uk/Publications/2004/05/19366/37239> (accessed 07/09/2015)

²¹⁰ SNH (2012) SNH Green Networks in Development Planning [online] Available at: <http://www.snh.gov.uk/docs/B1041551.pdf> (accessed 14/08/2015)

²¹¹ Particulate Matter 2.5 (PM2.5)

²¹² SNH (2014) Urban Green Infrastructure benefits factsheets (online) Available at: <http://www.snh.gov.uk/docs/A1413427.pdf> (accessed 14/08/2015)

²¹³ Scotland's Environment (2015) Air quality [online] Available at: <http://www.environment.scotland.gov.uk/get-informed/air/air-quality/> (accessed 27/08/2015)

²¹⁴ SNH (2014) Urban Green Infrastructure benefits factsheets (online) Available at: <http://www.snh.gov.uk/docs/A1413427.pdf> (accessed 14/08/2015)

SEA Topic	Effect	Summary of potential environmental effects, including on ecosystems, and likely significance.
Climatic factors		<p>Land use and management plays a significant role in managing the predicted effects and contributions to climatic factors, both in terms of emissions and the removal of CO₂ from the atmosphere. For example, agriculture and related land uses contribute around 20% of total GHG emissions in Scotland and fertiliser applications to grassland are reported to be the largest single source of nitrous oxide emissions²¹⁵. The effective management of nutrients, in particular nitrogen, is therefore critically important in delivering lower carbon emissions from farming²¹⁶. As discussed previously, these policies and proposals are also likely to be beneficial across a range of SEA topics such as soil, water and biodiversity (regulating, supporting and provisioning services).</p> <p>The natural environment can also act as a carbon sink, demonstrating the important role that soil and vegetation play in the sequestration of carbon (regulating services). This has the potential to be significant depending on the measures proposed and their location. For example, the peat soils found in upland Scotland contain almost 25 times as much carbon as all other plant life in the UK, in addition to being internationally important for wildlife²¹⁷. There are also a number of soil and grassland practices which can reduce CO₂ losses and promote carbon sequestration; for example, reducing ploughing intensity, avoiding compaction and erosion, and maintaining a healthy and diverse soil biological population through careful management²¹⁸ are relevant to a wide range of sectors. Measures such as these are also likely to have additional benefits, particularly in agriculture, including improving soil quality (supporting and regulating services) which can lead to greater capacity for food production (provisioning services).</p> <p>In addition to reducing the contribution of land use practices in terms of GHG emissions and carbon sequestration, the natural environment and careful consideration of its use and management can play a significant role in climate change mitigation and adaptation. As discussed previously, the natural environment itself can help to provide solutions to freshwater management and flooding prevention through measures such as the planting of trees and woodlands, and use of green infrastructure such as SUDS or green roofs. The importance of reducing fragmentation and improving ecosystem health in order to adapt to a changing climate is set out in a range of documents. For example, the 2020 Challenge states a need to improve ecosystem health at the catchment or landscape scale, and that integration of action for wider habitats is needed to combat fragmentation and restore key habitats. This is also reflected in Climate Ready Scotland: Scottish Climate Change Adaptation Programme which supports a healthy and diverse natural environment with the capacity to adapt to climate change and ensure that our natural environment is resilient to any future effects.</p>
Material assets.		<p>Agriculture and forestry are two key assets in Scotland and our forests are some of the most productive in the UK, with the amount of timber harvested having increased steadily over the last 35 years²¹⁹. Tourism is also one of Scotland's largest business sectors. There is likely to be beneficial impacts through the implementation of this group of measures and the consideration of land use at the catchment level.</p> <p>Changes in land management practices such as those set out in the group of policies and proposals has the potential to lead to benefits for soil quality, and the potential for secondary benefits for food production and water quality (provisioning and regulating services). Much of our tourism and iconic industries, such as the whiskey and sporting and fishing sectors rely on high water quality and healthy biodiversity. There is likely to be the potential for benefits from the creation of habitats and outdoor recreation spaces on population and human health, and the potential for secondary effects through improved environmental setting (cultural services). In some instances the creation of community green space and infrastructure and can improve community engagement and cohesion, and can help to reduce anti-social behaviour (cultural services).</p> <p>There is also the potential for benefits through the promotion of food production in the urban environment (provisioning services). This can have a beneficial impact through improved soil quality, species diversity, habitat creation and pollination in the urban context (supporting and regulating services) in addition to having human health benefits from the creation of outdoor spaces, improved environmental setting, and community engagement (cultural services). There may also be the potential for secondary benefits through increasing regeneration and economic growth in areas with vacant or derelict land, which has the potential to leading to further localised benefits. For example, the role of green space in driving economic development is noted in both the Scottish Forest Strategy and the NPF3, with the NPF3 stating that "well-designed green infrastructure can support regeneration efforts within out towns and cities, and improved attractiveness and environmental performance can act as a catalyst for economic investment"²²⁰.</p>

