Glasgow and Clyde Valley Forestry and Woodland Strategy
ENVIRONMENTAL REPORT

Prepared for Glasgow and Clyde Valley Strategic Development Planning Authority
by
Land Use Consultants

June 2011

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SEA ENVIRONMENTAL REPORT – COVER NOTE

PART 1

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PART 2

An Environmental Report is attached for:

Glasgow and Clyde Valley Forestry and Woodland Strategy

The Responsible Authority is:

Glasgow and Clyde Valley Strategic Development Planning Authority

PART 3

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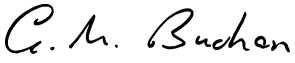
Signature	
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Background

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 Glasgow and Clyde Valley Forestry and Woodland Strategy (FWS). It sets out a summary of the SEA process, followed by an outline of the likely regionally-significant effects of the FWS. 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: first examining the high-level effects of the FWS' key themes, vision and objective; 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 FWS. The report is now being circulated for further comment and will inform the final review of the FWS on conclusion of the consultation period. As this is being conducted in parallel with the SEA consultation process for the Glasgow and Clyde Valley Proposed Development Plan, any key finding from this exercise with relevance to the FWS will also be taken into account.

Scope of the Environmental Report

The Environmental Report includes the following:

- Key facts about the FWS and an outline of its 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

- Proposed mitigation and monitoring measures

Main objectives of the GCV FWS

The Forestry and Woodland Strategy (FWS) was developed to support the **Glasgow and Clyde Valley Strategic Development Plan**. It is intended to guide woodland expansion and management, providing a policy and spatial framework to maximise the contribution of woodland and forestry to the people, economy and environment of the region.

The Strategy is divided into the following themes, with key objectives outlined under each. These are as follows:

To maximise the role of forests and woodlands in supporting the economy of Glasgow and the Clyde Valley. This will be achieved by:

- Contributing to an environment for investment
- Supporting a healthy timber production and processing sector

To maximise the role of forests and woodlands in improving quality of life for residents and visitors to Glasgow and the Clyde Valley. This will be achieved by:

- Improving local environments where it is needed most
- Involving and empowering communities

To maximise the role of forests and woodlands in addressing climate change and adapting to its impacts. This will be achieved by:

- Increasing climate change mitigation
- Supporting climate change adaptation

To maximise the role of forests and woodlands in contributing to the quality of the environment. This will be achieved by:

- Conserving and enhancing diverse species and habitats
- Creating better townscapes and landscapes
- Securing high environmental quality

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 FWS.

Biodiversity, flora and fauna

GCV contains a wide variety of habitats from the shoreline of the Clyde to the highest points in the Campsie Fells and the Southern Uplands. The area is ringed by

Regional Parks (Clyde Muirshiel and the Pentland Hills), National Park (Loch Lomond and Trossachs) a proposed Regional Park (the Campsies) and an extensive Regional Scenic Area (Southern Uplands), all of which provide important wildlife habitats. The Clyde Valley Woodlands are part of an EU LIFE project to maintain their value for biodiversity. The Slamannan Plateau is one of only two wintering grounds for Bean Geese in the UK. There are several Sites of Special Scientific Interest in the GCV area, as well as other local nature reserves, wildlife sites, and sites designated as Sites of Importance for Nature Conservation.

Glasgow and the Clyde Valley encompasses coastal, lowland, mid-altitude and upland landscapes which are predominately cultivated or affected by human activities and contain significant urban developments. The area supports a broad range of natural heritage interests, fundamentally reflecting climatic, topographical, geological and altitudinal variations, but variously altered by past land-use.

The nature conservation interest of the area is widespread and a number of general habitat or more specialist surveys have identified a whole range of habitats, vegetation communities or species of interest. This wide range covers remnant semi-natural habitats to more recently formed habitats, and occurs on the upland, lowland and even densely populated urban areas. Habitats of particular nature conservation interest and importance in the Clyde Valley area are the valley or gorge woodlands, a number of bog and mire communities, the upland fringe habitats, the Clyde estuary and the various lochs and floodplain haughs.

Population and human health

The GCV area has a well documented concentration of health inequalities. Poor health service provision can significantly affect a person's quality of life. The level of medical care in the more rural locations of the GCV region is understandably limited. There are urban locations which suffer from high levels of deprivation and subsequently have a greater propensity for poor general health, creating a greater need for medical attention. The likelihood is that these inequalities will continue and current health provision will not address the present and future health problems.

Soil

The industrial legacy of the GCV area means that there are a significant number of locations that contain potential or definite contamination. This has meant pollution of soil on many of these sites, resulting loss of ground water resources with associated potential impacts on public health.

The region also has a large resource of peat soils, occurring largely as blanket bog in the upland areas with remnant lowland raised bogs around the Slammanan plateau. Peat soils are major carbon stores and are particularly sensitive to inappropriate woodland expansion.

Water

GCV has a complex water environment, ranging from the upland catchments of the Clyde, the White and Black Cart Waters, the Avon and the Gryfe to heavily-

modified natural lochs (such as Castle Semple Loch), man-made reservoirs and the Clyde estuary. Many of the major rivers flow through settlement, creating significant flooding problems and generating a range of adverse effects on communities. Equally, the riparian habitats of the upper Clyde valley are internationally important habitats and river corridors are major resources for recreation.

The region's industrial heritage and dense population centres have also created issues in maintaining good water quality. Contamination from development and runoff from hard surfaces can both result in pollution although spatial planning can help reduce this risk by directing development to areas where there is less risk of contamination and away from the most sensitive locations such as aquifers.

Air and climate

Air pollution can adversely affect human health, quality of life and biodiversity. Targets set by the UK Air Quality Strategy have generally been met, including in relation to PM10, NO_2 and SO_2. Record levels of ozone depletion were recorded over Scotland in 2005, with a 5% decline in stratospheric ozone recorded over the last 20 years.

Air pollutant concentrations vary due to climate and geography[1]. The more densely populated Central Belt has the highest concentrations of poor air quality. Air Quality Management Areas (AQMA) have been declared in East Dunbartonshire, Glasgow, North Lanarkshire and Renfrewshire.

The GCV region is expected to experience increasing impacts of climate change as the decades go on. This could potentially include greater levels of rainfall and increased incidences of flooding, rising sea levels affecting coastal areas/river basins and an accentuation of a range of potential natural hazards i.e. landslides etc. Flooding is expected to be more frequent, particularly within existing flood plains, river basins and on coastal areas. In current development plans, flooding is likely to increasingly impact on land for development opportunities unless steps are taken to adapt to the changing circumstances.

In current development plans, efforts are being focused on reducing the GCV area's GHG emissions in line with the Scottish Government targets. It has so far proved difficult to take forward a coordinated approach to tackling GHG emissions at a city region level and there has been little co-ordination with other public and private bodies to address the issue. In the absence of a strategic approach there is likely to be limited reduction in the region's GHG emissions

Landscape

Glasgow and the Clyde Valley has an extremely diverse set of landscapes, ranging from the densely developed, historic metropolitan area to the relatively remote uplands and moors of the Southern Uplands and Clyde Muirshiel.

[1] SNH 2004 Natural Heritage Trends – Air Pollution

Forests, woodlands and trees make an important contribution to the character of landscapes across Glasgow and the Clyde Valley, particularly in the middle Clyde Valley and in the numerous historic gardens and designed landscapes of the region. Productive forestry is an important feature of many rural areas, particularly in plateau and upland areas where geometric blocks of even aged conifers often contrast with the apparent wildness of the surrounding area.

Historic environment

Glasgow and the Clyde Valley has a rich and varied cultural heritage, ranging from prehistoric settlements to the legacy of the region's industrial past.

The strong influence of the region's rivers, including the Clyde itself, provide a focus for a significant element of the region's heritage – creating communication routes and providing key resources from the earliest times.

Key sites include the Antonine Wall World Heritage Site – the last Roman frontier system to define the northern border of the Empire – which bisects the region; a range of designed landscapes and historic villages; and the historic core of Glasgow itself, which represents the legacy of 18th and 19th century mercantile and financial innovation.

Material assets

The region has a range of natural resources that have been extensively exploited throughout its history, most notably coal and associated minerals, but also including hard rock, sands and gravel.
Energy generation is an increasingly important factor, with Europe's two largest onshore wind farms located in the region. Increasing resource efficiency, reducing waste and promoting renewable energy are key aspects of the Strategic Development Plan, as is reusing vacant and derelict land.

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: framework for assessing environmental effects

Topic	Evaluation ++/+/?/0/-/--	Timeframe Short / medium / long	Duration Temporary / permanent	Commentary	Cumulative or synergistic effects	Mitigation / enhancement
Biodiversity						
Etc...						

The spatial content of the strategy was assessed against a baseline constraints map, comprising national designations, land capability and other key sensitivities.

Likely effects of the GC FWS

The FWS 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 are outlined in the table provided below.

