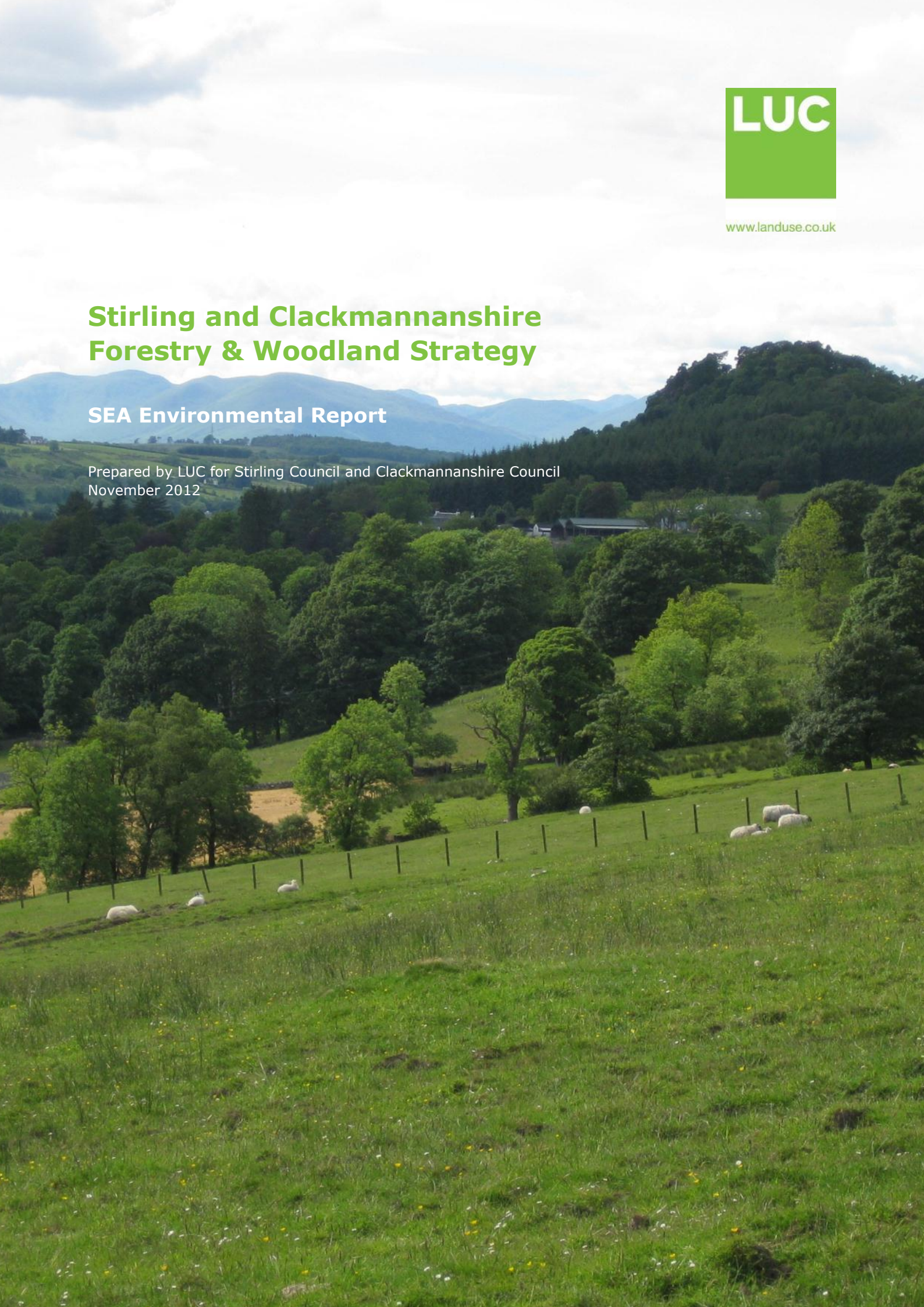

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Stirling and Clackmannanshire Forestry & Woodland Strategy

SEA Environmental Report

Prepared by LUC for Stirling Council and Clackmannanshire Council
November 2012

Project Title: Stirling and Clackmannanshire Forestry & Woodland Council

Client: Stirling Council and Clackmannanshire Council

Version	Date	Version Details	Prepared by	Checked by	Approved by Principal
1	26/11/2012	Issue 1	MM	SMO	NJ

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Landscape Management
Ecology
Mapping & Visualisation

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SEA ENVIRONMENTAL REPORT – COVER NOTE

PART 1

To: SEA.gateway@scotland.gsi.gov.uk

or

SEA Gateway
Scottish Government
Area 1 H (Bridge)
Victoria Quay
Edinburgh EH6 6QQ

PART 2

An SEA Environmental Report is attached for the plan, programme or strategy (PPS) entitled:

Stirling and Clackmannanshire Forestry and Woodland Strategy

The Responsible Authority is:

Stirling Council and Clackmannanshire Council

PART 3

Please tick the appropriate box

☑ The PPS falls under the scope of Section 5(3) of the Act and requires an SEA under the Environmental Assessment (Scotland) Act 2005. ***or***

☐ The PPS falls under the scope of Section 5(4) of the Act and requires an SEA under the Environmental Assessment (Scotland) Act 2005. ***or***

☐ The PPS does not require an SEA under the Environmental Assessment (Scotland) Act 2005. However, we wish to carry out an SEA on a voluntary basis. We accept that, as this SEA is voluntary, the statutory 5 week timescale for views from the Consultation Authorities cannot be guaranteed.

PART 4

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PART 5

Signature (electronic signature is acceptable)	
Date	

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Non-Technical Summary

Background

Strategic Environmental Assessment (SEA) is required under the Environmental Assessment (Scotland) Act 2005. It is a systematic method of assessing the environmental effects of plans and programmes during their preparation, allowing for the mitigation of any adverse effects before implementation.

This is the non-technical summary of the Environmental Report prepared as part of the SEA of the Stirling and Clackmannanshire Forestry & Woodland Strategy (SCFWS). It sets out a summary of the SEA process, followed by an outline of the likely regionally significant effects of the SCFWS. An important element of SEA is making the information about possible impacts available to the public, and this non-technical summary sets out how to make comments on the SEA process and outcomes.

Summary of the SEA Process

The SEA process to date comprised a number of key stages. At the outset, a **scoping** exercise was undertaken to identify the method for and overall content of the SEA. This process involved extensive engagement with the Consultation Authorities – Scottish Natural Heritage (SNH), Historic Scotland (HS) and the Scottish Environment Protection Agency (SEPA). A **scoping report** was also submitted to the Consultation Authorities for their comments.

Following consideration of comments on the scoping report, assessment progressed: firstly by examining the high-level effects of the SCFWS' vision, key themes, and policy objectives; and then moving on to more detailed assessment of its spatial content and strategic priorities – resulting in the preparation of this **environmental report**. The findings of the assessment process have been used to inform the development of the consultation draft SCFWS. The report is now being circulated for further comment and will inform the final review of the SCFWS on conclusion of the consultation period.

Scope of the Environmental Report

The Environmental Report includes the following:

- Purpose and scope of the SCFWS and an outline of its vision, key themes, & policy objectives;
- Relationships with other plans, programmes and strategies;
- Environmental baseline – the current state of the environment and likely evolution of the environment without the FWS;
- Identification of SEA objectives for the assessment;
- Application of the objectives to the FWS;
- Assessment of the spatial content of the FWS;
- Assessment of alternatives; and
- Proposed mitigation and monitoring measures.

Strategic Themes, Aims, and Objectives of the Stirling and Clackmannanshire Forestry & Woodland Strategy

The SCFWS is intended as a strategic management tool helping to inform the location, design and management of woodlands in Stirling and Clackmannanshire, providing a policy and a spatial framework to maximise the contribution of woodland and forestry to the people, environment and economy of the region. The SCFWS will also help to target grant support for forestry projects and

guide the preparation of forest plans. Stirling Council and Clackmannanshire Council will have regard to the SCFWS when preparing their Local Development Plans, providing a consistent approach to woodland creation and management across the region.

The Strategy is divided into the following themes, aims and key policy objectives. These are as follows:

- **Climate Change** - Help Stirling & Clackmannanshire reduce the impact of climate change and better equip the counties to be able to adapt to its changing climate:
  - To identify areas for new woodland creation/existing woodland restoration;
  - To highlight areas for climate change adaptation, particularly those which will contribute to sustainable flood management;
  - To support the development of biomass for heating;
  - To promote the benefits of carbon sequestration through the Woodland Carbon Code; and
  - To advocate forestry and woodland management practices which reduce carbon loss from soils.
- **Timber** - Maximise the benefits of Stirling & Clackmannanshire's increasing and sustainable timber resource:
  - To encourage continued investment in the local timber processing capacity;
  - To promote the use of timber as a renewable, versatile raw material; and
  - To encourage the development of the hardwood timber sector.
- **Business Development** - Support business development and strengthen the forest industry and its contribution to local economic growth and employment:
  - To support rural diversification and business development opportunities;
  - To promote Stirling & Clackmannanshire as a destination for tourists and visitors; and
  - To facilitate opportunities for acquiring new skills and experience.
- **Community Development** - Improve the quality of life and well-being of local residents and visitors to Stirling & Clackmannanshire by supporting community development and encourage an increased community involvement in forestry and woodland initiatives:
  - To develop opportunities for expanding the existing woodland resource in and around the towns and villages in Stirling & Clackmannanshire;
  - To promote woodlands as community-owned or managed asset;
  - To facilitate the development of social enterprise networks and capacity building initiatives; and
  - To identify opportunities for delivering the Curriculum for Excellence and lifelong learning through Forest Schools and other forest and woodland-based education.
- **Access and Health** - Encourage responsible access to and enjoyment of forests and woodlands across Stirling & Clackmannanshire and help improve physical and mental health of residents:
  - To highlight opportunities for expanding sustainable recreational facilities in the Stirling & Clackmannanshire for both formal and informal recreation;
  - To support wellbeing initiatives such as Braveheart, Branching out and Green Gym; and
  - To promote natural play and active travel through Forest Schools and other forest education initiatives.
- **Environmental Quality** - Protect the environmental quality of Stirling & Clackmannanshire's natural resources, enhance the landscape and make the most of its unique cultural heritage:
  - To actively promote Stirling & Clackmannanshire's rich cultural heritage;
  - To contribute to the management and enhancement of Stirling & Clackmannanshire's historic environment; and
  - To promote responsible public access to, and interpretation of, all suitable assets (e.g. archaeology, historic landscapes and buildings).
- **Biodiversity** - Conserve and enhance the region's biodiversity and increase an awareness and enjoyment of the environment:
  - To promote the conservation of key sites and priority habitats;

- To consolidate and expand functional connectivity through habitat networks in the wider landscape; and
- Highlighting specific woodland types to assist with the protection of key species (e.g. red squirrel and black grouse).

Environmental Baseline

Schedule 3 of the Environmental Assessment (Scotland) Act 2005 requires that the Environmental Report includes a description of "*the relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan or programme"* and "*the environmental characteristics of areas likely to be significantly affected*". This section of the report summarises the environmental context of the SCFWS.

Biodiversity

Stirling and Clackmannanshire have a number of sites designated for their ecological or landscape value. Large parts of the Firth of Forth are internationally designated as a 'RAMSAR' site and a 'Special Protection Area' (SPA) because of its value for overwintering bird populations. Eight areas have international designations as 'Special Areas of Conservation' (SAC) including the River Tay and River Teith. A further 51 sites are nationally designated as 'Sites of Special Scientific Interest' (SSSI). There are also 21 'Local Nature Conservation Sites' in Clackmannanshire. Other important habitats include lowland raised bog which is a nationally scarce resource.

Climate Change

The main changes of importance to Stirling and Clackmannanshire include an overall rise in temperature, a decrease in summer rainfall and an increase in winter rainfall. Nationally, the increased temperatures and changes in rainfall are being associated with risks of flooding, water shortage, rising sea levels and increased risk of diseases.

Population and Human Health

Clackmannanshire has slightly lower than Scotland average levels of employment. There is a higher than average percentage of adults claiming incapacity benefit or severe disability allowance. Although there is no divergence from the Scotland average for all indicators in the ill health and injury domain, expected years of life in good health are significantly worse than the Scotland averages for men and women. Clackmannanshire also has a significantly worse than average percentage of people living in the 15% most deprived areas of Scotland. The areas most affected are Alloa and Tullibody.

Stirling has significantly better than the Scotland average for male and female life expectancies. The percentage of adults claiming incapacity benefit or severe disability allowance is significantly better (lower) than average. Just over 8.0% of households are in extreme fuel poverty (Scotland 7.5%). Stirling is significantly better than, or not significantly different to, Scotland on all of the education and economy related indicators. The percentage of the population living in the 15% most deprived areas is significantly worse than average with Raploch and Borestone the most affected areas.

Soil

The total area of derelict and urban vacant land in Clackmannanshire has decreased to 29ha (17 sites) in 2011. This represents a 13% reduction in the period 2005-2011. In Stirling this figure is significantly higher at 170ha (50 sites), although this also represents a decrease of 10% in vacant and derelict land during the same survey period.

Prime agricultural land is recognised as a valuable and non-renewable resource to support food production within Scotland. Prime quality agricultural land within Stirling is principally located along the River Teith with small sections in the surrounding areas of Cowie. The prime agricultural land in Clackmannanshire is primarily situated along the River Devon and the Black Devon.

In general, the peat soils/blanket bogs are located in the steeper slopes of the Ochil Hills, Campsie Fells and along the Glen Artney, with a combination of blanket bog and industrial peat in the Flanders Moss area.