²¹⁵ Rees R.M, Topp CFE, Bell M, Reid G, Audsley R, Eory V, McLeod M, Wall E, Moran D, Moxely AP, (2015) Reducing the emissions from the agriculture and land use sector, Evidence presented to the Committee on Climate Change 22 January 2015 [online] Available at: <https://www.theccc.org.uk/wp-content/uploads/2015/01/SRUC.pdf> (accessed 21/08/2015)

²¹⁶ Rees R.M, Topp CFE, Bell M, Reid G, Audsley R, Eory V, McLeod M, Wall E, Moran D, Moxely AP, (2015) Reducing the emissions from the agriculture and land use sector, Evidence presented to the Committee on Climate Change 22 January 2015 [online] Available at: <https://www.theccc.org.uk/wp-content/uploads/2015/01/SRUC.pdf> (accessed 21/08/2015)

²¹⁷ SNH (2015) why are peatlands important [online] Available at: <http://www.snh.gov.uk/climate-change/taking-action/carbon-management/peatland-action/why-are-healthy-peatlands-important/> (accessed 24/08/2015)

²¹⁸ Soil Association (2015) Low Carbon Farming Technical Information Soil and Grassland Management [online] Available at: <http://www.soilassociation.org/innovativefarming/lowcarbonfarming/technicalinformation> (accessed 21/08/2015)

²¹⁹ Scottish Government (2013) Key statistical trends for forestry timber harvested [online] Available at: <http://www.scotland.gov.uk/Topics/Statistics/Browse/Agriculture-Fisheries/TrendTimberHarvested> (accessed 07/09/2015)

²²⁰ Scottish Government (2014) National Planning Framework 3: A Plan for Scotland: Ambition, Opportunity, Place and Scottish Planning Policy [online] Available at: <http://www.scotland.gov.uk/Topics/Built-Environment/planning/NPF3-SPP-Review/NPF3> (accessed 07/09/2015)