SUMMARY OF REGIONALLY-SIGNIFICANT ENVIRONMENTAL EFFECTS			
SEA Topic	**Summary of positive effects**	**Summary of adverse effects**	**Mitigation and comments**
Biodiversity	· FWS will have a **strongly positive** effect in promoting and delivering high quality networks of native woodland habitat to reverse fragmentation and facilitate ecological adaptation to climate change · FWS includes suitable protection for designated sites (in both policy and spatial content), and prioritises reinforcing links between key assets · Restructuring existing productive forests is likely to have a positive effect on currently relatively low biodiversity values · Policies focused on enhancing and establishing green networks in degraded and urban areas will is likely to enhance biodiversity values in these areas and could contribute to improved public knowledge and appreciation of natural heritage · A strategic approach to succession planning and management of key woodland assets likely to be affected by climate change will help safeguard key values, or facilitate expansion/migration as necessary · Explicit protection and enhancement of key open ground and non-woodland habitats	· Potential for minor adverse impacts in terms of invasive species: Expanding networks of native broadleaved woodlands could make movement/expansion of grey squirrel population easier	· Adverse effect outweighed by major benefits of habitat enhancement. Ongoing monitoring of red squirrel population and protection of key sites/routes to refugia likely to prevent significant effects on red squirrel population · 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 & human health	Integration of FWS aims with SDP development objectives has the potential for **strongly positive** effects in relation to: · Targeting environmental enhancement on vacant, derelict and	· 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)	· Effects will be mitigated through the planning system – preventing inappropriate use of biomass technology

SUMMARY OF REGIONALLY-SIGNIFICANT ENVIRONMENTAL EFFECTS			
SEA Topic	**Summary of positive effects**	**Summary of adverse effects**	**Mitigation and comments**
	stalled sites and areas of low environmental quality · Providing guidance to help deliver quality greenspace through the development process · Providing additional support to WIAT by prioritising the urban fringe area for environmental enhancement · Development of community-scale biomass energy installations could contribute to alleviation of fuel poverty · Contributing to place-making and competitiveness of the city-region		in Smoke Control / Air Quality Management Areas · Need for appropriate policy framework in LDPs
Soil	· 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 · Limited potential for conflict with other land uses (largely mitigated through policy) – could result in small-scale loss of quality soil resources to woodland that	· Development of forest soils and growth of trees is likely to compensate carbon budgets · 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	· 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	· Potential for poorly-planned woodland in floodplain locations to exacerbate flooding issues – need for stronger cross-reference to SEPA flood risk data	· Add key floodplain areas where woodland could contribute to cumulative/synergistic effects as 'sensitive' land in

SUMMARY OF REGIONALLY-SIGNIFICANT ENVIRONMENTAL EFFECTS			
SEA Topic	**Summary of positive effects**	**Summary of adverse effects**	**Mitigation and comments**
	flood management objectives and improve water quality by reducing runoff and erosion · FWS makes strong 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		spatial model (would require interpretation of data from SEPA) · **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
Air	· FWS prioritises greening of transport corridors – significant potential to intercept and mitigate air pollution associated with transport emissions (especially particulate emissions) · Robust approach to urban planting and safeguarding/succession planning for parks and street trees likely to make a positive contribution to interception of pollution over longer term · FWS promotes energy and resource efficiency in the forestry sector – could help to reduce air pollution derived from the sector	· Intensive promotion of biomass (particularly when viewed in conjunction with the Renewable Heat Incentive and SDP promotion of biomass) could result in more widespread adoption – with consequent increases in pollutant emissions from boilers/CHP plants/domestic installations · Potential for significant impacts from large-scale biomass plants (although not explicitly encouraged by the FWS) · Forestry entirely dependent on fossil fuels at every stage of the process – although resource and energy and efficiency policies will help reduce effects, the likely overall increase in activity will increase air pollution derived from the	· Impacts would be assessed and mitigated through the planning process · Large-scale biomass unlikely to be supported on sustainability grounds · Emissions from the sector likely to be regionally insignificant

SUMMARY OF REGIONALLY-SIGNIFICANT ENVIRONMENTAL EFFECTS			
SEA Topic	**Summary of positive effects**	**Summary of adverse effects**	**Mitigation and comments**
		sector	
Climatic factors	· 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 sustainable flood management and climate change adaptation · Renewable energy policies (biomass and wind) will displace 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 entirely dependent on fossil fuels at every stage of the process – increased activity likely to result in a net increase in emissions from the sector · Increased activity in timber sector likely to increase volume of road transport as major processing infrastructure largely outside GCV – and few opportunities for modal shift in timber transport	· 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 (although as a largely new aspect of the sector, will still generate additional emissions)
Historic environment	· The FWS is likely to make a positive contribution to the protection of the region's historic assets · Designated sites are highlighted as 'sensitive' to woodland expansion and removal, 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 · Acknowledges the contribution of trees and woodland to the historic environment through forming settings of assets, and the value of ancient woodland	· Limited potential for impacts on previously unrecognised archaeological sites – largely mitigated through the FCS assessment / EIA process	· Positive effects rely on **assumed mitigation** of FCS regulatory processes

SUMMARY OF REGIONALLY-SIGNIFICANT ENVIRONMENTAL EFFECTS			
SEA Topic	**Summary of positive effects**	**Summary of adverse effects**	**Mitigation and comments**
	and veteran trees as part of the cultural landscape in their own right		
Landscape	· Protecting and enhancing landscape character is an important aspect of the FWS, and is therefore likely to have a positive overall effect · Geographical priorities referenced to landscape character to ensure proposals are appropriate · Restructuring of existing plantations likely to convey significant landscape benefits · Farm woodland and native woodland policies prioritise the enhancement of existing, and restoration of degraded, landscape character ·	· Although the FWS is very positive with regard to landscape, there is potential for cumulative/synergistic effects in terms of wider processes of landscape change. Contributing to Scottish Government targets for woodland expansion will result in significant landscape change. Other forms of land use – renewable energy development in particular – is also generating significant change particularly in moorland and upland landscapes (that are also likely to be subject for larger-scale proposals for woodland expansion).	· 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': continued implementation of the existing Forestry Framework developed as part of the standing Structure Plan in 2005
- Scenario based on 2010 rapid update of the above Forestry Framework
- First iteration of the core spatial policy content (prioritising urban fringe woodland expansion)

None of the alternatives outperformed the FWS 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

As the FWS has no operational focus, it is inappropriate to recommend practical mitigation measures. However, as noted above there is potential for strengthening the internal links of the document to ensure that actions undertaken under one strategic priority take into account the requirements of other relevant themes.

As a regional level strategy, the role of the FWS in influencing woodland creation and management 'on the ground' is relatively limited. Although it provides a broad framework within which land managers and regulators will operate, it cannot provide suitably detailed guidance to capture all eventualities. Therefore lower tier plans and policies – and particularly Local Development Plans, and associated supplementary guidance – will be critical in ensuring that the priorities of the FWS are carried through to the site level.

Contact point

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1 Introduction

PURPOSE OF THIS ENVIRONMENTAL REPORT AND KEY FACTS

1.1 As part of the preparation of the Glasgow and Clyde Valley Forestry and Woodland Strategy (FWS), Glasgow and Clyde Valley Strategic Development Planning Authority (GCVSDPA) is carrying out a Strategic Environmental Assessment (SEA). SEA is a systematic method for considering the likely environmental effects of certain PPS. 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.

SEA is required by the Environmental Assessment (Scotland) Act 2005. The key SEA stages are:

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 **Report** 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.

1.2 The purpose of this Environmental Report is to:

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

1.3 The key facts relating to the GCV FWS are set out in Table 1 below.

Table 1.1: Key facts relating to GCV FWS

Responsible authority	Glasgow and the Clyde Valley Strategic Development Planning Authority (GCV SDPA)
Title of PPS	Glasgow and the Clyde Valley Forestry and Woodland Strategy
What prompted the PPS (e.g. regulatory or administrative provision)	Planning etc. (Scotland) Act 2006; Publication of Scottish Government guidance '*The right tree in the right place: Planning for forestry and woodlands*'
Subject (e.g. transport)	Strategic Development Planning; Forestry
Period covered by PPS	2012 to 2035
Frequency of updates	5 years
Area covered by PPS	The FWS covers eight separate local authorities: East Dunbartonshire; East Renfrewshire; Glasgow City; Inverclyde; Renfrewshire; South Lanarkshire; West Dunbartonshire (excluding that part covered by the Loch Lomond National Park Authority)
Purpose and/or objectives	The FWS will provide the strategic framework for woodland expansion and management across the Glasgow and Clyde Valley city-region
Contact point	Dr. Grahame Buchan, SDP Manager