Water

Clackmannanshire's groundwater classification is good to poor. The groundwater status in Stirling is predominately good with poorer quality around the River Earn and the Forth Estuary.

Clackmannanshire is classified as having poor ecological potential particularly at the Forth Estuary and at the Gartmorn Dam, which is the largest area of open water in the area. This is due to a number of issues including flood banks, diffuse pollution and significant domestic and industrial discharges. The ecological status of surface water in Stirling is predominately poor, particularly along the River Carron and the River Lochay.

The status of surface water in Clackmannanshire is predominately moderate with the exception of the River Devon which is classified as poor. Across the Stirling area the surface water is mostly moderate with the exception of the River Teith which has a 'bad' classification.

The SEPA Flood Risk Map (2010) for Scotland identifies areas at potential risk of flooding from rivers and the sea. This does not take into account all flood defences which may be in place, however it provides an indication of areas at risk. Low lying areas adjacent to the River Forth are potentially at risk from flooding, particularly in towns located near the estuary. There is also flood risk associated with the course of the River Devon and the River Teith. The coastline is also at risk of flooding from the sea.

Air

Part IV of the Environment Act (1995) places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. Nitrogen dioxide emissions for Stirling and Clackmannanshire are currently below the concentrations identified as air quality objectives for Scotland by 2011. PM^{10}s are emitted through combustion, with road traffic a main contributor to this problem. Monitoring within Stirling and Clackmannanshire has identified that PM^{10} levels have not exceeded air quality objectives for Scotland in 2011. Neither Clackmannanshire Council nor Stirling Council has a declared Air Quality Management Area.

Material Assets

There are no landfill sites within the Clackmannanshire area licensed to accept non-inert waste. A major new facility has planning permission at Muirpark, Tullibody which will provide sufficient inert capacity to serve the area for a number of years. A waste transfer facility is located in Stirling which bulks waste for transport to the landfill site at Polmont, Falkirk. Shallow coal reserves that may be suitable for opencast working are found across much of Clackmannanshire.

Cultural Heritage

Both Stirling and Clackmannanshire have a rich cultural heritage with a large number of Listed Buildings, Conservation Areas, Scheduled Monuments, Gardens and Designed Landscapes, and archaeological sites. The area has a wealth of archaeological sites and features including 163 Scheduled Ancient Monuments. There are 1,875 Listed Buildings in the area with 106 Category A listed buildings, 875 Category B listed buildings and 894 Category C listed buildings. There are three large inventory battlefields in the area, namely Bannockburn, Sheriffmuir, and Stirling Bridge. Fourteen sites are identified within the Inventory of Gardens and Designed Landscapes lie within the study area. There are 35 Conservation Areas within the area.

Landscape

Stirling & Clackmannanshire's woodland and forest cover currently extends to some 17,133 hectares or 17% of total land area. This compares favourably with Scotland's 17% woodland cover as a whole.

The area supports a wide range of tree species and contains a mosaic of different forest and woodlands types including large-scale coniferous plantations (for example the Carron Valley Forest, Lennieston Muir and Braes of Doune), mixed traditional estate woodlands (for example Cromlix, Blairdrummond and Harviestoun) and small-scale mixed lowland farm woodlands, ancient woodland/long established plantation origin sites (including Abbey Craig, Cambusbarron and Devonside) and urban woods (for example Gean Park, Callendar Woods).

Landscape Character Assessments have identified the following landscape character types within the study area: lowland hills, lowland river valleys, highland, summits & plateaux, wooded glens, forested glens, open upland hills, farmed moorland hills, flat arable farmland, river valley farmland, forested moorland hills, and urban.

Clackmannanshire is distinguished by the contrast between the high ground of the Ochil Hills and the flat carselands of the Devon and Forth Valleys. On the highest ground of the upper plateau-like surfaces of the Ochills, poor drainage has resulted in the formation of blanket bogs. In general, the land cover of Clackmannanshire is predominately agricultural with arable land the most common type. The remainder of the agricultural land consists of rough grassland, and improved grassland. Areas of arable land generally correspond with the fertile soils of the Carse of Forth. Rough grassland dominates the hill land of the Ochills, with small percentages of coniferous and broadleaved woodlands. The district has, as a whole, a high percentage of urban and rural development compared to the national averages. The principal areas of Green Belt in Clackmannanshire are between Alloa and Clackmannan, Tullibody and along the Hillfoots.

Stirling Council covers a large area extending from the densely populated Central Belt to the foothills of the Grampian Mountains. The south eastern part of the area is characterised by flat arable farmland and contains the internationally important lowland rasied bogs of Flanders Moss, and encompasses the Teith and Forth Valleys. The eastern border of the area is marked by the Ochil Hills. The southern boundary of the study area is marked by the Campsie Hills and Kilsyth Hills with the area characterised by the lowland river valleys of the River Carron and Ettrick Water. Northern Stirling has a relatively complex upland terrain including several lochs (Loch Earn, and Loch Tay), forests and Munros. The principal areas of Green Belt are within the Carron Valley Forest, and along the River Lockay, River Teith and River Forth.

Both Stirling and Clackmannashire have extensive areas designated as Areas of Great Landscape Value (AGLV). In Clackmannanshire, two AGLVs extend across the Ochil Hills and in the area surrounding the Black Devon River. In Stirling, three AGLVs encompass the Campsie Fells, Breadalbane and the western edge of the Ochil Hills.

SEA Objectives

The SEA was carried out by assessing the key priorities of the FWS against a set of agreed SEA objectives. The framework for assessing the core policy content is indicated below.

Table 0.1 SEA Objectives

Schedule 3 Component	SEA Objectives	Sub-criteria for assessment
Biodiversity	To conserve and enhance the diversity of habitats and species	Expand habitat networks
		Conserve and enhance key habitats and species
Population & Human health	To avoid further blight in disadvantaged communities	Target woodland expansion in areas where benefits can be optimised
	To promote and develop Green Network thinking	Contribute to community and health benefits by promoting access, recreation and active travel using the green network
Soil	To avoid adverse direct and indirect impacts on soil stability, structure and quality	Where appropriate, seek to re-use VDL for a range of woodland / green network purposes
		Steer woodland expansion away from sensitive soil resources (i.e. peat) to minimise the potential for pollution and loss of soil carbon
		Safeguard prime agricultural land
Water	To protect and improve relevant waterbody status	Contribute to the delivery of River Basin Management Plans, Area Action Plans and flood management
		Continue to support sustainable water management
Air	To protect and enhance	Contribute to a reduction in air pollution

	air quality	Reduce the potential for unnecessary 'timber miles' and associated emissions
		Contribute to sustainable travel and transport objectives
Climatic factors	To reduce GHG emissions	Seek to minimise GHG emissions from the sector
		Seek to prevent new planting on peat soils to maintain carbon stores
	To support climate change mitigation	Support appropriate renewable energy development
		Safeguard the standing timber carbon resource
	To support climate change adaptation	Contribute to sustainable water management and erosion prevention
		Contribute to resilience planning objectives
Material assets	To support sufficient infrastructure development	Protect key mineral resources from sterilisation through inappropriate afforestation
		Contribute to the appropriate re-use of VDL
	To minimise waste	Promote the efficient operation of the sector and the safe treatment and disposal of non-reusable/recyclable arisings
Cultural Heritage	To conserve and enhance the cultural and built environment	Seek to ensure that woodland expansion safeguards the fabric and setting of heritage assets
		Contribute to the character and significance of important historic landscapes
		Seek to promote responsible access to and appreciation of cultural heritage via the green network
Landscape	Conserve and enhance the character of the region's landscapes	Steer woodland expansion proposals to appropriate locations
		Support measures to promote good woodland design and appropriate diversity
		Encourage the use of woodland to root new development and existing settlements in the landscape
		Woodland expansion should reflect current and future capacity to accommodate change

Likely effects of the Stirling and Clackmannanshire Forestry & Woodland Strategy

The SCFWS is likely to have a broadly positive effect on the environment. The SEA identified no overall significant environmental effects, scoring particularly positively in relation to biodiversity and human health objectives.

The key effects of the strategy's more detailed themes and objectives are outlined in the following table.

Table 0.2 Summary of Environmental Effects

SEA Objective	Summary of Positive Effects	Summary of Negative Effects	Mitigation and Comments
BIODIVERSITY To conserve and enhance the diversity of habitats and species	The FWS will have a generally positive effect on biodiversity, delivering improved habitat connectivity, protection of key habitats and better integration with woodland management objectives Enhancing and establishing woodland planting in degraded and urban areas is likely to enhance biodiversity values in these areas and could contribute to improved public knowledge and appreciation of natural heritage Explicit protection and enhancement of key open ground and non-woodland habitats	Potential for minor adverse effects in relation to increased public access to woodlands, particularly for intensive recreational activities, to increase disturbance to sensitive species and habitats Potential for large areas of monoculture biomass planting to have a negative effect on biodiversity Potential for high impact or invasive methods of timber processing to cause disturbance to habitats and species Potential impact on species and habitats already present on VDL	Adverse effects outweighed by major benefits of habitat enhancement. Positive effects rely on assumed mitigation provided by Forestry Commission Scotland's process of assessing SRDP application for woodland creation / planning system for woodland delivered in parallel with development
POPULATION AND HUMAN HEALTH To avoid further blight in disadvantaged communities To promote and develop Green Network thinking	The FWS will have a positive overall effect on population and human health objectives Targeting environmental enhancement on vacant, derelict and stalled sites will significantly improve the environmental quality of disadvantaged areas Providing guidance to help deliver quality greenspace through the development process Development of community-scale biomass energy installations could contribute to alleviation of fuel poverty Contributing to place-making and competitiveness of the region	Potential for minor adverse effects on health as a result of wide-spread adoption of woody biomass as a domestic / community-scale fuel source (increased PM_{10} emissions)	Mitigated through the planning system – preventing inappropriate use of biomass technology in Smoke Control / Air Quality Management Areas

SEA Objective	Summary of Positive Effects	Summary of Negative Effects	Mitigation and Comments
SOIL To avoid adverse direct and indirect impacts on soil stability, structure and quality	Protection of peat soils as a key carbon store and asset for biodiversity in policy and spatial content Appropriate woodland expansion should increase soil carbon content and improve stability Riparian planting and reinforcement of existing woodlands will contribute to slope stability, reducing runoff and soil erosion Reuse of VDL for woodland will have significant benefits for soil quality, potentially helping to address contamination, improving water infiltration, organic content and fertility	Development of new larger-scale woodlands has the potential for localised impact on soils, as a certain amount of carbon release and disturbance will occur during drainage (if required) and planting operations Potential negative impacts from forestry and woodland practices, e.g. soil erosion from site clearance/ harvesting. Potential soil erosion/disturbance from intensive recreational activities Potential for new woodlands and trees for biomass production to cause damage and disruption to soil structure	Care will need to be taken to ensure that a balance is achieved between making productive use of residues from forest thinnings and leaving enough residues behind to protect and enrich the soil in these areas. Development of forest soils and growth of trees is likely to compensate carbon budgets Need for stronger cross-referencing with soil policy to ensure appropriate protection of the resource Avoidance of adverse effects relies on assumed mitigation delivered through adherence to FCS 'Forests and Soils' guidance / FCS regulatory processes screening out sensitive sites
WATER To protect and improve relevant waterbody status	FWS likely to have a positive overall effect on the water environment Development of new and enhancement of existing riparian woodlands could contribute to sustainable flood management objectives and improve water quality by reducing runoff and erosion FWS makes links to River Basin Management Planning Planting on VDL has the potential to help remediate contamination, reduce runoff and improve infiltration and absorption/retention capacity Promotion of Continuous Cover Forestry could improve outcomes for the water environment over clearfell systems Protection and enhancement of peat soils important for safeguarding catchments' water retention capacity	Many of the negative effects on water quality are secondary effects resulting from a decrease in soil erosion and soil contamination.	Assumed mitigation delivered through the FCS assessment process Potential to make stronger links to water protection policy – although UKFS and FCS guidance compliance should design out significant effects

SEA Objective	Summary of Positive Effects	Summary of Negative Effects	Mitigation and Comments
AIR To protect and enhance air quality	Woodland expansion will make a positive contribution to regional carbon sequestration and Scottish Government emission reduction targets Renewable energy (biomass) will replace traditional non-renewable fuel sources Protection of peat soils, and restoration of degraded peatland likely to make a contribution to the region's carbon storage potential – and prevent further emissions from degrading bogs	Forestry processes dependent on fossil fuels – increased activity likely to result in a net increase in emissions from the sector Increased activity in timber sector likely to increase volume of traffic transporting timber from processing facilities Localised pollution of air quality through increased use of woodfuel	Wider use of biomass should not generate additional CO_2 emissions as material burnt should be replaced by, at minimum, an equivalent area of new planting Prioritising growing and processing biomass close to markets will help to minimise emissions Encourage woodland planting near settlements and in close proximity to public transport facilities
CLIMATIC FACTORS To reduce GHG emissions To support climate change mitigation To support climate change adaptation	Woodland expansion will make a positive contribution to regional carbon sequestration and Scottish Government emission reduction targets Riparian and appropriate floodplain woodland expansion will make a positive contribution to climate change adaptation (sustainable flood management, increased soil stability, increased connectivity of habitats) Promotion of woodfuel as a source of energy has the potential to reduce GHG emissions by replacing other sources of energy with higher GHG emissions Protection of peat soils, and restoration of degraded peatland likely to make a contribution to the region's carbon storage potential – and prevent further emissions from degrading bogs	Forestry processes dependent on fossil fuels – increased activity likely to result in a net increase in emissions from the sector Increased activity in timber sector likely to increase volume of traffic transporting timber from processing facilities Potential for localised air quality issues through increased use of woodfuel	Wider use of biomass should not generate additional CO_2 emissions as material burnt should be replaced by, at minimum, an equivalent area of new planting Prioritising growing and processing biomass close to markets will help to minimise emissions Encourage woodland planting near settlements to reduce the distance people have to travel to enjoy woodlands Ensuring biomass technologies are deployed in appropriate locations with be managed through the planning process