SEA Topic	Effect	Summary of potential environmental effects, including on ecosystems, and likely significance.
Cultural Heritage and Landscape		<p>Climate change, land use and development pressures can have a negative impact on landscape, and many national policies and plans highlight the importance and need to consider the potential for effects when making decisions about development management and land use. Some research has shown that mitigation and adaptation measures to climate change can potentially have a greater influence on Scottish landscapes than the direct effects of climate change; for example, engineered responses to the threat of riparian flooding²²¹. The consideration of land use at landscape scale, including the consideration of applying ecosystem services and mapping therefore has the potential to have a beneficial effect.</p> <p>Habitat creation and enhancement, such as the creation or regeneration of urban green space, can help connect people with nature, visually improve the aesthetic values of an area, increase awareness and improve our understanding of the importance of our cultural heritage, and improve social and community cohesion (cultural services). It can also be an effective tool in water management, including adaptation to flooding, with the potential to create many secondary benefits such as the potential to improve visual amenity. Some of our most iconic landscapes and areas of high conservation value are also those that contain high biodiversity value; for example, our many moorlands, peatlands, ancient forests and woodlands. Therefore careful consideration of their management is required to ensure that the many functions they provide, such as cultural and visual significance (cultural services), carbon sequestration, water purification and supporting a range of biodiversity (regulating, supporting and provisioning services), are maintained and where possible, enhanced. The use of ecosystem services and mapping and the application of this information in informing the decision making process should help to facilitate this.</p>
Summary		<p>A number of national policies currently set out the importance of ecosystem health. For example, the NPF3, SPP and the 2020 Challenge, set out the role and importance of our natural environment for our social, economic and environmental prosperity, and that ecosystem health underpins this. They elaborate, stating a need to restore and maintain good ecosystem health to ensure that the benefits can be continued to be felt by all. These, and other relevant documents, also note that the consideration of ecosystem health needs to be considered at catchment or landscape scale, taking full account of land use impacts on the ecosystem services that underpin social, economic and environmental health. The role of river basin management planning and the SRDP in land management are also discussed as delivery mechanisms to co-ordinate and support action across catchment areas.</p> <p>Land use in Scotland, and how our land is managed has significant influence over a range of topics²²². Habitat change, mainly due to increased intensive land management, urban development, pollution and nutrient enrichment and over-exploitation of resources have all been identified as pressures which have caused a decline in biodiversity.²²³ Therefore it is likely that this group of proposals will have a significantly beneficial impact on not only biodiversity, but also have additional secondary or indirect benefits on all other topic areas.</p> <p>As around 80% of our land is used for agriculture²²⁴, the benefits from proposals to move towards more sustainable land use and low emissions farming have the potential to be significant in a number of ways. For example, this has the potential to influence how our land looks (cultural services), the food and other materials we gain from it (provisioning services), the air we breathe and the water we drink (regulating services), and the opportunities for access and closeness to nature and the benefits we get from this, such as physical and mental well-being (cultural services). The consideration of green infrastructure in the urban environment can provide additional socio-economic benefits such as increased community cohesion and reduced anti-social behaviour (cultural services). In addition to reducing the contribution of land use practices in terms of GHG emissions, the natural environment itself and our careful use and management of it can also play a significant role in managing the effects of climate change. For example, the use of mitigation and enhancement measures such as natural flood defences can also provide a range of additional positive effects for biodiversity, soil and water quality (supporting, regulation and provisioning services) and visual amenity (cultural services), amongst others.</p> <p>The consideration at catchment or landscape scale of ecosystem health, and the services they provide, can positively influence our understanding of the connections and interactions between the many different aspects of the environment. In the future, this could help to identify opportunities for additional benefits, opportunities to optimise these, and identify areas of possible conflict. An example of this is the Aberdeenshire LUS Pilot²²⁵, developed to “consider existing and future land uses in a collective way, with a view to optimising the use of land, and to establish a mechanism to prioritise or guide decisions about possible competing or conflicting uses”. While the findings of the pilot acknowledged that rural land use issues are complex, they reported that there is strong support for more integrated; holistic and rural land use planning.</p>

²²¹ Scottish Natural Heritage (2011) Summary of the effects of climate change on landscape and quality of life in Scotland [online] Available at: <http://www.snh.gov.uk/docs/B988942.pdf> (accessed 07/09/2015)

²²² Rees R.M, Topp CFE, Bell M, Reid G, Audsley R, Eory V, McLeod M, Wall E, Moran D, Moxley AP, (2015) Reducing the emissions from the agriculture and land use sector, Evidence presented to the Committee on Climate Change 22 January 2015 [online] Available at: <https://www.theccc.org.uk/wp-content/uploads/2015/01/SRUC.pdf> (accessed 21/08/2015)

²²³ Biodiversity Scotland (2013) Key pressures on biodiversity [online] Available at: <http://www.biodiversityscotland.gov.uk/biodiversity/pressures/> (accessed 07/09/2015)

²²⁴ Rees R.M, Topp CFE, Bell M, Reid G, Audsley R, Eory V, McLeod M, Wall E, Moran D, Moxley AP, (2015) Reducing the emissions from the agriculture and land use sector, Evidence presented to the Committee on Climate Change 22 January 2015 [online] Available at: <https://www.theccc.org.uk/wp-content/uploads/2015/01/SRUC.pdf> (accessed 21/08/2015)

²²⁵ Aberdeenshire Council, The James Hutton Institute (2015) Aberdeenshire Land Use Strategy Pilot, Final Report 2015 [online] Available at: <http://www.aberdeenshire.gov.uk/energy/AberdeenshireLandUseStrategyPilotFinalReportMarch2015.pdf> (accessed 26/08/2015)



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This publication is available at www.gov.scot

Any enquiries regarding this publication should be sent to us at
The Scottish Government
St Andrew's House
Edinburgh
EH1 3DG

ISBN: 978-1-78544-836-2 (web only)

Published by The Scottish Government, November 2015

Produced for The Scottish Government by APS Group Scotland, 21 Tennant Street, Edinburgh EH6 5NA
PPDAS59328 (11/15)