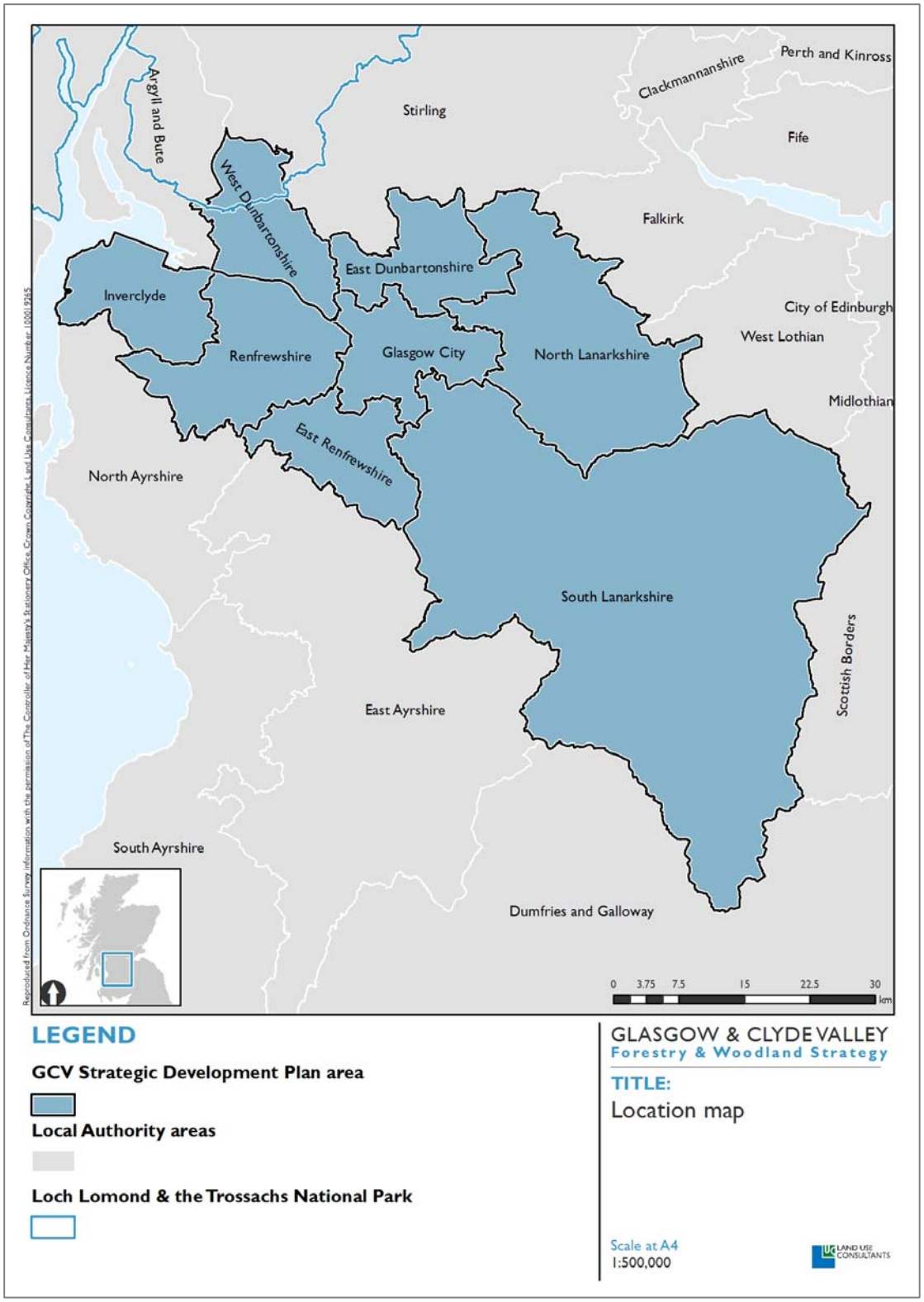


Figure 1.1: Location map

SEA ACTIVITIES TO DATE

1.4 Table 1.2 below outlines the SEA process to date in relation to the FWS.

Table 1.2: Summary of SEA activity

SEA Action/Activity	When?	Notes (e.g. comment on data availability, particular issues or any advice from the Consultation Authorities that has now been taken into account)
screening to determine whether the PPS is likely to have significant environmental effects	-	
scoping the consultation periods and the level of detail to be included in the Environmental Report	February 2011	
Outline and objectives of the PPS	February 2011	
relationship with other PPS and environmental objectives	February 2011	
environmental baseline established	February 2011	
environmental problems identified	February 2011	
assessment of future of area without the PPS	March 2011	
alternatives considered	March-May 2011	
environmental assessment methods established	February 2011	
selection of PPS alternatives to be included in the environmental assessment	March-May 2011	
identification of environmental problems that may persist after implementation and measures envisaged to prevent, reduce and offset any significant adverse effects	May 2011	
monitoring methods proposed	May 2011	
consultation timescales • Timescale for Consultation Authorities • Timescale for public		
notification/publicity action		

2 The Glasgow and Clyde Valley Forestry and Woodland Strategy

OUTLINE AND OBJECTIVES

2.1 The production of the Main Issues Report for the Glasgow and Clyde Valley Strategic Development plan, along with recently-issued Scottish Government guidance, highlighted the need for an update to the existing Forestry Framework (2005). Similarly, the provisions of National Planning Framework 2 (notably the Central Scotland Green Network), the Scottish Planning Policy and Circular 1/2009 necessitate a robust and sustainable approach to planning for woodland and forestry.

2.2 The Forestry and Woodland Strategy (FWS) sets out a long-term spatial and policy framework that will broadly define the scope, nature and extent of woodland expansion across the city-region and establish priorities for management of new and existing woodland assets. The time horizon and lifespan of the Strategy mirrors that of the Strategic Development Plan – covering the period from 2012 to 2035 – and will be reviewed after five years.

2.3 The FWS comprises a vision statement, paralleling that of the SDP, and a spatial framework defining areas with potential to accommodate woodland expansion – and areas with significant sensitivities. It also defines key spatial and policy priorities in relation to management and enhancement of woodland assets, and the potential for high quality green networks to improve health outcomes, to contribute to place-making and to support sustainable economic development.

2.4 The Strategy will replace the existing Glasgow and the Clyde Valley Forestry and Woodland Framework, produced in 2005 to support the aims of the current Structure Plan. Both planning and forestry policy have evolved significantly since the adoption of this document.

STRUCTURE AND KEY THEMES

2.5 The FWS is structured as follows:

PART A:

- Introduction: setting out the purpose and origins of the FWS
- Policy context: setting out the key drivers and policy relationships influencing the development of the FWS
- Vision and objectives: defining the role of woodlands and forestry over the life of the FWS
- Potential for woodland expansion: setting out the broad potential for woodland expansion across the region and categorising land to guide proposals to appropriate locations

PART B: Achieving the Vision

Structured by broad themes, and defines strategic priorities for the region. For a breakdown of themes, priorities and key issues, see Table 2.1 *below*

- Supporting the economy
- Improving quality of life
- Responding to climate change
- Enriching the environment
- Geographic priorities
- Action Plan

2.6 The FWS is structured to optimise its contribution to the aims and objectives of the proposed GCV Strategic Development Plan.

Table 2.1: themes, strategic priorities and key issues

Theme	Strategic priorities	Key issues
SUPPORTING THE ECONOMY	An environment for investment	Enhancing economic investment locations
		Temporary planting on stalled sites
		Greening vacant, derelict and underused land
		Enhancing transport corridors
		Promoting rural development and diversification
		Supporting the tourism sector
		Shaping new communities
	A healthy timber production and processing sector	Maintaining and increasing timber production
		Encouraging hard wood production
		Biomass
		Timber transport, processing and local markets
IMPROVING QUALITY OF LIFE	Improving local environments where it is needed most	Woodland in and Around Towns (WIAT)
		New woodlands on vacant, derelict and underused land
	Involving and empowering communities	Community participation in woodland planning and management
		Community ownership
		Woodland-based social enterprise
	Promoting access and better health	(covered in one section)
	Education and skills	(covered in one section)
RESPONDING TO CLIMATE CHANGE	Mitigating climate change	Increasing carbon sequestration · Woodland expansion · Timber in construction · Energy efficiency in the forestry sector

		Developing the biomass and wood fibre sector · Existing woodland management · New biomass crops · Supply chain, processing and market development
		Contributing to renewable energy development · Biomass · Wind farms
	Adapting to climate change	Contributing to sustainable flood management
		Expanding habitat networks
		Managing forests and woods in a changing climate · Productive forestry · Urban, historic and semi-natural woodlands
ENRICHING THE ENVIRONMENT	**Diverse species and habitats**	Nationally and internationally important woodland habitats
		Contributing to LBAP targets
		Restoring ancient and semi-natural woodland
		Developing habitat networks
		Expanding native woodlands
		Protecting and enhancing other important habitats
	Better landscapes and townscapes	Improving townscapes and landscapes · Trees in towns · Rural areas
		Maintaining important designed landscapes and specimen trees
		Protecting the historic environment
	High environmental quality	Contributing to high quality water environment
		Maintaining good air quality
		Reducing the impact of noise
		Conserving and improving soils

STATUS AND ROLE OF THE FORESTRY AND WOODLAND STRATEGY

2.7 Current guidance from Scottish Ministers indicates that forestry and woodland strategies should form part of development plan, reflecting their important status in relation to a range of land use planning and management decisions.

2.8 The FWS forms part of the evidence base for the Strategic Development Plan and will make a substantial contribution to the implementation of the SDP vision. There is also potential for it to be adopted as Supplementary Guidance to the relevant Local Development Plan, in line with Circular 1/2009 and '*The Right Tree in the Right Place*.'

2.9 FWSs are intended as a strategic management tool, helping to inform the location, design and management of woodlands within an area and to target grant support for forestry projects. Ministers consider that FWSs may be used to inform:

- **Development management decisions** that include proposals for woodland removal or creation;
- The development of **Regional Priorities** for SRDP and an authority's view on planting proposals and applications for grant support;
- The screening and scoping of proposals that fall within the scope of the **Environmental Impact Assessment** (Forestry) (Scotland) Regulations 1999;
- The development and approval of **Forestry District Strategic Plans** and long term **Forestry Design and Management Plans;**
- Emerging **development plans.**

2.10 '*The Right Tree in the Right Place*' indicates that FWS should divide land in categories indicating the suitability of different locations for new woodland planting. The recommended categories are as follows:

- **Preferred** land, which offers the greatest scope to accommodate future woodland expansion, and hence, to deliver on a very wide range of objectives;
- **Potential** land, which offers considerable scope to accommodate future expansion of a range of woodland types, but where at least one significant sensitivity exists;
- **Sensitive** areas, where a combination of issues means that there is limited scope to accommodate further woodland expansion.

SPATIAL FRAMEWORK

2.11 In line with current policy, and to support the aims and objectives of the Scottish Forestry Strategy, a spatial approach has been adopted to improve accessibility and draw out sub-regional prioritise.