SEA Objective	Summary of Positive Effects	Summary of Negative Effects	Mitigation and Comments
MATERIAL ASSETS To support sufficient infrastructure development To minimise waste	Woodland expansion to VDL or contaminated land will reduce the amount of underused land Biomass fuel for heat and power contributes to the positive reuse of waste woodland materials Safe treatment and disposal of non-reusable waste arisings is likely to positive effects on the conservation of biodiversity Promoting the role of green infrastructure in transforming VDL and will deliver a range of environmental services to people, including flood alleviation, which may previously have been delivered by grey infrastructure solutions	Encouraging increased recreation may result in a minor upsurge in the amount of waste produced by visitors	Positive effects rely on assumed mitigation delivered through the FCS assessment process
CULTURAL HERITAGE AND HISTORIC ENVIRONMENT To conserve and enhance the cultural and built environment	The FWS is likely to make a positive contribution to the protection of the region's historic assets Designated sites – with the exception of Inventory Battlefields – are highlighted as 'sensitive' to woodland expansion, helping to ensure they will not be subject to inappropriate proposals Succession planning for trees in parks, gardens and designed landscapes will help safeguard the character and significance of the assets as the climate changes Promoting traditional harvesting techniques will not only have environmental benefits for sensitive locations but also help to keep important local cultural traditions alive Acknowledges the contribution of trees and woodland to the historic environment through forming settings of assets, and the value of ancient woodland and veteran trees as part of the cultural landscape in their own right	Potential for inappropriate woodland expansion on Inventory Battlefield sites Limited potential for impacts on previously unrecognised archaeological sites – largely mitigated through the FCS assessment / EIA process Potential for impact in sensitive locations from high concentrations of visitors Potential for planting to generate adverse effects on the setting of a range of heritage assets	Positive effects rely on assumed mitigation delivered through the FCS assessment process Inventory Battlefields should be included within the 'sensitive' land classification, as befits their national significance and complexity Need for a statement highlighting the potential sensitivity of heritage assets' settings, and the need for appropriate design and management

SEA Objective	Summary of Positive Effects	Summary of Negative Effects	Mitigation and Comments
LANDSCAPE To conserve and enhance the character of the region's landscapes	Protecting and enhancing landscape character is an important aspect of the FWS, and is therefore likely to have a positive overall effect Restructuring of existing plantations is likely to convey significant landscape benefits Promoting continuous cover forestry and other low impact silvicultural practices could strongly benefit the conservation and enhancement of the regions landscape character.	Planting large areas of woody biomass monoculture has the potential to have a negative impact on landscape character and areas of plantation need to be carefully located.	Significant increases in woodland cover will inevitably result in relatively large-scale landscape change. It will be incumbent on FCS and local authorities to judge the capacity of the landscape to accommodate woodland expansion proposals

Alternatives

The performance of the FWS was assessed against three alternate approaches that could be adopted for the planning and management of woodlands and forestry. These were:

- 'business as usual' scenario – Represented by the continued application of the 2004 Indicative Forestry Strategy Policy and Background Report and the Scottish Forestry Strategy;
- an alternative focussed on achieving the aims of the Central Scotland Green Network; and
- four alternative scenarios for woodland expansion - minor, moderate and high level expansion and a notional environmental capacity based approach.

None of the alternatives outperformed the SCFWS in terms of positive benefits, illustrating the value of its balanced approach to addressing key issues and the process of consultation that contributed to its development.

Monitoring

The Environmental Assessment (Scotland) Act 2005 requires significant environmental effects to be monitored. This needs to be done in such a way as to also enable them to identify any unforeseen adverse effects at an early stage and to enable them to take appropriate remedial action. Although no significant adverse environmental effects were identified, monitoring is required to identify any unforeseen adverse environmental effects.

Contact point

For further information relating to the SEA, please contact:

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1 Introduction

Introduction

1.1 Woodlands and forests across Stirling & Clackmannanshire make a significant contribution to the attractive landscape of the two counties and provide a wealth of benefits to the local population and visitors, as well as making substantial contributions to the local economy and quality of the area's environment, biodiversity and cultural heritage. Woodlands and forests also provide the backdrop to a number of popular recreation and tourism hubs located within the area - notably Gartmorn Dam Country Park & Nature Reserve, Carron Valley Forest and Reservoir, the Ochil Hills Woodland Park, Balquhidderock Wood and Mugdock and Plean Country Parks.

1.2 Given Stirling and Clackmannanshire's inherent qualities, it is essential to ensure that any future proposals for developing and expanding the area's woodland and forest resource are focused on maintaining an appropriate balance between, and wherever possible enhancing, other land uses.

1.3 The **Stirling & Clackmannanshire Forestry and Woodland Strategy (SCFWS)** has been developed through consultation with a wide range of stakeholders and sets out the Councils' vision, strategies and objectives for the future of woodlands and forestry in the area, covering the period from 2012 to 2052.

Purpose of the Environmental Report

1.4 As part of the preparation of Stirling and Clackmannanshire Forestry & Woodland Strategy, Stirling Council and Clackmannanshire Council are carrying out a Strategic Environmental Assessment (SEA) of the Strategy. A SEA is a systematic method for considering the likely environmental effects of certain plans, policies or strategies (PPS). A SEA aims to:

- integrate environmental factors into PPS preparation and decision-making;
- improve PPS and enhance environmental protection;
- increase public participation in decision making; and
- facilitate openness and transparency of decision-making.

1.5 The purpose of the Stirling and Clackmannanshire Forestry & Woodland Strategy **Strategic Environmental Assessment (SEA) Environmental Report** is to:

- provide information on Stirling and Clackmannanshire Forestry & Woodland Strategy;
- identify, describe and evaluate the likely significant effects of the PPS and its reasonable alternatives; and
- provide an early and effective opportunity for the Consultation Authorities and the public to offer views on any aspect of this Environmental Report.

1.6 The SEA Environmental Report has been prepared in accordance with The Environmental Assessment (Scotland) Act 2005. The key SEA stages are:

Table 1.1 Key stages of the SEA process

Screening	Determining whether the PPS is likely to have significant environmental effects and whether an SEA is required.
Scoping	Deciding on the scope and level of detail of the Environmental Report, and the consultation period for the report - this is done in consultation with Scottish Natural Heritage, The Scottish Ministers (Historic Scotland) and the Scottish Environment Protection Agency.

Environmental Report	Publishing an Environmental Report on the PPS and its environmental effects, and consulting on that report.
Adoption	Providing information on: the adopted PPS; how consultation comments have been taken into account; and methods for monitoring the significant environmental effects of the implementation of the PPS.
Monitoring	Monitoring significant environmental effects in such a manner so as to also enable the Responsible Authority to identify any unforeseen adverse effects at an early stage and undertake appropriate remedial action.

SEA activities to date

1.7 This section summarises the SEA activities to date, in relation to Stirling and Clackmannanshire Forestry & Woodland Strategy.

Table 1.2: SEA activities to date

SEA Action	Date Carried Out	Notes
Screening		*Straight to scoping*
Scoping	July-September 2012	
Outline and objectives of PPS	July 2012, updated October 2012	
Relationship with other PPS and environmental objectives	July 2012	
Establish environmental baseline	July 2012	
Identify environmental problems	July 2012	
Assessment of future of area without PPS	September 2012	
Alternatives considered	September 2012	
Environmental assessment methods established	October 2012	
Selection of PPS alternatives to be included in the environmental assessment	October 2012	
Identification of environmental problems that may persist after implementation and measures envisaged to prevent, reduce and offset any significant adverse effects	October 2012	
Monitoring methods proposed	October 2012	
Consultation timescales	November 2012	
Notification/publicity action	November 2012	

Introducing the Stirling and Clackmannanshire Forestry & Woodland Strategy

Strategy background and information

1.8 The Stirling and Clackmannanshire Forestry and Woodland Strategy is intended to set out a long-term spatial and policy framework that will broadly define the scope, nature and extent of woodland expansion across the Stirling and Clackmannanshire region and establish priorities for management of new and existing woodland assets. The time horizon and lifespan of the Strategy covers the period from 2012 to 2052 – and incorporates 5 yearly reviews.

1.9 The SCFWS comprises a vision statement and a spatial framework defining areas with potential to accommodate woodland expansion whilst also identifying areas with significant sensitivities. It defines key strategic themes and policy objectives in relation to the management and

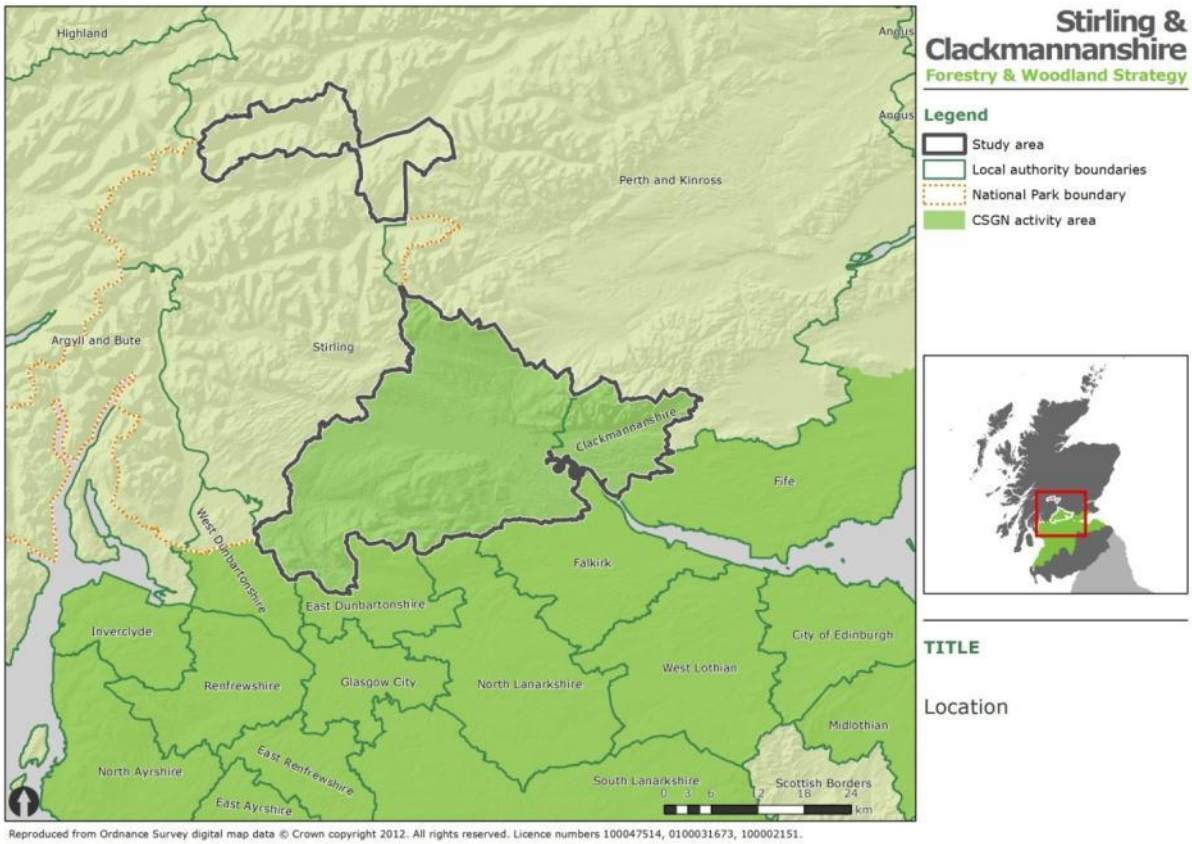
enhancement of woodland assets, and outlines key outcomes including the potential for high quality green networks to improve health, to contribute to place-making and to support sustainable economic development. Finally, with the intention of providing more detail on how the Strategy's vision, objectives and outcomes will be achieved and the benefits these will accrue, a range of opportunities are identified.

1.10 The Strategy is applicable to all of Stirling & Clackmannanshire but excludes those areas within the boundary of the Loch Lomonds & Trossachs National Park which are covered separately by the National Park Partnership Plan 2012 – 2017 (see Figure 1.1 Location)

1.11 The Strategy will replace the existing Stirling and Clackmannanshire Indicative Forestry Strategy Policy, adopted in 2004, created to support the aims of the Clackmannanshire and Stirling Structure Plan 2002.

1.12 The SCFWS will form part of the evidence base for two local development plans, namely Stirling Local Development Plan and Clackmannanshire Local Development Plan. It is anticipated that the local authorities will make use of the SCFWS in responding to consultations on woodland creation proposals, in assessing development proposals that could affect woodland and in developing locally-focussed action plans for woodland expansion and management. It is also intended to assist Forestry Commission Scotland in assessing applications for grant support for woodland creation and management.