2.12 Zones were defined based on broad landscape character, shared patterns of woodland distribution and commonality in priorities for woodland expansion and management.

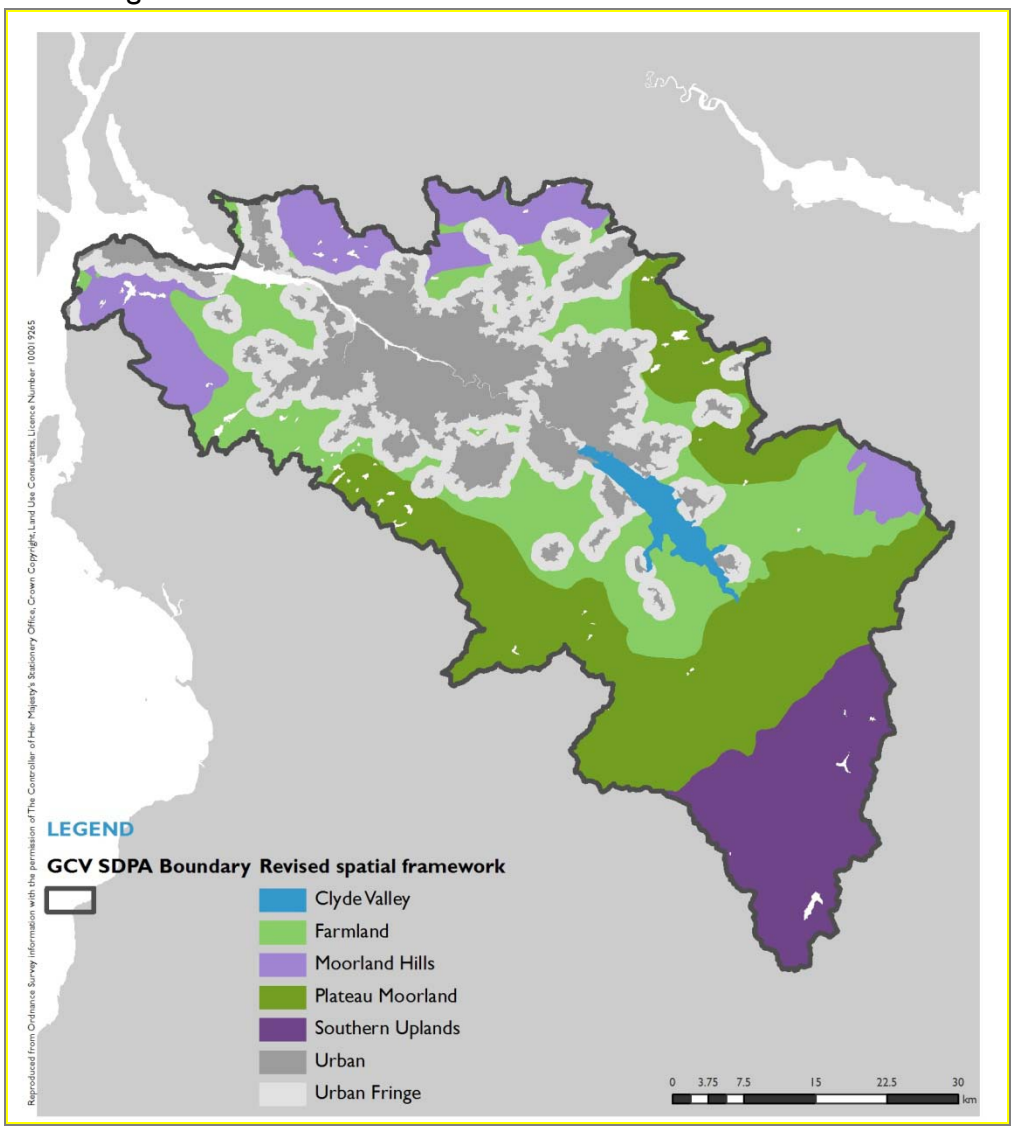


Figure 2.1: Spatial framework

2.13 A brief overview of the landscapes, woodlands and key issues for each zone is provided, along with high level priorities for woodland management and expansion.

POTENTIAL FOR WOODLAND EXPANSION

2.14 The core policy content of the FWS is the section defining broad potential for woodland expansion across the Region (Section 6 of the FWS). 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.

2.15 Land categorisation and the underlying spatial analysis were strongly influenced by Scottish Government advice contained in *'The Right Tree in the Right Place'* – with context-specific adaptations. Several iterations were produced and are assessed below in Section 5 of this report. The finalised option is illustrated in Figure 2.2 below.

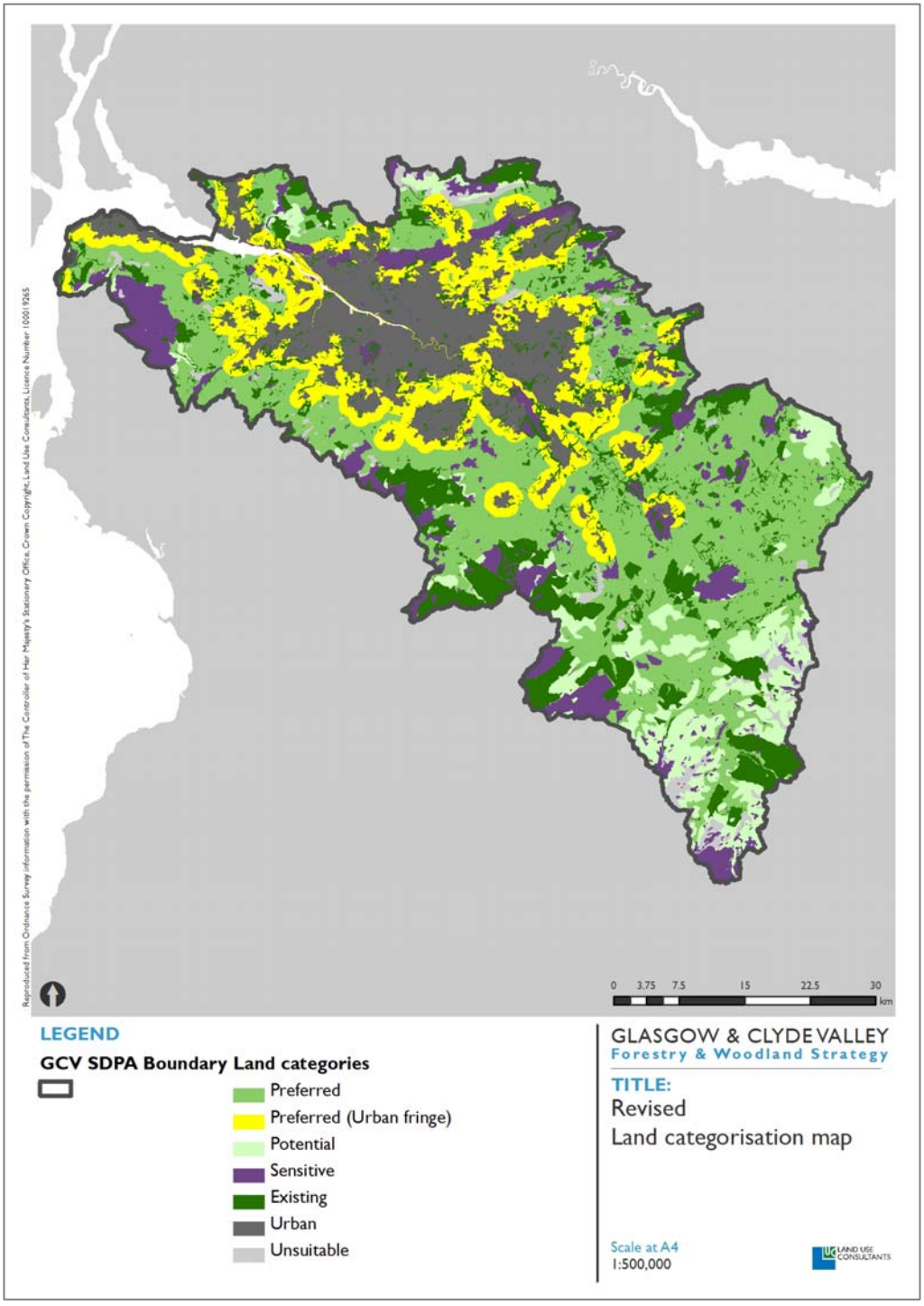


Figure 2.2: Potential for woodland expansion

RELATIONSHIP WITH OTHER PPS AND ENVIRONMENTAL PROTECTION OBJECTIVES

2.16 Part of the process of developing the FWS and identifying pertinent environmental issues for the area involves reviewing relevant plans, programmes and strategies (PPS). Documents ranging from national policy down to local authority strategies and their associated environmental assessments have been reviewed. An initial list of these documents and relevant environmental issues are included as Appendix 2. Such a list can never be definitive given the continual process of review and updating of such documents, therefore the list was updated as appropriate as the SEA process moved forward.

2.17 The FWS sits within the spatial planning policy hierarchy. At the top of this hierarchy is the National Planning Framework (NPF2), which sets the long-term spatial strategy for Scotland and identifies key 'national developments.' Strategic Development Plans (SDP) nest beneath the NPF, informing strategic infrastructure investment and setting the broad framework for development in Scotland's city-regions – in this case Glasgow and the Clyde Valley. The FWS forms part of the supporting information for the SDP and its principal objectives will be incorporated within the regional policy framework. The third level of the hierarchy comprises the emerging Local Development Plans / adopted local plans for the eight local authority areas in Glasgow and the Clyde Valley. These plans deal with the detailed local and site-specific issues of the NPF and the SDP.