Figure 1.1 Location



Strategy facts

1.13 The key facts relating to the Stirling and Clackmannanshire FWS are:

Table 1.3 Key strategy facts

Responsible Authority	Stirling Council & Clackmannanshire Council
Title of PPS	Stirling and Clackmannanshire Forestry & Woodland Strategy
What prompted the PPS (e.g. regulatory or administrative provision)	Planning (etc.) Scotland Act 2006 Scottish Government guidance "*The Right Tree in the Right Place: Planning for Forestry and Woodlands"* Scottish Forestry Strategy (2006)
Subject	Forestry and Woodland
Period covered by PPS	2012-2052 (40 year period)
Frequency of updates	5 yearly reviews
Area covered by PPS	All of Stirling & Clackmannanshire but excludes those areas within the boundary of the Loch Lomonds & Trossachs National Park
Purpose and/or objectives	The FWS will provide the strategic framework for woodland expansion and management across the Stirling and Clackmannanshire area
Contact point	Gordon Roger Clackmannanshire Council

Purpose of the Forestry and Woodland Strategy

1.14 The Stirling and Clackmannanshire Forestry & Woodland Strategy links with other Scottish Government initiatives i.e. the **Scottish Forestry Strategy (SFS) (2006)** and Circular 1/2009 **'The Right Tree in the Right Place – Planning for Forestry and Woodlands' (2010)**, which aim to enhance the opportunities for woodland and forests to deliver a wide range of benefits.

1.15 At a more pan-regional level, the SCFWS seeks to contribute to the delivery of the key themes of the **Central Scotland Green Network** (CSGN) which encompasses 19 local authorities across Central Scotland.

1.16 The Stirling and Clackmannanshire Forestry & Woodland Strategy will:

- guide and support local authority policy;
- form the basis for Supplementary Planning Guidance for the two Local Development Plans;
- inform local authority development management decisions that include proposals for woodland removal or creation;
- guide development of Regional Priorities for SRDP and the planning authority's views on planting proposals and applications for grant support;
- inform and guide the screening and scoping of proposals that fall within the scope of the Environmental Impact Assessment (Forestry) (Scotland) Regulations 1999; and
- assist with the development and approval of Forestry District Strategic Plans and long term Forestry Design and Management Plans.

Strategy Vision, Themes, Policy Objectives, & Key Outcomes

Vision

1.17 The vision for the SCFWS is as follows:

"Through their expansion, protection and sustainable management, the forests and woods of Stirling and Clackmannanshire will provide a range of benefits for local people and visitors by contributing to the economic, environmental and social well-being of the area. Through partnership working and integrated planning, implementation and monitoring, new jobs will be created, opportunities provided for active and passive outdoor recreation, habitats enhanced for wildlife and attractive landscapes protected so that local people can live and work and visitors can enjoy the area's natural and cultural heritage".

Strategic Themes & Aims

1.18 Corresponding to the Scottish Forestry Strategy's seven key themes, the SCFWS have identified their **strategic themes** as:

- Climate Change
- Timber
- Business Development
- Community Development
- Access and Health
- Environmental Quality
- Biodiversity

1.19 The following **aims** have been identified for the SCFWS:

- Helping Stirling & Clackmannanshire to reduce the impact of climate change and better equip the counties to be able to adapt to its changing climate (Climate Change).
- Maximising the benefits of Stirling & Clackmannanshire's increasing and sustainable timber resource (Timber).
- Supporting business development and strengthening the forest industry and its contribution to local economic growth and employment (Business Development).
- Improving the quality of life and well-being of local residents and visitors to Stirling and Clackmannanshire by supporting community development and encouraging an increased community involvement in forestry and woodland initiatives (Community Development).
- Encouraging responsible access to and enjoyment of forests and woodlands across Stirling & Clackmannanshire and helping to improve physical and mental health of residents (Access and Health).
- Protecting the environmental quality of Stirling & Clackmannanshire's natural resources, enhancing the landscape and making the most of its unique cultural heritage (Environmental Quality).
- Conserving and enhancing the region's biodiversity and increase an awareness and enjoyment of the environment (Biodiversity).

Policy objectives and key outcomes

1.20 The themes of the SCFWS are each supported by more detailed **policy objectives. Key outcomes**, considered in terms of the Scottish Forestry Strategy, the Single Outcome Agreements for Clackmannanshire and Stirling and the Central Scotland Green Network Vision, have been highlighted in order to further demonstrate the links between the SCFWS and other, complementary strategy documents. These are summarised in Table 1.4.

Table 1.4 FWS themes, policy objectives and outcomes

	Policy Objectives	Key Outcomes

CLIMATE CHANGE	To identify areas for new woodland creation/existing woodland restoration	High quality, robust and adaptable environment [SFS] An environment that can adapt to climate change [CSGN] A region in greater carbon balance [CSGN] People feel good about their physical surroundings [CSGN]
	To highlight areas for climate change adaptation, particularly those which will contribute to sustainable flood management	
	To support the development of biomass for heating	
	To promote the benefits of carbon sequestration through the Woodland Carbon Code	
	To advocate forestry and woodland management practices which reduce carbon loss from soils	
TIMBER	To encourage continued investment in the local timber processing capacity	Competitive & innovative business contributing to the growth of the Scottish economy [SFS] Increased levels of economic activity, competitiveness & employment [CSGN] Increased levels of enterprise and creativity [CSGN] A strong "green industry" sector [CSGN]
	To promote the use of timber as a renewable, versatile raw material	
	To encourage the development of the hardwood timber sector	
BUSINESS DEVELOPMENT	To support rural diversification and business development opportunities	Competitive & innovative business contributing to the growth of the Scottish economy [SFS] Increased levels of economic activity, competitiveness & employment [CSGN] Increased levels of enterprise and creativity [CSGN] Increased levels of tourism [CSGN]
	To promote Stirling & Clackmannanshire as a destination for tourists and visitors	
	To facilitate opportunities for acquiring new skills and experience	
COMMUNITY DEVELOPMENT	To develop opportunities for expanding the existing woodland resource in and around the towns and villages in Stirling & Clackmannanshire	Improved health & well-being of people and their communities [SFS] People are involved in volunteering and in community action [CSGN] Increased levels of enterprise and creativity [CSGN] Properly maintained natural resources cost less to maintain [CSGN]
	To promote woodlands as community-owned or managed asset	
	To facilitate the development of social enterprise networks and capacity building initiatives	
	To identify opportunities for delivering the Curriculum for Excellence and lifelong learning through Forest Schools and other forest and woodland-based education	
ACCESS & HEALTH	To highlight opportunities for expanding sustainable recreational facilities in the Stirling & Clackmannanshire for both formal and informal recreation	Improved health & well-being of people and their communities [SFS] People feel good about their physical surroundings [CSGN] More people use and enjoy outdoor spaces [CSGN] Improved levels of physical and mental well-being [CSGN]
	To support wellbeing initiatives such as Braveheart, Branching out and Green Gym	
	To promote natural play and active travel through Forest Schools and other forest education initiatives	
ECultural heritageCulNVIRONMENTAL	To actively promote Stirling & Clackmannanshire's rich cultural heritage	High quality, robust and adaptable environment [SFS] Natural resources are valued and managed [CSGN] Characterful, high quality landscapes add value to the region [CSGN] More people taking part in, and appreciating cultural activities [CSGN]
	To contribute to the management and enhancement of Stirling & Clackmannanshire's historic environment	
	To promote responsibly public access to, and interpretation of, all suitable assets (e.g. archaeology, historic landscapes and buildings)	

BIODIVERSIY	To promote the conservation of key sites and priority habitats	High quality, robust and adaptable environment [SFS] Habitats and species will become more resilient as a result of an integrated habitat network [CSGN] Natural resources are valued and managed [CSGN]
	To consolidate and expand functional connectivity through habitat networks in the wider landscape	
	Highlighting specific woodland types to assist with the protection of key species (e.g. red squirrel, badgers and black grouse)	

Structure

Land categories

1.21 Based on the recommendations in the Planning Circular **'The Right Tree in the Right Place – Planning for Forestry and Woodlands' (2010)**, the Strategy will split areas with potential woodland expansion into three categories, i.e. Preferred, Potential, and Sensitive. In addition, areas physically unsuitable for woodland, urban areas and existing woodland have been used in the analysis.

Table 1.5 Land categories

Land Category	Description
Preferred	Land which offers the greatest scope to accommodate future expansion of a range of woodland types, and hence, to deliver on a very wide range of objectives. Within preferred areas sensitivities are, in general, likely to be limited, and it should be possible to address any particular site specific issues within well designed proposals that meet the UK Forestry Standard and associated guidelines. Future woodland expansion is therefore likely to be focused on preferred areas.
Potential	Land which offers considerable potential to accommodate future expansion of a range of woodland types, but where at least one significant sensitivity exists. The extent to which specific proposals in potential areas will be permissible will depend on how well sensitivities can be addressed within the proposals. The design of schemes in such areas will require careful consideration.
Sensitive	Land on which, due to a combination of sensitivities, there is limited scope to accommodate further woodland expansion. Limited woodland expansion is only likely to be possible within sensitive areas where it is of a scale and character which can be accommodated without significant negative impacts and/or where it would positively enhance the features of interest locally.
Existing woodland	Land currently under woodland of all types.
Unsuitable	Land physically unsuitable for the growth or management of trees.
Urban	Larger settlements, within which the opportunities for woodland creation are often too small to map effectively at a strategic scale.

Potential for woodland expansion

1.22 Chapter 4 of the SCFWS provides the core policy content of the Strategy by defining the broad potential for woodland expansion across the Region. As the spatial expression of the vision, and a high level attempt to qualify the Region's ability to support new woodland, interpretation of this policy and associated mapping will have an important influence on the environmental effects of planting and management proposals.

1.23 Several iterations were produced and are assessed in Chapter 5: Assessment of Environmental Effects of this report. The finalised option is illustrated in .

1.24 The SCFWS highlights two types of woodland (i.e. native woodland and mixed woodland) as the most appropriate types of woodland for expansion in Stirling and Clackmannanshire from four

potential woodland types (i.e. native woodland, mixed woodland, softwood forests and energy forests).

1.25 Furthermore and in order to give a local geographic context, these two woodland types have been mapped against the 33 details Landscape Types found within Stirling and Clackmannanshire. This enables a more detailed appreciation of how much new woodland may be appropriate in the region, and where expansion could occur without significant adverse effects on the environment.

2 Relationship with Other Plans, Programmes, & Strategies (PPS) and Environmental Protection Objectives

2.1 A review of relevant plans, programmes and strategies (PPS) has been undertaken to assist in identifying the pertinent environmental issues in the area. Documents ranging from national policy through to local authority strategies and their associated environmental assessments have been reviewed. This chapter summarises the analysis of the plans, programmes and strategies relating to forestry and woodlands.

National Policy Context

Forestry

2.2 The national policy context for the Stirling & Clackmannanshire Forestry and Woodland Strategy is informed by the **Scottish Forestry Strategy** (SFS) (2006) which sets out Scottish Ministers' aspirations for Scotland's woodland resource, highlighting key themes, issues and policies for expansion and management. The SFS has set a target of increasing Scotland's woodland cover to 25% by the second half of the century. The SFS sets out a vision for Scotland's woodlands under the following seven themes:

- Helping Scotland mitigate and adapt to ***climate change***;
- Getting the most from Scotland's ***timber*** resource;
- Supporting sustainable economic growth through the ***business development*** of the Scottish woodland sector;
- Supporting ***community development*** to improve quality of life and wellbeing;
- Improving ***access*** to woodlands, to help improve the ***health*** of Scotland;
- Protecting the ***environmental quality*** of our natural resources;
- Helping to conserve and enhance Scotland's ***biodiversity***.

2.3 Recent policy developments build upon the SFS and consider the actions that needs to follow if the vision is to be achieved, notably the:

- Scottish Government's **Rationale for Woodland Expansion** which lays out the Scottish Government's thinking on how woodland expansion can best increase the delivery of public benefits from Scotland's land.
- Scottish Government's **Policy on Control of Woodland Removal** which seeks to facilitate the desired increase in woodland area by preventing avoidable woodland loss. It establishes the need for compensatory planting where development proposals or forestry work necessitates the loss of woodland.

2.4 Within the pan-regional policy context, the **Central Scotland Green Network (CSGN)** is a national development within the National Planning Framework, encompassing 19 local authorities across Central Scotland, which aims to change the face of Central Scotland by restoring and improving the rural and urban landscape of the area. The CSGN will be a strategic network of woodland and other habitats, active travel routes, greenspace links, watercourses and waterways, providing an enhanced setting for development and other land uses and improved opportunities for outdoor recreation and cultural activity.

2.5 Any recommendations made within the Strategy for forest management, forest operations and woodland creation would also fall within the scope of existing Best Practices and Guidance; in particular, **the UK Forestry Standard** and associated Guidelines, and the **UK Woodland Assurance Standard**. As such, the approval and subsequent monitoring of any Scottish Government-funded woodland proposals highlighted in, or developed as a result of, the Stirling & Clackmannanshire Forestry and Woodland Strategy would primarily be the responsibility of Forestry Commission Scotland who would ensure any actions were compatible or consistent with the relevant local, regional or national targets, criteria and best practice guidelines.

Planning

2.6 **Section 159 of The Town and Country Planning (Scotland) Act 1997**, as amended, places a duty on planning authorities to ensure that, whenever appropriate, planning permissions make adequate provision for the preservation or planting of trees.

2.7 The **National Planning Framework** (NFP2) reiterates the objectives of the SFS and the need to proactively plan for woodland expansion and confirms the protection that should be afforded to existing woodland.

2.8 **Paragraph 146 of Scottish Planning Policy** requires the protection of key woodland resources, including ancient and semi-natural woodland and other native and long-established woodlands.

2.9 The **Scotland Rural Development Programme (SRDP) 2007-2013** sets out the programme of economic, environmental and social measures that will be used to develop rural Scotland over the programme period. Its aims are to increase competitiveness in agriculture and forestry, improve the environment and the countryside and enhance the quality of life in rural areas.