2.18 The **Scottish Planning Policy** (SPP) sets out the Scottish Government's national level policy on the purpose, practice and core principles of spatial planning. It also provides concise guidance on key policy themes. In line with Ministers' policy, it is unnecessary to rehearse the full breadth of the SPP's content – however, its provisions will be taken into account in the development of the FWS.

2.19 As the FWS also sits at the intersection of Scottish Government planning and forestry legislation and guidance, and is therefore subject to a range of policy interactions. These include:

- 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
- The **Scottish Forestry Strategy** (SFS) sets out Ministers' aspirations for Scotland's woodland resource, highlighting key themes, issues and policies for expansion and management.
    - The SFS sets a target of increasing Scotland's woodland cover to **25% by the second half of the century**[2]
    - The policies of the SFS are supported by the current suite of Forestry Commission guidance and seek to implement the UK Forestry

[2] Further developed in the Scottish Government Rationale for Woodland Expansion (FCS, 2009) http://www.forestry.gov.uk/pdf/ForestExpansion.pdf/$FILE/ForestExpansion.pdf

Standard (UKFS) and the UK Woodland Assurance Standard (UKWAS)

- **National Planning Framework 2** 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.
    - NPF2 also affords 'National Development' status to the development of the **Central Scotland Green Network**, the most ambitious environmental enhancement project of its type in Europe.
- **The Climate Change (Scotland) Act 2009** ('the 2009 Act') sets ambitious targets for reductions in carbon emissions and establishes the duty for Ministers to produce a **Land Use Strategy**[3] and conveys the power to modify the functions of the Forestry Commissioners to facilitate efforts to adapt to and mitigate climate change
- **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. A consultation on the delivery of sustainable flood management is underway and this will have a significant impact on the development plans of the future.
- Scottish Government **Policy on Control of Woodland Removal** 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

The FWS is required to take account of such policies, and– along with the SDP –addresses the following key challenges:

- Mitigation of, and adaptation to, **climate change**
    - Implementing the provisions of the Climate Change (Scotland) Act 2009 and associated policy and strategy
- Protecting **ecosystem services**:
    - Facilitating the development and delivery of River Basin Management Plans (a requirement of the EU Water Framework Directive / Water Environment and Water Services (Scotland) Act 2003
    - Implementing the provisions of the Scottish Soil Framework

Climate change

Climate Change (Scotland) Act 2009

2.20 The 2009 Act establishes the legal framework for emissions reductions by 2050. While the FWS 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

[3] Section 57, The Climate Change (Scotland) Act 2009

particularly importance are issues of improving the sustainability of timber transport and forest operations reliant on the use of heavy machinery.

2.21 The FWS Action Plan includes provisions to support the reduction of emissions from the sector as a whole.

'Getting the best from our land: A land use strategy for Scotland'

2.22 Broadly, the land use strategy seeks to steer Scotland towards a low-carbon economy which affords a better consideration of the natural environment and enables people to maintain and enhance their connection to the land. The strategy defines a range of principles for land-use decision-making that is designed to deliver multiple benefits to the economy, the environmental and communities alike. Indicative Forestry Strategies are identified as a key means of securing appropriate and sustainable land use – although the links to planning are poorly articulated in the current draft. Key interactions are likely to relate to:

- Carbon sequestration and management of existing carbon stores
- Understanding and conserving ecosystem services
- Understanding the relationship between land management change and ecosystem processes
- Integrating this knowledge in decision-making
- Developing appropriate regulatory and policy frameworks to facilitate transition to a low carbon economy

Ecosystem services

River Basin Management Planning

2.23 The GCV area lies within the Scotland River Basin District, in which eight area management plans have been prepared – of which the Clyde AMP is relevant to the GCV area. Area Management Plans set out how the water environment will be managed over the next six years, with the current plan covering the period from 2009 to 2015. The plan sets out what needs to be achieved for all water bodies in the area to reach good ecological status.

2.24 Forestry practice has clear potential to impact on the water environment, therefore the FWS prioritises appropriate environmental protection through implementation of the Forestry Commission guidelines, adherence to the UK Forestry Standard and an ambition for woodland managers to meet the objectives set by the UK Woodland Assurance Standard.

Scottish Soil Framework

2.25 The Scottish Soil Framework was published in May 2009 and aims to raise awareness of the services soils provide to society and the pressures they face. Scotland's soil resource is in generally good health, but is under pressure from soil carbon loss and the effects of climate change.

2.26 Ensuring forestry planning and practice protects key soil carbon resources and maximises woodland's potential to lock up carbon in soils[4] is a key aspect of the FWS.

[4] It is estimated that soils within woodland contain more than double the carbon stored within the trees themselves. 'Combating Climate Change: A Role for UK Forests (2009). The Stationary Office, Edinburgh.

3 Environmental baseline and identification of environmental problems

Relevant aspects of the current state of the environment

3.2 The Environmental Assessment (Scotland) Act 2005 Schedule 3 requires that the Environmental Report includes a description of the relevant aspects of the current state of the environment and the likely evolution therefore without implementation of the PPS, and the environmental characteristics of areas likely to be affected. This data provides the basis for predicting, evaluating and monitoring the environmental effects of the GCV Forestry and Woodland Strategy.

3.3 The following data sources were utilised in developing the environmental baseline (it should be noted that, in line with guidance provided by PAN 1/2010, a significant proportion of relevant information has been drawn from the recent GCV Main Issues Report SEA):

Table 3.1: Baseline data sources

Topic	Data sources
Biodiversity	National and local designations: SAC, SPA, Ramsar sites, SSSI LNRs, Local wildlife sites LBAP habitats and species Woodland and land cover
Population and human health	Population (projections from census data) Scottish Index of multiple deprivation 2009 Employment sectors and unemployment data Scottish Neighbourhood Statistics Health trends Recreation area/open space resources Core paths
Climatic factors	UKCP09 Climate projections Observed trends
Air	Air quality monitoring data (Air Quality Management Areas / Smoke Control Areas) Transport monitoring data Air quality action plans
Water	Local flood data Water quality monitoring data SEPA Indicative River and Coastal flood map

Topic	Data sources
Soil	Vacant, derelict and contaminated land
	Soil type and quality / land capability
Material assets	Mineral resources
	Energy developments and areas of potential for energy development.
	Waste arisings
	Agriculture
	Areas of potential forestry planting
Cultural heritage	Scheduled Monuments
	Listed buildings
	Conservation areas
	National Monuments Record of Scotland
	Inventory-listed Gardens and Designed Landscapes
	Historic Landuse Assessment
Landscape	Local landscape character assessment

ENVIRONMENTAL BASELINE

3.4 This section follows the structure identified in the SEA Objectives.

Biodiversity

Trends in Biodiversity and Land cover in the GCV Area[5]

3.5 GCV contains a wide variety of habitats from the shoreline of the Clyde to the highest points in the Campsie Fells and the Southern Uplands. The area is ringed by a Regional Park (Clyde Muirshiel), National Park (Loch Lomond and Trossachs) a proposed Regional Park (the Campsies) and an extensive Regional Scenic Area (Southern Uplands), all of which provide important wildlife habitats. The Clyde Valley Woodlands are part of an EU LIFE project to maintain their value for biodiversity. The mudflats in the Clyde are an internationally important site for migratory birds and the Slamannan Plateau is one of only two wintering grounds for Bean Geese in the UK. There are several Sites of Special Scientific Interest in the GCV area, as well as other local nature reserves, wildlife sites, and sites designated as Sites of Importance for Nature Conservation.

3.6 Land cover change continues to have a major impact on the biodiversity of the area. From the 50's to the late 90's the GCV area lost between 5 and 10% of its semi natural habitats. Parts of the Southern Uplands, the Campsies and the Kilpatrick Hills fared slightly worst by losing up to 25%. This is in comparison to a national average of 17%. This pattern is also reflected in a reduction in hedgerows, broadleaf woodland, heather moorland, blanket

[5] http://www.gcvcore.gov.uk/DOCS/structure_plan/SEA_Part_2.pdf

mire, lowland mire and rough grassland (Natural Heritage Trends Scotland 2001).

3.7 The main causes of this change were urban expansion, the use of uplands areas for water catchment, managed grassland and grazing, forestry and the intensification of farming in lowland areas.

3.8 During the 1990s, these trends changed and some habitats showed signs of expansion. Across Scotland the acreage of coniferous woodland remained static whilst there was an increase in the extent of broadleaf woodland, marshland, and horticulture and arable land. Decline continued at a slower rate in areas of heathland and natural grassland. These changes can be put down to the introduction of a more sensitive forestry policy and will probably be aided further by changes to agricultural policy and less intensive farming techniques.

3.9 Pressure will continue from development of all kinds even though there is greater protection given to habitats through national and international designations and the need for EIA on applications.

3.10 One particular threat is from windfarm development which is located in upland areas that often display semi natural characteristics. With greater protection and sensitivity in planting and more emphasis on restoration and creation these trends should continue to improve over the FWS period.

3.11 The reduction in semi natural habitats has meant that there has been an associated decline in a number of the species that rely on these areas. The remnants of these species have retreated to those areas of their habitats that remain. Across Scotland and the GCV area there has been reductions in the number of butterflies, fresh water fish and rare plants. One third of the species that are given protection in Scotland have declined over the past ten years. Also a third of native mammals have declined in number over the same period (Natural Heritage Trends Scotland 2001).

3.12 There have been some successes with an increase in fresh water birds, wintering waders, a reasonably static level of native plant species and the reintroduction of some species that had previously become extinct through hunting or persecution.

3.13 The trends mentioned above are expected to continue over the FWS period with improvements in the numbers of species under threat.

3.14 This will be especially evident in the lowland areas where a shift in the focus of farming practice towards land management will lead to an increase in and improvement of habitats.

3.15 Urban expansion and other types of development will continue to have an effect on the location and diversity of species and with urban areas expected to continue to increase over the next 20 years this could be one of the greater threats to flora and fauna unless guided through planning policy to the least sensitive locations.

3.16 The GCV area includes several landscapes that are recognised as being of national and regional importance. The north of the GCV area includes parts of the Loch Lomond National Park and the Campsie Fells proposed Regional

Park. The West of the area is the Clyde Muirshiel Regional Park and to the South are the Southern Uplands, which are designated as areas of Regional Scenic Importance.

3.17 There are also numerous country parks, often based around the remnants of old country estates. The Clyde Valley is also of landscape importance as it represents one of the few remaining large areas of riparian native woodland in West Central Scotland.

Natural Heritage Features

3.18 Glasgow and the Clyde Valley encompasses coastal, lowland, mid-altitude and upland landscapes which are predominately cultivated or affected by human activities and contain significant urban developments. The area supports a broad range of natural heritage interests, fundamentally reflecting climatic, topographical, geological and altitudinal variations, but variously altered by past land-use.

3.19 The nature conservation interest of the area is widespread and a number of general habitat or more specialist surveys have identified a whole range of habitats, vegetation communities or species of interest. This wide range covers remnant semi-natural habitats to more recently formed habitats, and occurs on the upland, lowland and even densely populated urban areas. Habitats of particular nature conservation interest and importance in the Clyde Valley area are the valley or gorge woodlands, a number of bog and mire communities, the upland fringe habitats, the Clyde estuary and the various lochs and floodplain haughs.

Upland Habitats

3.20 Upland habitats are well represented throughout the Clyde Valley catchment area, ranging from the basaltic rocks of the Kilsyth Hills in the north and much of the west, from Renfrewshire to East Kilbride, to the highest ground in the southern uplands, with the coal measures and gritstones of the high ground of the Slamannan plateau occurring to the eastern fringes.

3.21 The high ground typically supports three main habitats: upland pasture, heather moorland or coniferous forestry. These habitats can occur in complex mosaics but frequently they are represented in discrete units, reflecting the local estate management regimes. The combinations of these habitats over the seasons can impart characteristic ranges of colours and textures to the landscape with shades of greens, browns, ochres and straw, and at flowering periods, the vivid purple of the extensive heather dominated areas and the white heads of cotton-grasses in blanket bog.

3.22 The pasture grasslands, maintained by sheep grazing, are dominated by fine-leaved fescue, mat and wavy-hair grasses and broader-leaved bent grasses, usually with a limited range of associate herbs and mosses. The acidic grasslands can occur in complex mosaics with dry and wet heaths, in part reflecting soils and drainage, but mostly the localized influence of stock grazing; such mosaics can be of high value to wildlife and species diversity and have visual landscape appeal.

3.23 The species diversity can be locally high, often associated with bent-fescue type grasslands on shallower soils or those with a more basic underlying geology such as in the Renfrewshire. Locally, bracken can form extensive stands, sometimes indicating former woodland areas, and generally impacting both on the ecology and landscape.

3.24 At many of the more accessible hillsides and lower slopes agricultural improvement, such as drainage and fertiliser applications, can increase the frequency of broader-leaved pasture grasses, reducing the ecological interest and creating a brighter, green sward, contrasting with the paler hues of the unimproved grasslands.

3.25 The moorlands are characterised by the abundance of heather but range from dry heaths with other ericoids such as blaeberry, bell heather, crowberry, and, on higher ground, cowberry, to wet heaths or blanket bogs, on shallow slopes, depressions or plateaux. In these areas graminoid elements such as purple moor-grass, deer-grass and cotton-grasses can be more extensive. The ecological interest and species diversity of relatively less disturbed areas can be high, supporting various herbs, and notably lower plants such as mosses, liverworts and lichens. The heather moorlands are often maintained by muirburn, and the patchwork result can be seen over much of the Southern Uplands, although inappropriate burning practices can have an adverse effect on upland habitats and species.

3.26 In general, the less intensively used upland areas provide a valuable resource for wildlife with a wide range of invertebrates, birds and mammals supported, including, for example, emperor moth, mountain hare, skylark, curlew, golden plover and lapwing, red and black grouse and hen harrier. These species are threatened by agricultural intensification and afforestation.

Bogs and Mires

3.27 Habitats associated with impeded drainage and in particular deep peat formation are of special note within the Clyde Valley area, and extend into the adjacent ground of Ayrshire, Falkirk and West Lothian. The peatlands of the local area are recognised at a national and European level, and both raised and blanket bogs are identified as priority habitats by the EC Habitats Directive, and a number of sites are designated as SSSIs or as pSACs (proposed European sites). The bog and mire habitats, as previously noted, can occur in mosaics with wet and dry heaths and, where degraded by draining, burning or grazing, with acid grasslands.

3.28 The bog and mire habitats are all threatened by land-use pressures such as drainage for agriculture, but also afforestation, open-cast mining and peat extraction. Significant areas of the former peat resource have been lost over the last century to these activities and to urban spread.

3.29 Blanket bogs are a feature of the poorly draining ground of slopes, shoulders and plateaux of the uplands. Heather and cotton grass are the dominant, although cross-leaved heath, deer-grass and purple moor-grass can also be common; cloudberry is also a feature of the upland blanket mires above 400 m. A significant feature of bogs is the usually abundant growth of mosses, notably the main peat forming bog-mosses (*Sphagnum* spp.). Where degraded

the graminoid elements can become more prevalent, with cotton grass and purple moor-grass locally dominant. Extensive areas of blanket bog occur at Clyde Muirshiel in Renfrewshire, the summit plateaux of the Kilpatrick and Kilsyth Hills to the north of Glasgow, the moors above Eaglesham and in the southern uplands.

3.30 Raised bogs, although superficially similar to blanket bogs, are more discrete units, typically developing in the lowlands, in shallow basins or on broad, river flood-plains, and may have been growing for several thousands of years. When in a relatively pristine condition they support a luxurious growth of bog-mosses with associate liverworts, other mosses and lichens, in addition to previously mentioned bog species. Raised bogs are well represented in the area with notable examples being Cranley and Carnwath mosses to the east of Lanark and Red and Coalburn mosses, north of Abington. Other sites occur on the urban fringe such as Blantyre Muir by Hamilton, Commonhead Moss, East Glasgow and Branchal Moss by Newmains. The western margins of the Slamannan plateau support a number of raised or intermediate bogs of note such as Black Loch and Lady Bell's Mosses.

3.31 Other mires, including, basin or valley mires and rush-dominated pastures usually occur in association with bog habitats but can occur as distinct units, and as noted with other wetlands, can significantly add to the species diversity and interest, when present as part of site habitat mosaics. Rush-dominated pastures are a very common landscape feature, often marking out drained hill slopes and ridge and furrow drainage patterns in pasture grasslands, but are also important habitats at a range of sites, including marginal farmland and at urban areas.

Lowland Habitats (Agriculture)

3.32 Throughout the more accessible, low altitude areas, where not developed for urban uses, the land is mainly agricultural. This is mostly under pasture, including silage, grassland, but there are areas of arable crops in particular barley, wheat, oats and oil-seed rape. The vast majority of the grasslands have been dramatically altered by improvements such as draining, fertilising and seeding, and areas of unimproved, or even semi-improved, pasture or traditional meadow grasslands are becoming an increasingly rare resource. Even though large areas of the urban fringe still retain a rural atmosphere, the ecological interest of this improved farmland landscape is in general fairly low and it could arguably represent the most serious current threat to the natural heritage resource of the area.

3.33 Local areas of less-improved grassland, and other habitats such as heaths, mires, wetlands and woodlands occur scattered throughout the lowlands, usually on marginal farmland such as along the sides of water courses, poorly draining depressions or haughs, local rocky ridges, upland transition slopes and on the urban fringes (several of these are noted further in other sections). These areas can be of high diversity and interest and many are noted as being Sites of Interest for Nature Conservation (SINCs) within their respective local authority areas.

Designations

3.34 International biodiversity designations in GCV include five Special Protection Areas (SPAs), nine Special Areas of Conservation (SACs) and one Ramsar site. The GCV area has 87 Sites of Special Scientific Interest.