Forestry and Planning

2.10 **'The Right Tree in the Right Place – Planning for Forestry and Woodlands' (2010)** identifies forestry and woodland strategies as a suitable topic for supplementary guidance to a new generation of development plans.

2.11 **'Getting the Best from our Land': A Land Use Strategy for Scotland** sets the strategic framework for bringing together proposals for optimising the potential of Scotland's land resources.

2.12 It establishes the vision and objectives for land-based economic activity in Scotland and sets out 10 'principles for sustainable land use', which should be taken into account in the development of the Forestry and Woodland Strategy. These are:

- Opportunities for land use to deliver multiple benefits should be encouraged.
- Regulation should continue to protect essential public interests whilst placing as light a burden on business as is consistent with achieving its purpose. Incentives should be efficient and cost-effective.
- Where land is highly suitable for a primary use (for example food production, flood management, water catchment management and carbon storage) this value should be recognised in decision-making.
- Land use decisions should be informed by an understanding of the functioning of the ecosystems which the affect in order to maintain the benefits the ecosystem services they provide.
- Landscape change should be managed positively and sympathetically, considering the implications of change at a scale appropriate to the landscape in question, given that all Scotland's landscapes are important to our sense of identity and to our individual and social wellbeing.
- Land-use decisions should be informed by an understanding of the opportunities and threats brought about by the changing climate. Greenhouse gas emissions associated with land use should be reduced and land should continue to contribute to delivering climate change adaptation and mitigation objectives.

- Where land has ceased to fulfil a useful function because it is derelict or vacant, this represents a significant loss of economic potential and amenity for the community concerned. It should be a priority to examine options for restoring all such land to economic, social or environmentally productive uses.
- Outdoor recreation opportunities and public access to land should be encouraged, along with the provision of accessible green space close to where people live, given their importance to health and well-being.
- People should have opportunities to contribute to debates and decisions about land use and management decisions which affect their lives and their future.
- Opportunities to broaden our understanding of the links between land use and daily living should be encouraged.

Climate Change

2.13 The **Climate Change (Scotland) Act 2009** establishes the legal framework for emissions reductions by 2050. While the SCFWS can play only a very limited role in achieving these targets, it is important to acknowledge the reliance of the forestry sector – in common with all land-based industries – on the use of fossil fuels. Of particular importance are issues of improving the sustainability of timber transport and forest operations reliant on the use of heavy machinery.

2.14 The aim of the Scottish Government's **Climate Change Adaptation Framework (2009)** is to lead planned adaptation across all sectors to increase the resilience of Scotland's communities and the natural and economic systems upon which they depend, to the impacts of climate change. There are three key pillars of the Framework:

- Improve understanding of the consequences of climate change and challenges and opportunities presented;
- Equip stakeholders with skills and tools for adaptation;
- Integrate adaptation into wider regeneration and public policy to help address climate change.

2.15 The **Forestry Commission Scotland Climate Change Action Plan 2009-2011** examines the FSC's strategy to increase the contribution and response of Scottish forestry to the challenges of climate change. The following is a summary of the Plan's actions:

- Protect and manage existing forests through sustainable management, conserve carbon stocks and minimise removal;
- Create new woodland to capture carbon, produce wood and help adaptation;
- Promote use of sustainably produced wood for energy and construction;
- Reduce the forestry sector's carbon footprint;
- Raise awareness and understanding of climate change and how forestry can make a positive contribution; and
- Measure progress.

Ecosystem Services

2.16 The **Flood Risk Management (Scotland) Act 2009** places a duty on responsible authorities (including local authorities and Scottish Water) to manage flooding in a sustainable manner and ensure the adoption of consistent principles and practices.

2.17 The **River Basin Management Plan for the Scotland River Basin District 2009-2015** provides detailed information on the environmental quality of rivers, lochs and seas and sets out what needs to be achieved for all water bodies in the area to reach good ecological status. **Area Management Plans** have been prepared as supplementary documents to the River Basin Management Plan for the Scotland River Basin District 2009-2011, of which the Forth Area Management Plan is relevant to Stirling and Clackmannanshire.

2.18 The **Scottish Soil Framework 2009** aims to raise awareness of the services soils provide to society and the pressures they encounter. Scotland's soil resource is in generally good health, but is under pressure from soil carbon loss and the effects of climate change. Ensuring forestry planning and practice protects key soil carbon resources and maximises woodland's potential to lock up carbon in soils is a key aspect of the SCFWS.

Local Policy Context

2.19 At the local level the Stirling & Clackmannanshire Forestry and Woodland Strategy is informed by both existing local authority development plans and by the views and aspirations of Stirling and Clackmannanshire residents, communities and other stakeholders, together with those policies listed in **Appendix 1: Relationship to Other Plans, Programmes & Strategies**.

3 Relevant Aspects of the Current State of the Environment

Baseline information

3.1 In line with the guidance set out in PAN 1/2010[1] the baseline information prepared for the SEA of the Stirling and Clackmannanshire Forestry & Woodland Strategy presents information relevant to the development of the FWS at a suitable level of detail. A summary of the main issues in relation to the SEA topics is provided below.

Air

3.2 Part IV of the Environment Act (1995) places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. Nitrogen dioxide emissions for Stirling and Clackmannanshire are currently below the concentrations identified as air quality objectives for Scotland by 2011. PM_{10}s are emitted through combustion, with road traffic a main contributor to this problem. Monitoring within Stirling and Clackmannanshire has identified that PM_{10} levels have not exceeded air quality objectives for Scotland in 2011. Neither Clackmannanshire Council nor Stirling Council has a declared Air Quality Management Area.

Biodiversity

3.3 Stirling and Clackmannanshire have a number of sites designated for their ecological or landscape value (see Figure 3.1 Designated natural heritage sites)

3.4 Stirling's natural environment includes some of the largest lowland raised bog habitats in the UK focussed on Flanders Moss, upland habitats, botanical resources north and west of Killin, and significant areas of ancient and semi-natural woodland.

3.5 Clackmannanshire's natural environment contains a number of UK priority habitats, including lowland mixed deciduous woodland, upland mixed ashwood, upland oakwood, wet woodland and wood pasture.

3.6 Large parts of the Firth of Forth are internationally designated as a 'Ramsar' site and a 'Special Protection Area' (SPA) because of its value for overwintering bird populations. Eight areas have international designations as 'Special Areas of Conservation' (SAC) including the River Tay and River Teith. A further 51 sites are nationally designated as 'Sites of Special Scientific Interest' (SSSI) including Ben Heasgarnich, Meall na Samhna, Meall Ghaordie, Glen Lochay Woods, Balglass Corries and Craig Leith & Myreton Hill.

3.7 In addition to the Gartmorn Dam Local Nature Reserve and Country Park, there are also 21 'Local Nature Conservation Sites'. These include wooded areas such as Blackmuir Wood, Braehead Woodlands, Brandyhill Wood, Cowpark Wood, Pond Wood, Red Carr Wood, Devon Gorge Woodlands, Silver Glen & Woodland Park, Twenty-five Acre Wood and Auchlinksy Burn & Wood.

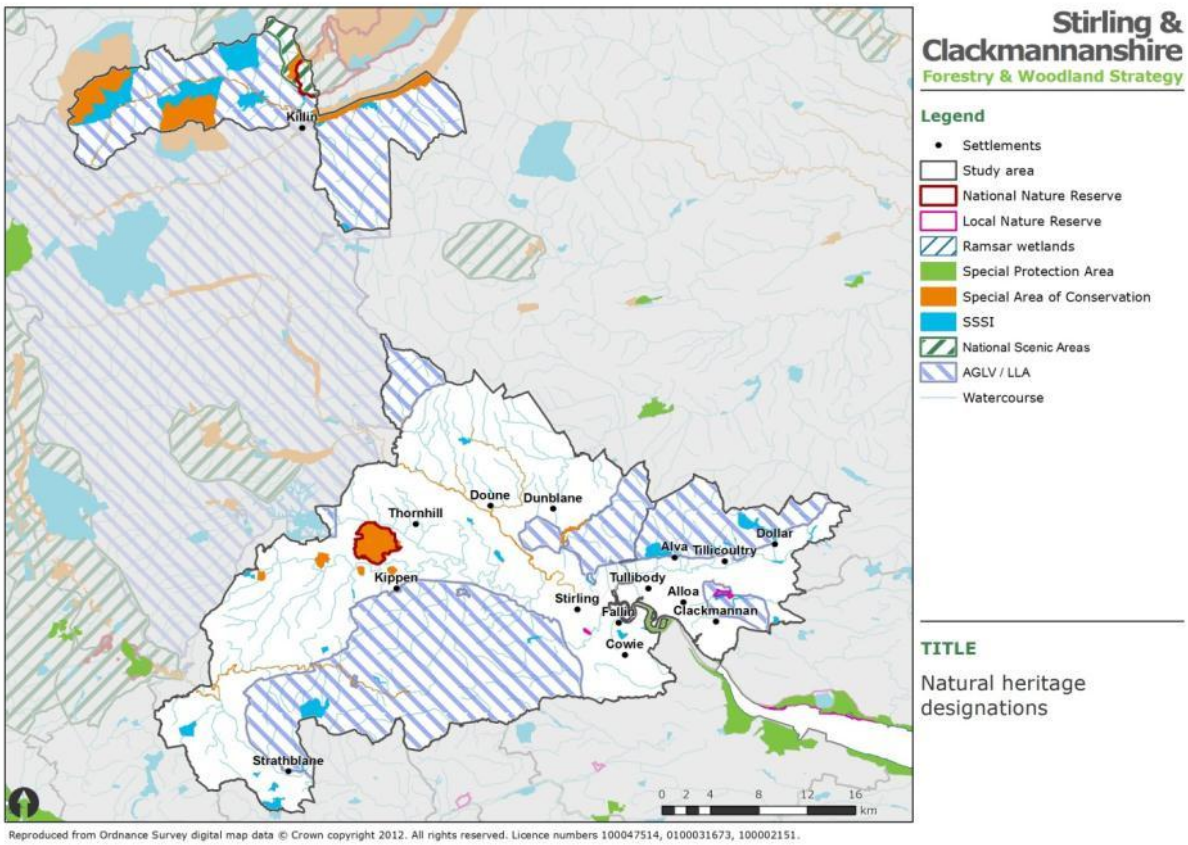
[1] Planning Advice Note 1/2010: Strategic Environmental Assessment of Development Plans

Table 3.1 Natura 2000 designations in Stirling & Clackmannanshire

Designation	Number	Name	Key Interests	Current status
Special Protection Area	1	Firth of Forth	Over winter the area supports 95000 waterfowl.	Pink-footed goose; lapwing[2] - favourable
Special Area of Conservation	8	Ben Heasgarnich	Upland calcareous grassland; base-rich fen; montane vegetation	Generally unfavourable
		Ben Lawers	Blanket bog; upland calcareous grassland; dry heath; base-rich fen; montane habitats; open water	Generally unfavourable (open water, high altitude flushes and rock vegetation communities favourable)
		Endrick Water	Atlantic salmon; brook lamprey; river lamprey	Salmon – unfavourable, recovering Lamprey - favourable
		Flanders Mosses	Degraded raised bog; Active raised bog	Degraded bog – unfavourable, recovering; Active – unfavourable, declining
		Kippenrait Glen	Mixed woodland	Unfavourable
		Meall na Samhna	Calcareous grassland; montane habitats; willow scrub	Generally unfavourable (rock vegetation favourable)
		River Tay	River lamprey; brook lamprey; sea lamprey; Atlantic salmon; otter; open water	All favourable
		River Teith	River lamprey; brook lamprey; sea lamprey; Atlantic salmon	Favourable (salmon – unfavourable recovering)
Ramsar Wetland	1	Firth of Forth	Important for a number of wintering waders and waterfowl.	As Firth of Forth SPA

[2] Selected as main species that could be affected by woodland expansion in foraging areas

Figure 3.1 Designated natural heritage sites



Climate Change

3.8 The **UK Climate Projections 2009** for the East of Scotland provides an overview of potential climate changes.

Table 3.2 UK climate projections 2009

	2020s		2050s		2080s	
	Medium	High	Medium	High	Medium	High
Summer average temperature	+1.4°C	+1.4°C	+2.3°C	+2.7°C	+3.5°C	+4.3°C
Winter average temperature	+1.1°C	+1.1°C	+1.7°C	+1.8°C	+2.2°C	+2.6°C
Summer precipitation	-6%	-4%	-13%	-13%	-17%	-21%
Winter precipitation	+4%	+3%	+10%	+10%	+12%	+19%

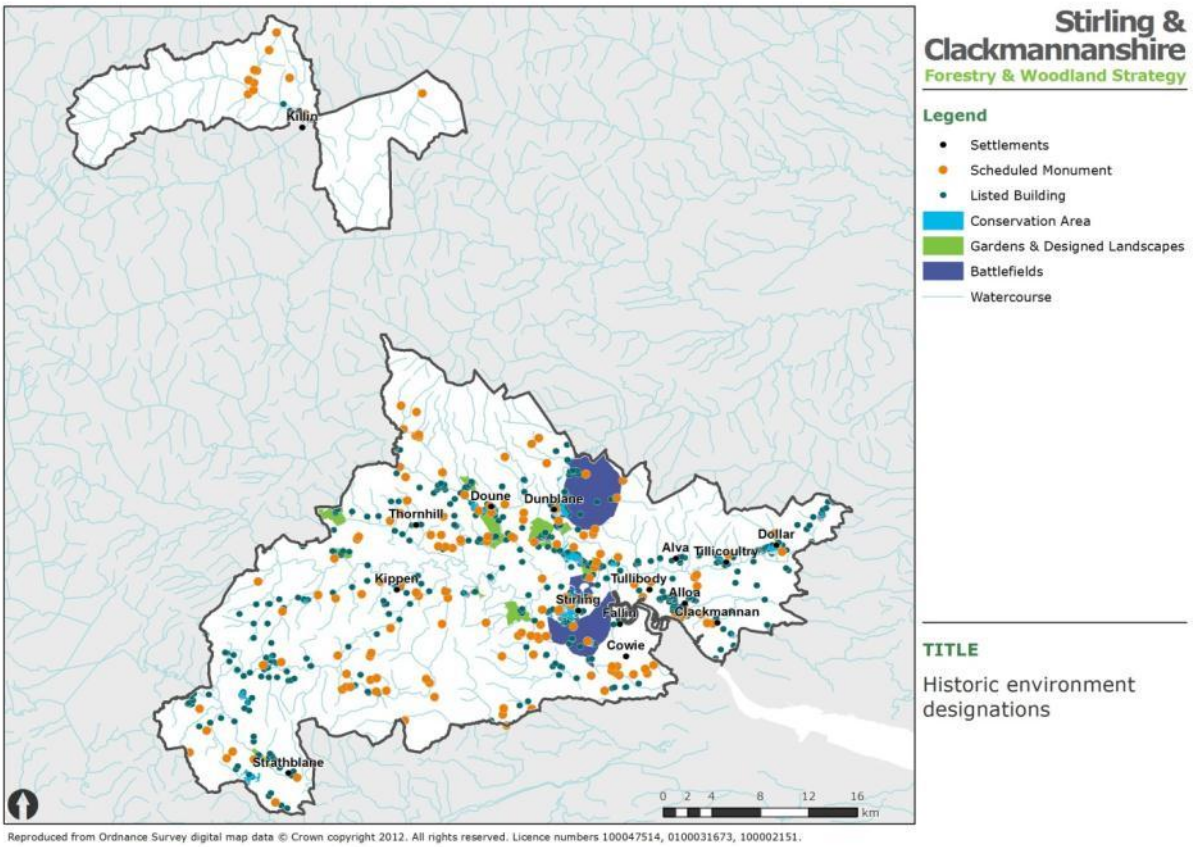
3.9 The main changes of importance to Stirling and Clackmannanshire include an overall rise in temperature, a decrease in summer rainfall and an increase in winter rainfall. Nationally, the increased temperatures and changes in rainfall are being associated with risks of flooding, water shortage, rising sea levels and increased risk of diseases.

Cultural Heritage

3.10 Both Stirling and Clackmannanshire have a rich cultural heritage with a large number of Listed Buildings, Conservation Areas, Scheduled Monuments, Gardens and Designed Landscapes, and

archaeological sites (see Figure 3.2 Historic environment designations). The area has a wealth of archaeological sites and features including 163 Scheduled Ancient Monuments. There are 1,875 Listed Buildings in the area with 106 Category A listed buildings, 875 Category B listed buildings and 894 Category C(S) listed buildings. There are three large inventory battlefields in the area, namely Bannockburn, Sheriffmuir, and Stirling Bridge. Fourteen sites are identified within the Inventory of Gardens and Designed Landscapes lie within the study area including Blair Drummond and Castle Campbell designated landscapes. Furthermore, there are 35 Conservation Areas within the area.

Figure 3.2 Historic environment designations



Landscape and townscape

3.11 Stirling & Clackmannanshire's woodland and forest cover currently extends to some 17,133 hectares or 17% of total land area. This compares favourably with Scotland's 17% woodland cover as a whole.

3.12 The area supports a wide range of tree species and contains a mosaic of different forest and woodlands types including large-scale coniferous plantations (for example the Carron Valley Forest, Lennieston Muir and Braes of Doune), mixed traditional estate woodlands (for example Cromlix, Blairdrummond and Harviestoun) and small-scale mixed lowland farm woodlands, ancient woodland/long established plantation origin sites (including Abbey Craig, Cambusbarron and Devonside) and urban woods (for example Gean Park, Callendar Woods).

3.13 Landscape Character Assessments have identified thirteen landscape character types within the study area: valleys and floodplains of the lowlands; high, rolling rounded hills; highland straths; highland and island glens; inland lochs; urban; lowland hill margins and fringes; lowland hills; lowland river valleys; undulating farmlands, hills and valleys; lowland valley fringes; upland hills and moorlands; and fragmentary character types (see **Error! Reference source not found.**).

3.14 Clackmannanshire is distinguished by the contrast between the high ground of the Ochil Hills and the flat carselands of the Devon and Forth Valleys. On the highest ground of the upper plateau-like surfaces of the Ochills, poor drainage has resulted in the formation of blanket bogs. In

general, the land cover of Clackmannanshire is predominately agricultural with arable land the most common type. The remainder of the agricultural land consists of rough grassland, and improved grassland. Areas of arable land generally correspond with the fertile soils of the Carse of Forth. Rough grassland dominates the hill land of the Ochills, with small percentages of coniferous and broadleaved woodlands. The district has, as a whole, a high percentage of urban and rural development compared to the national averages. The principal areas of Green Belt in Clackmannanshire are between Alloa and Clackmannan, Tullibody and along the Hillfoots.

3.15 Stirling Council covers a large area extending from the densely populated Central Belt to the foothills of the Grampian Mountains. The south eastern part of the area is characterised by flat arable farmland and contains the internationally important lowland raised bogs of Flanders Moss, and encompasses the Teith and Forth Valleys. The eastern border of the area is marked by the Ochil Hills. The southern boundary of the study area is marked by the Campsie Hills and Kilsyth Hills with the area characterised by the lowland river valleys of the River Carron and Ettrick Water. Northern Stirling has a relatively complex upland terrain including several lochs (Loch Earn, and Loch Tay), forests and Munros. The principal areas of Green Belt are within the Carron Valley Forest, and along the River Lockay, River Teith and River Forth.

3.16 In Clackmannanshire, two AGLVs extend across the Ochil Hills and in the area surrounding the Black Devon River. In Stirling, three AGLVs encompass the Campsie Fells, Breadalbane and the western edge of the Ochil Hills.

Figure 3.3: detailed landscape classification

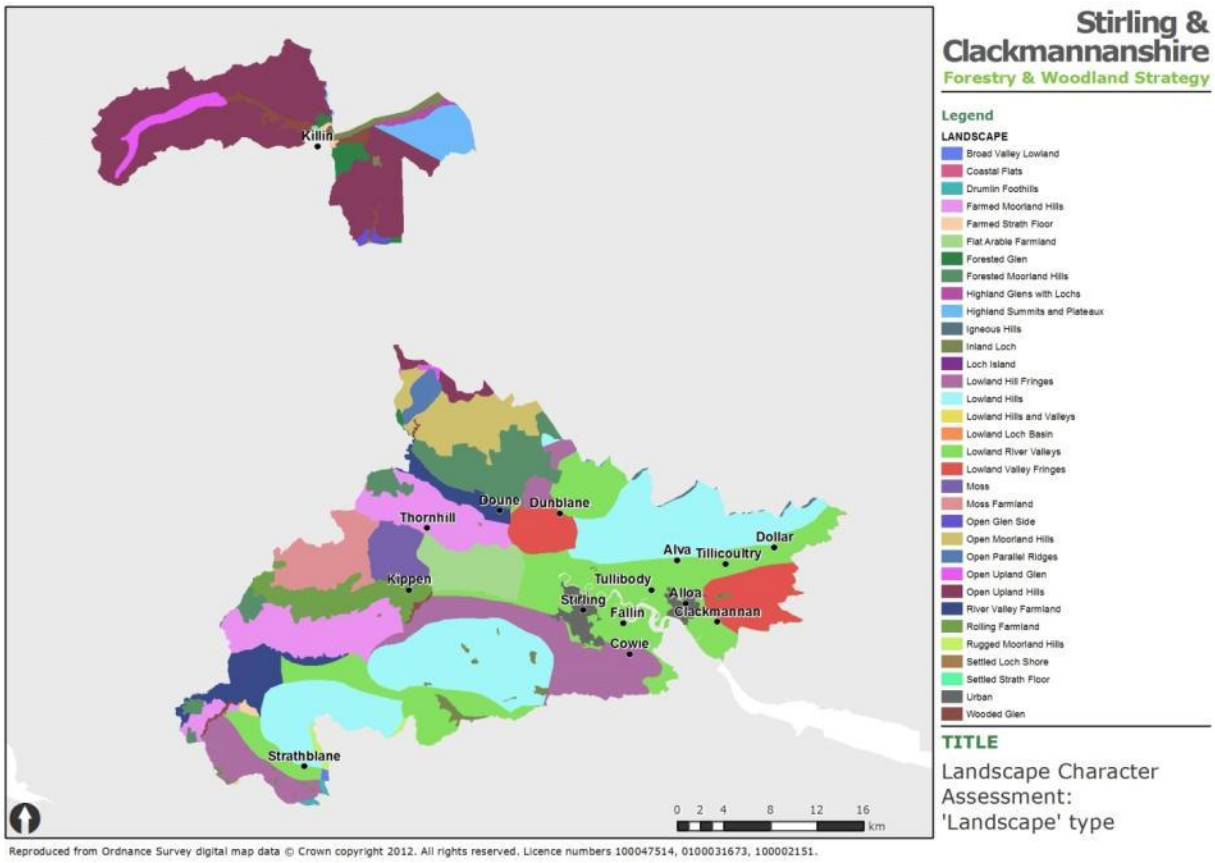
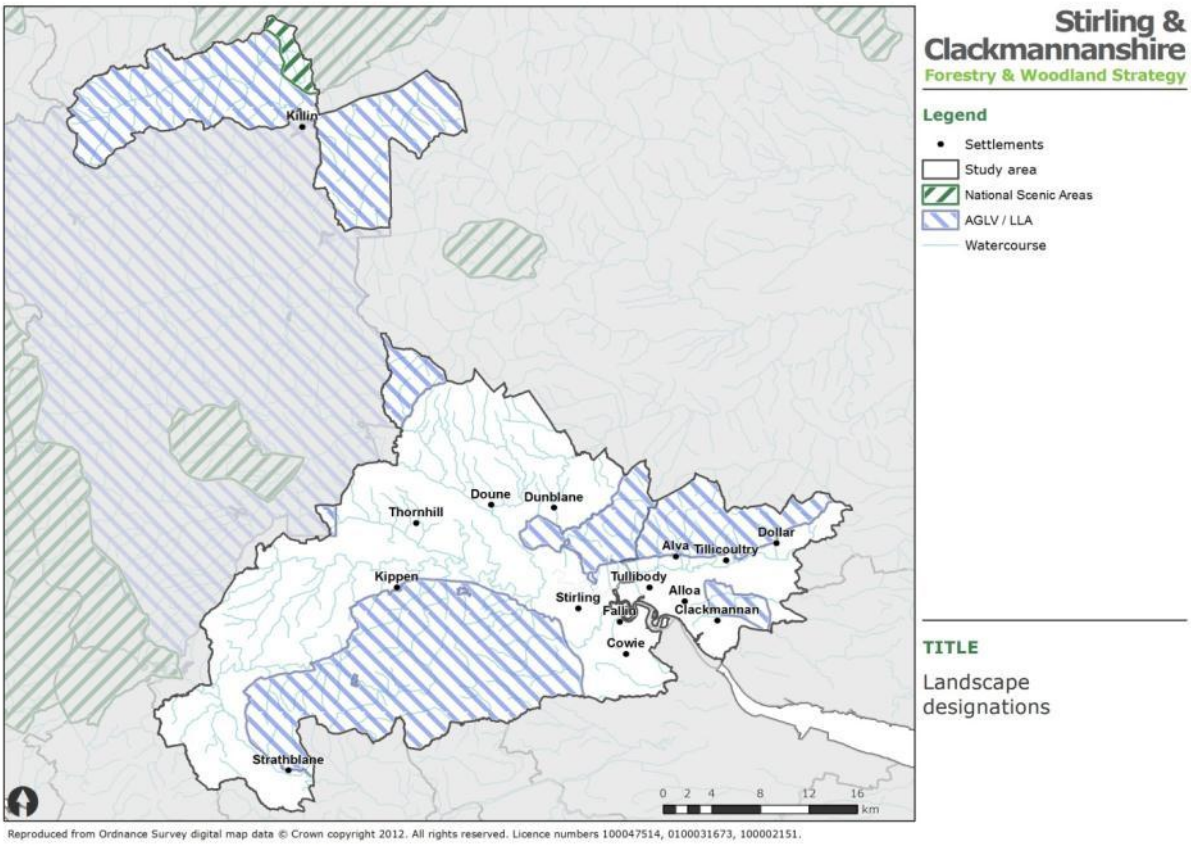


Figure 3.4 Landscape designations



Material Assets

3.17 Clackmannanshire contains a range of minerals, including sand & gravel, silica, hard rock resources and other secondary aggregates as described in *The Scottish Government (2008) A Guide to Minerals Information in the Central Belt of Scotland*. Shallow coal reserves that may be suitable for opencast working are found across much of Clackmannanshire. There are no landfill sites within the Clackmannanshire area licensed to accept non-inert waste. A major new facility has planning permission at Muirpark, Tullibody which will provide sufficient inert capacity to serve the area for a number of years. A waste transfer facility is located in Stirling which bulks waste for transport to the landfill site at Polmont, Falkirk.