3.35 The status of 197 BAP species occurring in Scotland in the 2008 assessment is as follows[6]:

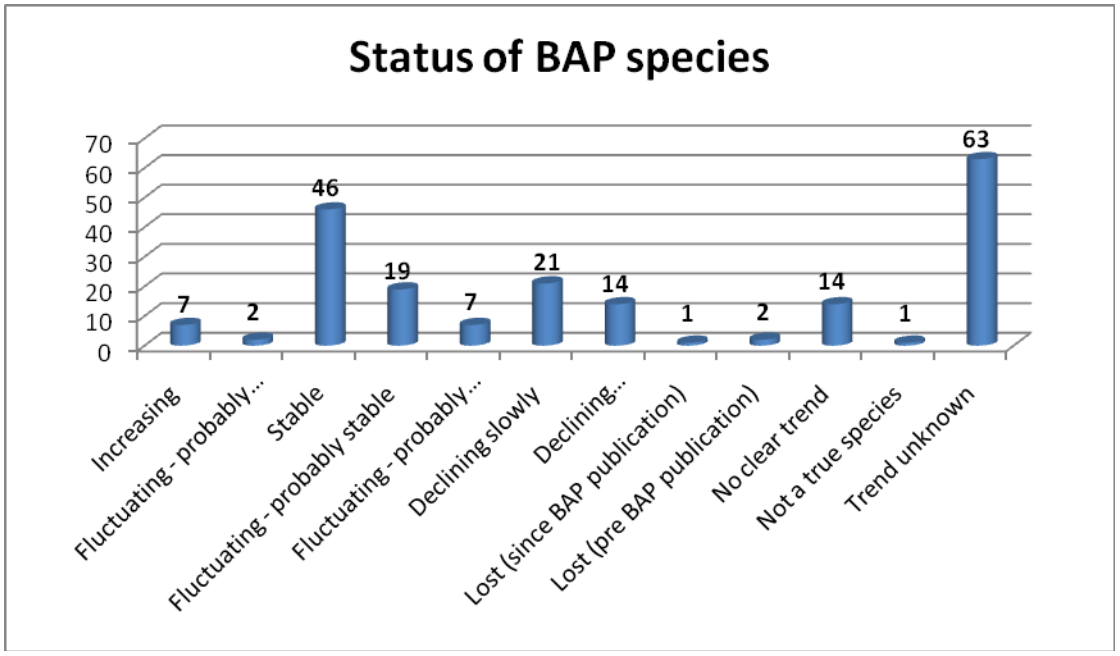


Figure 3.1: Status of BAP species

3.36 Of the 197 BAP species in Scotland:

- 9(5%) were increasing / fluctuating probably increasing;
- 65 (32%) were stable / fluctuating probably stable;
- 43 (22%) were declining or lost since the commencement of BAP in 1994;
- 14 (7%) showed no clear trend and for 63 (32%) was unknown;
- 3 (1%) were thought to be no longer present in Scotland and 1 (<1%) was no longer considered to be a true species.

3.37 SEPA provides further information on the current state of biodiversity. It notes that climate change is already having an impact, and that other processes including urbanisation, land use change and the spread of non-native species will make it difficult to reach stated biodiversity targets.[7] Although agriculture is noted by SEPA to be a key cause of habitat loss and

[6] Scotland's Biodiversity Indicators - S1 Status of UK BAP priority species

[7] Scottish Environment Protection Agency, (2006) State of Scotland's Environment 2006, SEPA: Stirling.

degradation, SEERAD figures show that there has been a steady increase in the overall area of land which is managed under agri-environment schemes.[8] SEPA also refer to SNH's natural heritage trends reports, which identified loss of neutral grassland, particularly in the uplands and islands, dwarf shrub heath, acid grassland and bog as key problems. This is confirmed by the broader Countryside Survey 2003, which monitored change in broad groups of habitats between 1990 and 1998, and showed that there was a substantial decrease in the extent of semi natural habitats in this period (-88,000 hectares).

3.38 The results of the Countryside Survey 2007 for woodland in Scotland show that for broadleaved woodland its extent increased by 10% between 1998 and 2007, its species richness declined (although there was no decline over 1990-2007) and competitive species increased at the expense of species of open ground. For coniferous woodland , its extent decreased by 7% and its species richness declined by 12% during 1998-2007.

3.39 Climate change is likely to exacerbate established pressures on biodiversity resources, and therefore has the potential increasingly to compromise site-based conservation measures. As a result, there has been a growing emphasis on the development of broader measures for protection and conservation including the commitment in the Scottish Biodiversity Strategy to removing barriers to species movement and dispersal and improving connections between habitats. The MONARCH[9] (Modelling Natural Resource Responses to Climate Change) research assessed the impacts of projected climate change on wildlife in Britain and Ireland. This included modelling the potential for changes in the ranges of a number of species. Overall, there is a northward shift in suitable climate space for many species. The main adaptation measures identified in the report include:

- Conserving and restoring the existing biodiversity resource;
- Reducing other sources of harm such as pollution and inappropriate habitat management;
- Developing ecologically resilient landscapes by reducing habitat fragmentation.

3.40 Settlement growth through infill and expansion can have a negative impact on biodiversity through reducing, fragmenting and isolating the extent of semi-natural habitat found in settlements. Most Local Biodiversity Action Plans outline opportunities for safeguarding biodiversity in settlements, but do not comprehensively or systematically address opportunities for achieving this.[10] Land on the urban fringe is sometimes blighted and poorly managed, providing a key opportunity for biodiversity enhancement and recreational use.

[8] Scottish Executive, (2006) Key Scottish Environment Statistics, Scottish Executive: Edinburgh.
[9] Walmsley, C.A., Smithers, R.J., Berry, P.M., Harley, M., Stevenson, M.J., Catchpole, R. (Eds.) (2007). MONARCH – Modelling Natural Resource Responses to Climate Change – a synthesis for biodiversity conservation. UKCIP, Oxford
[10] Scottish Natural Heritage (2002) Natural Heritage Futures Settlements Prospectus, Scottish Natural Heritage, Battleby

3.41 The value of the environment and the biodiversity which it supports is difficult to measure, however work by SEPA suggested that the ecosystem services provided by the natural environment are annually worth some £17 billion.[11] High levels of economic development are likely to adversely impact biodiversity through land take, pollution and habitat fragmentation. Development can, however, make a positive contribution to biodiversity by developing on-site projects which support habitats and species.

3.42 In 2006, the SEA for the National Transport Strategy noted that transport infrastructure can have a detrimental impact upon biodiversity in terms of loss and fragmentation of habitat caused by the creation of barriers to movement. Mitigation of these impacts should be undertaken through environmental appraisal at the regional and local level to determine how major schemes impact on biodiversity and propose measures to optimise benefits from new infrastructure, for example by planting new hedges and trees, and creating wildlife corridors and new habitats.

3.43 Forestry Commission Scotland is seeking to develop forest habitat networks and open habitat networks. This involves mapping, for woodland species and open ground species, contiguous areas containing functionally connected habitat patches in a matrix. The networks identified are the landscape structure through which focal species can disperse freely between numerous habitat patches.

Population

3.44 The GCV area has a well documented concentration of health inequalities. Poor health service provision can significantly affect a person's quality of life. The level of medical care in the more rural locations of the GCV region is understandably limited. There are urban locations which suffer from high levels of deprivation and subsequently have a greater propensity for poor general health, creating a greater need for medical attention. The likelihood is that these inequalities will continue and current health provision will not address the present and future health problems.

3.45 The GCV region will experience, along with the rest of Scotland, an aging population. The need for additional and adapted services will place an increasing burden on public service providers with implications for the standard of service that people will receive in the coming years and hence for their quality of life and health. The GCV political vision aims to create a high quality city region environment where people wish to migrate to live and work. Whilst it is the role of the SDP to make sure that there is the co-ordination of the appropriate strategic infrastructure, the FWS can also support delivery of this objective.

3.46 A number of areas of the GCV area contain concentrations of economic deprivation. Deprivation is intrinsically linked to low incomes, low educational attainment and unemployment. These also have a huge impact on lifestyle choices and a person's quality of life. These areas frequently suffer from social problems and poor environmental amenity and limited green space provision which can lead to health implications of its inhabitants. This limits people's

[11] Scottish Environment Protection Agency (2006) State of Scotland's Environment 2006

ability to enjoy and lead more active lifestyles. These areas of deprivation are likely to remain in their current state unless appropriately addressed and the FWS can play a lead role in targeting woodland provision, as part of a green space network, to areas where it can address lack of access to green space.

Human Health

3.47 Scotland's health record is poor, with the population having the highest rate of coronary heart disease in Europe. Poor health is particularly concentrated in households with lower incomes. Although levels of physical activity and consequently health have been improving, 44% of men and 33% of women currently meet the recommended levels of physical activity, indicating a need for further changes to lifestyles to overcome health problems in the long term Asthma and wheezing problems also persist and are more prevalent in deprived households.[12] Environmental pollution has a number of impacts on human health. The Royal Commission on Environmental Pollution (RCEP) report on the Urban Environment[13] identifies a number of impacts associated with the urban environment. This includes air pollution which causes premature death and reduces average life expectancy. Climate also causes extra deaths in summer through heatwaves and in winter by cold. There is an association between urban residence and the prevalence of psychiatric disorders.

3.48 Some 61% of people in high income areas considered themselves to be in good health, compared with only 45% of those living in disadvantaged council estates[14]. The importance of environmental justice is highlighted through the mortality rates for cancer, coronary heart disease and child health issues all show variations by deprivation category, where generally people in more deprived areas have poorer health. It also identifies the important role which local environment plays in the quality of life.