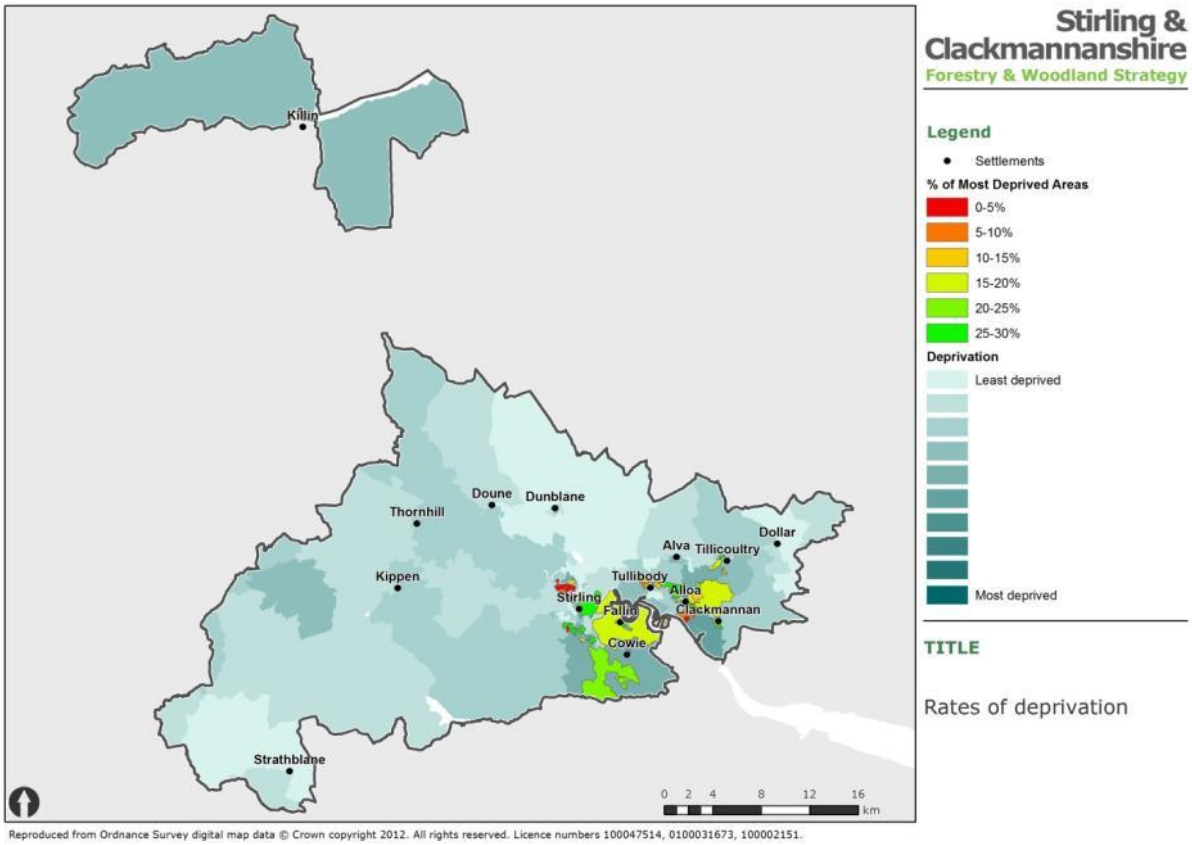
Population and Human Health

3.18 The **Scottish Public Health Observatory (ScotPHO) Health and Wellbeing Profiles 2010** provide statistics and highlight key issues/trends in population, education, health, and housing, in Scotland (see Figure 3.5 Rates of social deprivation).

3.19 Clackmannanshire has slightly lower than Scotland average levels of employment. There is a higher than average percentage of adults claiming incapacity benefit or severe disability allowance. Although there is no divergence from the Scotland average for all indicators in the ill health and injury domain, expected years of life in good health are significantly worse than the Scotland averages for men and women. Clackmannanshire also has a significantly worse than average percentage of people living in the 15% most deprived areas of Scotland. The areas most affected are Alloa and Tullibody.

3.20 Stirling has significantly better than the Scotland average for male and female life expectancies. The percentage of adults claiming incapacity benefit or severe disability allowance is significantly better (lower) than average. Just over 8.0% of households are in extreme fuel poverty (Scotland 7.5%). Stirling is significantly better than, or not significantly different to, Scotland on all of the education and economy related indicators. The percentage of the population living in the 15% most deprived areas is significantly worse than average with Raploch and Borestone the most affected areas.

Figure 3.5 Rates of social deprivation



Soil

3.21 The 2011 **Scottish Vacant and Derelict Land Survey** (SVDLS) is an annual survey undertaken to establish the extent of vacant and derelict land in Scotland. The total area of derelict and urban vacant land in Clackmannanshire has decreased to 29ha (17 sites) in 2011. This represents a 13% reduction in the period 2005-2011. In Stirling this figure is significantly higher at 170ha (50 sites), although this also represents a decrease of 10% in vacant and derelict land during the same survey period.

3.22 Prime agricultural land is recognised as a valuable and non-renewable resource to support food production within Scotland. Prime quality agricultural land within Stirling is principally located along the River Teith with small sections in the surrounding areas of Cowie. The prime agricultural land in Clackmannanshire is primarily situated along the River Devon and the Black Devon.

3.23 In general, the peat soils/blanket bogs are located in the steeper slopes of the Ochil Hills, Campsie Fells and along the Glen Artney, with a combination of blanket bog and industrial peat in the Flanders Moss area.

Water

3.24 The **River Basin Management Plan for the Scotland River Basin District 2009-2015** provides detailed information on the environmental quality of rivers, lochs and seas. The following information has been derived from its supplementary plan, namely the Forth Area Management Plan (AMP) 2009-2015.

- Clackmannanshire's groundwater classification is good to poor. The groundwater status in Stirling is predominately good with poorer quality around the River Earn and the Forth Estuary.

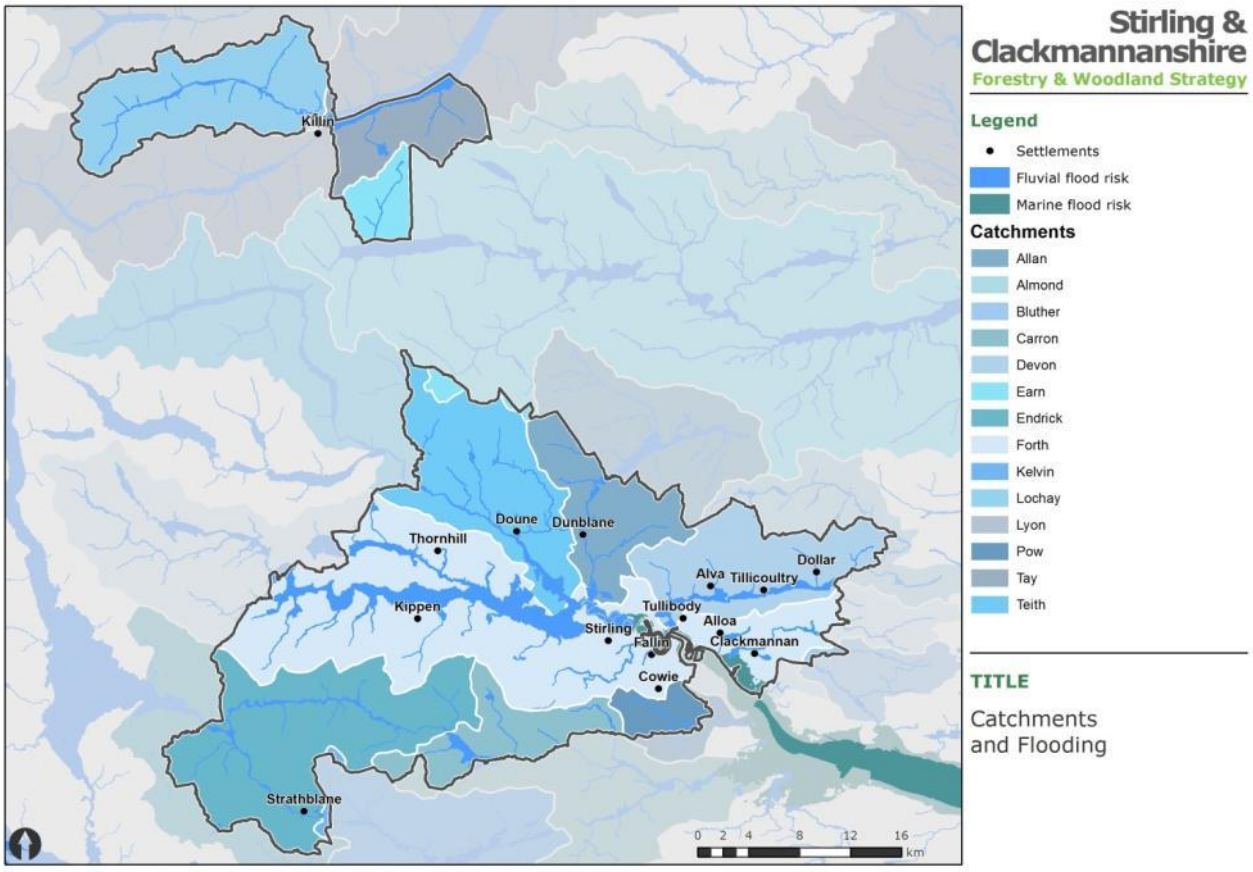
- Clackmannanshire is classified as having poor ecological potential particularly at the Forth Estuary and at the Gartmorn Dam, which is the largest area of open water in the area.

This is due to a number of issues including flood banks, diffuse pollution and significant domestic and industrial discharges. The ecological status of surface water in Stirling is predominately poor, particularly along the River Carron and the River Lochay.

- The status of surface water in Clackmannanshire is predominately moderate with the exception of the River Devon which is classified as poor. Across the Stirling area the surface water is mostly moderate with the exception of the River Teith which has a 'bad' classification.

- The SEPA Flood Risk Map (2010) for Scotland identifies areas at potential risk of flooding from rivers and the sea. This does not take into account all flood defences which may be in place, however it provides an indication of areas at risk. Low lying areas adjacent to the River Forth are potentially at risk from flooding, particularly in towns located near the estuary. There is also flood risk associated with the course of the River Devon and the River Teith. The coastline is also at risk of flooding from the sea (see Figure 3.6 Water catchments & flood risk)

Figure 3.6 Water catchments & flood risk



Environmental Issues

3.25 Environmental problems that affect the PPS were identified through an analysis of the baseline data. Relevant environmental problems are summarised in Table 3.3 below.

Table 3.3 Summary of environmental issues

	Environmental Issue	Supporting Data	Implications for SCFWS
Biodiversity	Habitat fragmentation through inappropriate forestry or development activity	*Integrated Habitat Network*	Forestry and woodland planting can contribute positively to supporting the forest habitat network.
	Spread of invasive species through enhanced habitat networks	*Scottish Biodiversity Forum Plantlife*	The FWS should include reference to invasive species and stress the importance of site based management activities to prevent further spread of in appropriate species.
	Potential reduction in opportunities for species movement and migration as a result of climate change.	*Monarch Study* *SNH*	The migration and adaptation of species to climate change should be incorporated into the design of the FWS through developing connectivity principles for woodland habitats and through specifying appropriate site management activities.
	A possible loss of core areas of biodiversity significance through inappropriate forestry operations or infrastructure development activity	*Phase 1 Habitat Survey data* *The Wildlife Information Centre – records* *LBAP monitoring*	The role of core areas of high biodiversity should be considered as an integral component of the FWS and used as the basis for linkage through new and existing habitat networks.
	Negative impact upon Natura 2000 sites	*SNH sitelink website*	Forestry and woodland planting in close proximity to Natura 2000 sites could affect the condition of the qualifying features, particularly through water quality and hydrological impacts and potential loss of foraging areas for overwintering wildfowl and waders. In their Scoping Response, SNH requested that a Habitats Regulations Appraisal screening process was required for the FWS. Subsequently, agreement was reached between SNH and the project steering group that HRA was not required.
Climate Change	Requirement for increased action for carbon sequestration and emissions reduction	*Scottish Government statistics on greenhouse gas emissions*	The FWS should promote mechanisms to increase % tree cover across the Region to help mitigate climate change and assist achievement of Scotland's $C0^2$ emissions targets.

Population & Human Health	Low levels of health and well being	*ScotPHO Health and Wellbeing Profiles 2010*	The FWS should target appropriate woodland creation and woodland access improvements in areas where health and community need is greatest and current provision is weak. The FWS can contribute to community and health benefits by supporting the Central Scotland Green Network objectives to encourage active travel and recreation.
Soil	High levels of vacant and derelict land, and areas of contamination	*Scottish Government (2010) The Scottish Vacant and Derelict Land Survey 2010.*	Forestry and woodland planting can play a role in the restoration of vacant and derelict land by seeking to re-use these sites for a range of woodland/green network purposes.
	Areas at risk of soil erosion or with poor soil quality as land cover	*Macaulay soil survey data*	The FWS can target areas at risk of soil erosion or with poor soil quality as land cover by woodland shelters protects soils from wind and rain thus reducing erosion. Forestry generally has lower chemical inputs and lower soil disturbance than intensive agriculture and can contribute to improving the quality and stability of the soil.
	Pressure on peatlands	*SNH windfarm map; Macaulay soil survey*	The FWS should steer woodland expansion away from deeper peat soils to avoid releasing CO_2 emissions to more suitable soil types.
Water	Risk of flooding particularly in low lying areas adjacent to the River Forth, River Devon and River Teith, and the coastline.	*SEPA monitoring*	The FWS should seek to promote: • Increasing percolation of rainwater into soil and reducing surface run-off. • Promote natural flood management as woodland can slow down and reduce run-off at a catchment scale and play a role within SUDS schemes.
	Poor water quality	*SEPA monitoring* *The River Basin Management Plan for the Scotland River Basin District 2009-2015*	Woodland and forestry planting can help to filter pollutants before they reach water courses and targeting woodland planting to areas with identified water quality issues can enhance overall water quality.
Air	Pollution and emissions resulting from the timber transportation and processing	*SEPA* *Scottish Government Statistics*	Planting should be directed to transport corridors to buffer the effect of emissions which can convey significant benefits in mitigating the effects of roads on nearby communities. Trees and woodland can also help intercept dust particles form industrial facilities and mineral workings, as well as providing visual screening and a barrier to noise. The FWS should seek to reduce the potential for unnecessary 'timber miles' and associated emissions by emphasising local processing and manufacture of timber products.

Cultural Heritage	Cultural heritage features are vulnerable to the cumulative effects of development, land use change and loss of viable use. Damage to archeology and the historic environment	*Historic Scotland* *Local heritage trusts* *Archaeology Scotland* *Local Authority Archaeologists*	The FWS should seek to conserve and enhance the cultural and built environment by: • Ensuring that woodland expansion safeguards the fabric and setting of heritage assets. • Contributing to the character and significance of important historic landscapes. • Ensure that any specific projects which arise as a result of the Forestry Strategy are screened for adverse impacts upon the historic environment.
Material assets	Loss of productive farmland	Macaulay Land Capability for Agriculture in Scotland	Woodland and forestry planting should be directed away from areas of most productive farmland.
Landsc	Landscape change due to minerals and windfarm development, and forestry and agricultural practices	*SNH windfarm map*	The FWS should conserve and enhance the character of the region's landscapes by steering woodland expansion proposals to appropriate locations and encouraging the use of woodland to root new development and existing settlements in the landscape.

Likely evolution of the environment without the Stirling and Clackmannanshire Forestry & Woodland Strategy

3.26 The logic of carrying out a Strategic Environmental Assessment is to understand the likely environmental effects of the implementation of the SCFWS. However, the Environmental Assessment (Scotland) Act 2005 also seeks examination of how the environment is likely to evolve without adoption and implementation of the strategy.

3.27 Without the Stirling and Clackmannanshire Forestry & Woodland Strategy, the evolution of the environment would take place within the context of the existing Stirling and Clackmannanshire Indicative Forestry Strategy Policy and Background Report, adopted in 2004, and the Scottish Forestry Strategy 2006.

3.28 The 2004 Indicative Forestry Strategy Policy and Background Report had several key omissions in terms of soil resources and air quality. Furthermore, forestry's role in relation to climate change adaptation is only narrowly referred to in terms of renewable energy production. Therefore, the role that forestry and woodlands play is somewhat narrow and the full benefits would not be exploited. Whilst the benefits of forestry and woodland planting would still occur, such as slope stabilisation, the full benefits and opportunities would not exploited to their full potential as new woodland would not be specifically targeted at areas that might benefit the most.

3.29 The Scottish Forestry Strategy provides a framework for strong support of the development of new woodlands, use of woodlands to deliver a range of social, health and educational benefits.

3.30 However, there would be little protection of soil resources from inappropriate planting, beyond the context of erosion and flooding. There would be limited protection of existing carbon resources such as standing timber and peat soils, resulting in potential carbon losses. There would be limited resilience planning in relation to climate change impacts, in relation to species choice in new planting and restructuring of existing woodlands. This would potentially result in greater losses of trees and woodlands as a result of climate change. There may be air quality impacts arising from timber transport, processing and tourism activity. Although some environmental enhancements would occur these would be quite limited and localised in extent. There would also

potentially be impacts on the historic environment as a result of new woodland planting and forest related tourism development.

3.31 The chief weakness of implementing the SFS at the regional level is the lack of strategic guidance as to the potential location of new woodland – provided by Map 6 'Potential for woodland expansion' in the SCFWS. This clearly highlights where significant sensitivities exist that must be considered in the development of woodland creation and management proposals. The ad hoc nature of woodland expansion that would be delivered using only the SFS is unlikely to have provided as balanced a suite of economic, social and environmental benefits as the Stirling and Clackmannanshire Forestry & Woodland Strategy.

4 SEA Methodology

Introduction

4.1 This Environmental Report has been prepared to present the findings of the Strategic Environmental Assessment conducted in parallel with the development of the Stirling and Clackmannanshire Forestry & Woodland Strategy.

4.2 This section of the report sets out the approach used in assessing the likely environmental effects generated by the vision, strategic themes and policy objectives of the SCFWS.

Assessment methods

Framework for assessing environmental effects

SEA objectives

4.3 Where appropriate, issues have been grouped to facilitate the assessment and sub-criteria have been edited to reflect the specific focus of the SCFWS. It is considered that the objectives selected adequately reflect the requirements of Schedule 3 of the Environmental Assessment (Scotland) Act 2005.

Table 4.1 SEA objectives

Schedule 3 Component	SEA Objectives	Sub-criteria for assessment
Biodiversity	To conserve and enhance the diversity of habitats and species	Expand habitat networks
		Conserve and enhance key habitats and species
Population & Human health	To avoid further blight in disadvantaged communities	Target woodland expansion in areas where benefits can be optimised
	To promote and develop Green Network thinking	Contribute to community and health benefits by promoting access, recreation and active travel using the green network
Soil	To avoid adverse direct and indirect impacts on soil stability, structure and quality	Where appropriate, seek to re-use VDL for a range of woodland / green network purposes
		Steer woodland expansion away from sensitive soil resources (i.e. peat) to minimise the potential for pollution and loss of soil carbon
		Safeguard prime agricultural land
Water	To protect and improve relevant waterbody status	Contribute to the delivery of River Basin Management Plans, Area Action Plans and flood management
		Continue to support sustainable water management
		Continue to protect groundwater dependant terrestrial ecosystems (GWDTEs) in accordance with the Water Framework Directive
Air	To protect and enhance air quality	Contribute to a reduction in air pollution
		Reduce the potential for unnecessary 'timber miles' and associated emissions
		Contribute to sustainable travel and transport

		objectives
Climatic factors	To reduce GHG emissions	Seek to minimise GHG emissions from the sector
		Seek to prevent new planting on peat soils to maintain carbon stores
	To support climate change mitigation	Support appropriate renewable energy development
		Safeguard the standing timber carbon resource
	To support climate change adaptation	Contribute to sustainable water management and erosion prevention
		Contribute to resilience planning objectives
Material assets	To support sufficient infrastructure development	Protect key mineral resources from sterilisation through inappropriate afforestation
		Contribute to the appropriate re-use of VDL
	To minimise waste	Promote the efficient operation of the sector and the safe treatment and disposal of non-reusable/recyclable arisings
		Seek to prevent new planting on peat soils
Cultural Heritage	To conserve and enhance the cultural and built environment	Seek to ensure that woodland expansion safeguards the fabric and setting of heritage assets
		Contribute to the character and significance of important historic landscapes
		Seek to promote responsible access to and appreciation of cultural heritage via the green network
Landscape	Conserve and enhance the character of the region's landscapes	Steer woodland expansion proposals to appropriate locations
		Support measures to promote good woodland design and appropriate diversity
		Encourage the use of woodland to root new development and existing settlements in the landscape
		Woodland expansion should reflect current and future capacity to accommodate change

Defining 'significance'

4.4 The strategic, regional focus of the SCFWS requires an environmental assessment with a similar scope. The SEA draws out environmental effects that are considered to be **regionally significant**.

4.5 The following factors are combined and used to identify the significance of effects:

- **Probability of effects** – greater likelihood of effects is likely to increase significance.
- **Frequency, duration and reversibility** – Will effects be limited to a single event? Will they be temporary or permanent?
- **Magnitude and spatial extent** – How large an area is likely to be affected? Will the effect comprise total loss or damage to a feature?
- **Sensitivity of receptors** – Does the area have recognised environmental value? Could effects contribute to existing environmental problems?

Assessing Different Parts of the SCFWS

4.6 Whilst the SEA Objectives provide a broad framework by which the effects of the SCFWS can be considered, different parts of the plan need to be assessed using different methods.

Thematic / objective-based assessment

4.7 The topics identified under each theme of the FWS (see Table 1.4 FWS themes, policy objectives and outcomes) have been assessed against the SEA objectives set out above. A 'traditional' matrix-based approach has been applied, with the results of the assessment presented as a discussion of regionally significant effects. Recommendations for changes to the FWS and desirable mitigation measures will be set out for each topic along with the alternative considered during the policy development process.

4.8 The following tables outline the framework for assessing environmental effects, and identifying proposed measures for preventing, reducing or offsetting significant adverse effects.

Table 4.2 Framework for assessing environmental effects

	SEA THEME:						
	SEA Objective • Sub-criteria for assessment						
	SCFWS Policy Objectives	Evaluation ++/+/0/?/-/--	Timeframe Short / medium / long	Duration Temporary / permanent	Commentary	Cumulative or Synergistic Effects	Mitigation/ Enhancement
SCFWS THEME	FWS Policy Objective 1						
	FWS Policy Objective 2						
	FWS Policy Objective 3						
	Etc...						

Table 4.3 Range of potential evaluation scores

Significant positive	Positive	Neutral	Unknown	Negative	Significant negative
++	+	0	?	-	--

4.9 A summary of the overall score for each SCFWS Policy Objective is also given. Recommendations for changes to the FWS and proposed measures for preventing, reducing or offsetting significant adverse effects have also been set out for each SEA Objective.

4.10 A discussion of the alternatives considered during the policy development process is also presented.

Map-based assessment

4.11 As the FWS will make a range of spatially-specific policy recommendations, an assessment method with a stronger spatial component is required. In setting a regional framework for lower-tier forestry policy, it is important to retain a focus on regionally significant effects. Using maps to represent the key spatial policies (for instance, the spatial framework and potential for woodland expansion) is more visually appealing and more accessible than lengthy descriptions or impenetrable matrices.

4.12 Spatial data outputs were compared against a series of GIS 'baseline' maps that bring together the key data for each SEA objective. For example, 'Biodiversity' mapping featured local, national and international designations, Integrated Habitat Network data, land cover data etc.

Assessment of Alternatives

Selection of Alternatives

4.13 Where viable alternatives have emerged during the development of the FWS, these have been recorded and assessed.

4.14 The Strategy has evolved significantly over subsequent iterations, involving major streamlining of the thematic content and substantial restructuring to provide a more integrated and accessible document. However, the core policy content – namely the indicative potential for expansion – has remained relatively constant, with only minor changes reflecting the availability of new spatial data. As this approach to categorising land and the associated mapping produced with it will be the key tools used by land managers to target woodland expansion – and will inform the decision-making of FCS and Stirling and Clackmannanshire planning authorities – it has the greatest scope to generate environmental impacts.

4.15 By contrast, the thematic content of the FWS has less potential for environmental effects in its own right as it will be applied through the filter of the mapping discussed above. Similarly, many of the 'policy objectives' identified stem from existing policy, guidance and strategy – frequently subject to SEA in their own right.

Scenario planning

4.16 It is difficult to assess the likely environmental effects of the FWS without undertaking high level analysis of the nature and scale of woodland expansion that could, in theory, occur in the region. This process was key to developing an understanding of the level of expansion that could reasonably be accommodated by the area, maintaining ambition and making a meaningful contribution to the Scottish Government's targets, while avoiding significant adverse effects on the environment.

4.17 Woodland cover in the region stands at a little under 17% of land area – equating to some 20,430ha of woodland.

4.18 These are as follows:

- 'Low' level expansion: increasing woodland cover to 19% of land area (2,063ha of additional woodland, representing a 10% increase on existing woodland cover)
- 'Moderate' expansion: increasing cover to 20% of land area (4,149ha of additional woodland, representing a 20% increase on existing woodland cover)
- 'High' levels of expansion: increasing cover to 23% of land area (7,922ha of additional woodland, representing a 38% increase on existing woodland cover)
- A scenario based on notional environmental capacity of each detailed landscape type, as illustrated in Figure 3.3, increasing woodland cover to 21% of land area (4,344ha of additional woodland, representing a 21% increase on existing woodland cover)

4.19 The scenarios were created using the GIS data developed to show the potential for woodland expansion (based on environmental constraints), and sub-divided by each of the detailed landscape types[3]. This process therefore provided a detailed breakdown of the areas of each class of land (i.e. 'preferred,' 'potential,' 'sensitive' etc.) in each landscape type. For scenarios 1-3, this data was then manipulated to affect a standard conversion of each land class to woodland. Scenario 4 applied a disaggregated approach to conversion rates in each zone, based on broad inferences as to landscape and environmental capacity for new woodland, and the likely nature and scale of appropriate woodland.

4.20 These calculations then generated:

- indicative cover figures for each zone;

[3] Originally, it was anticipated that a more generalised level of the Landscape Character dataset would be employed (e.g. 'Level 2' or 'Level 3' landscape types). However, on closer examination these proved to be both insufficiently detailed and somewhat at odds with the character of the area.

- overall regional cover;
- increase in woodland as a proportion of total land cover; and,
- indicative annual planting / regeneration rate required to achieve the headline cover figure

4.21 this figure will help to provide a contrast with current level of activity within the industry, and give an impression of the scale and rate of possible change

4.22 It should be noted that these figures do not represent a 'target' per se, but instead offer a means of understanding the potential contribution the region could make to meeting the Scottish Government target of 10,000ha of woodland creation per year.

4.23 The conclusions of this process are set out below, with a summary of the data presented in Appendix 3.