[12] Scottish Executive Health Department, (2005) Health Survey Results 2003, Scottish Executive: Edinburgh.
[13] Royal Commission on Environmental Pollution (2007) The Urban Environment
[14] Communities Scotland (2006) Strategic Environmental Assessment (SEA): Environmental Report for Communities Scotland Sustainable Development Policy & Scottish Social Statistics, Scottish Executive National Statistics Publication 2001

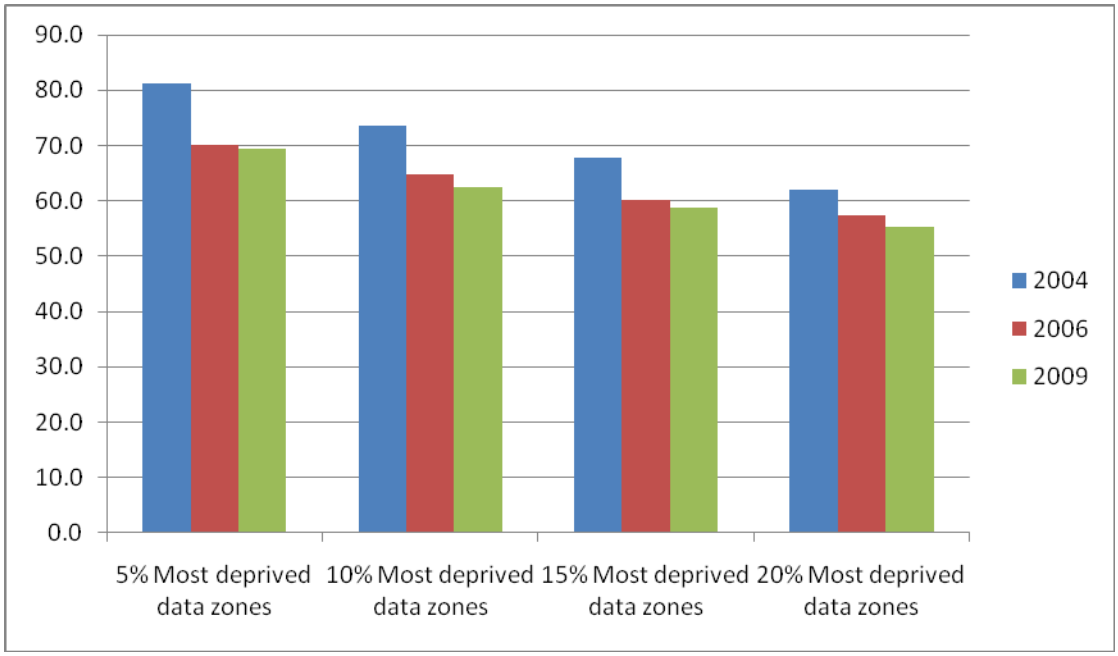


Figure 3.2: Scottish Index of Multiple Deprivation - % change in national share since 2004 across the top 5%, 10% , 15% and 20% datazones in the GCV area

3.49 These geographic concentrations of deprivation are largely within Glasgow, North Lanarkshire and South Lanarkshire. Deprivation is also a significant rural issue as a result of specific determining factors.

3.50 In addition, a lack of appropriate housing could also subsequently lead to people living in sub-standard or crowded accommodation which will significantly reduce their quality of life and could lead to human health problems.

3.51 Car use and traffic levels are a contributor to both climate change and air pollution. Within Across the GCV region, traffic pressures are most prominent in Glasgow city centre and the other major conurbations. In these locations levels of nitrogen dioxide and particulates are highest in the region. Under current development plans, pollution from traffic 'hotspots' will continue to not only affect the air quality of these locations with associated impact on health, as well as the local environmental quality and biodiversity.

3.52 Research undertaken for Scotland and Northern Ireland Forum for Environmental Research[15] examined the relationship between poor environmental quality and deprived communities in Scotland. There is a strong relationship with deprivation and industrial pollution, derelict land and river water quality, with people in deprived areas far more likely to be living near these sources of potential negative environmental impact than people in less deprived areas. People living in deprived areas are less likely to live near to areas of woodland, however there has been a recent focus in planting

[15] Scotland and Northern Ireland Forum for Environmental Research (2005) Investigating environmental justice in Scotland: Links between measures of environmental quality and social deprivation

close to deprived populations. There is a correlation between deprivation and poor air quality for nitrogen dioxide, PM 10, benzene and carbon monoxide. Environmental improvements can make an important contribution to environmental justice as the most deprived communities often live in the worst environments. People living in the most deprived areas have particular concerns about their local environment and quality of life issues such as vandalism, crime, safety, the behaviour of young people, litter and dereliction.

Soil

3.53 The industrial legacy of the GCV area means that there are a significant number of locations that contain potential or definite contamination. This has meant pollution of soil on many of these sites, resulting loss of ground water resources with associated potential impacts on public health. This blight will continue unless a remediation strategy is implemented. In cases where contamination is evident or confirmed, it is likely that future development could be avoided on these sites due to the additional practical and financial implications of treating contamination in the absence of a co-ordinated and appropriately funded remediation strategy.

3.54 With is inability to utilise this asset there is the likelihood that land provision under existing development plans would lead to uncoordinated land release to meet development demands, creating additional pressures on prime agricultural land, green space and other greenfield land resources in the region.

3.55 Soil is essentially a non-renewable resource and provides an important asset that supports a wide range of functions. A review of the key issues affecting Scotland's soils identified key issues to be addressed[16]. Soils suitable for arable cropping are largely found in eastern Scotland, and are relatively limited in extent, whilst lowland soils in the west of Scotland support productive pastures and dairy farming. Although soils throughout the country are generally of good quality, there are a number of recognised threats to soil. Loss of organic matter in soils could result in release of carbon. The impacts of climate change on soil are uncertain, but may include an increase in carbon released, and may require a shift in soil management. Although soil biodiversity is largely un-explored, there is evidence that contamination by heavy metals may affect the microbial community. Issues of structural degradation and compaction are relatively localised and generally reversible. Although erosion of mineral soils is limited, this could increase under future climate change scenarios. Soil sealing as a result of development can have a profound effect on the ability of soils to perform other functions and is effectively irreversible. There is evidence that agricultural land is being developed at twice the rate as in the mid 1990s, and this is likely to be affecting some of the most versatile and productive soils. Erosion and soil

[16] Scottish Executive Environment and Rural Affairs Department (2006) Environmental Research Report 2006/01 Scotland's Soil Resource – Current State and Threats
A 52% in SO deposition was recorded between 1986 and 1997, but NOx deposition has declined only slightly.
Scottish Environment Protection Agency, (2006) State of Scotland's Environment 2006, SEPA: Stirling.

sealing also result in loss of soils which form cultural heritage resources in their own right, as found around many of Scotland's settlements.

3.56 Soil erosion is a continuing problem and this could be exacerbated by climate change[17]. Levels of industrial and chemical soil pollution and contaminated land have generally declined as a result of reclamation and decontamination and regulation of activities. Targeted regeneration in areas with the greatest levels of derelict and vacant land (Glasgow and North Lanarkshire) has accelerated this process further.[18]

3.57 Nutrient enrichment as a result of agricultural activity is a continuing, but similarly declining problem for soil and water bodies.[19] It is expected that a combination of agricultural incentives (e.g. delivered through Land Management Contracts) and environmental regulation should help to reduce this problem further.

3.58 Scottish soils are characteristically high in carbon content, accounting for over 50% of total UK carbon soil content[20]. As such, they offer a valuable function as a carbon sink, and this should be weighed against any perceived carbon benefits from biomass growth and extraction. The removal of forestry on peatlands as part of a habitat restoration programme to restore peatland or scrub habitats could be encouraged as the long-term carbon storage benefits would outweigh any short term losses. The removal of forests from peaty soils is currently constrained by economic and technical factors, but a strong biomass sector may result in extraction becoming more economically viable. It is estimated that there is 1,096,000 ha of deep peat soil in Scotland[21]. Deep peats form a major part of Britain's terrestrial carbon sink. Changes in land management have an influence on dissolved organic carbon (DOC) which is the carbon contained within organic matter in solution, and represents a potentially important pathway for carbon loss from organic soils[22]. Land management activities such as drainage, burning, afforestation, grazing and liming might also influence DOC losses, and climate induced changes in hydrology and plan productivity could increase carbon losses in the short term.

[17] Scottish Environment Protection Agency, (2006) State of Scotland's Environment 2006, SEPA: Stirling.
[18] Scottish Environment Protection Agency, (2006) State of Scotland's Environment 2006, SEPA: Stirling
[19] Scottish Environment Protection Agency, (2006) State of Scotland's Environment 2006, SEPA: Stirling.
[20] SNH (2007)Biomass Energy and the National Heritage Strategic Environmental Assessment Environmental Report
[21] Forestry Commission (2000) Forests and Peatland Habitats Guideline Note
[22] Scottish Executive Environment and Rural Affairs Department (2007) ECOSSE: Estimating Carbon in Organic Soils – Sequestration and Emissions: Final Report

Water

Water Resources

3.59 Statistics compiled by Scottish Water[23] show that there has been a growth in un-metered demand for water, and that 48% of daily demand for water is lost in leakage from the system. Continuing growth in demand, combined with climate change, could put significant additional pressure on water supplies in the future. Water is abstracted from the environment to provide public water supplies and serve industry and agriculture. SEPA[24] considers that the main challenge for the water environment is to balance levels of abstraction with meeting the needs of users, whilst at the same time leaving enough water in the environment to conserve river, loch and wetland habitats and species.

Water Quality

3.60 The EU Water Framework Directive (WFD) aims for all surface water bodies to be of 'good' ecological and chemical status by 2015. River Basin Management Plans are required under the WFD; however development can place pressure on the water resources and without strategic action across the region, it is likely that poor standards would not be significantly raised. The GCV area is covered by the Scotland river basin district. At present there are 2,013 river, 309 loch, 284 groundwater, 40 estuary and 449 coastal water bodies in the Scotland RBD[25]. Contamination from development and run off from hard surfaces can both result in pollution although spatial planning can help reduce this risk by directing development to areas where there is less risk of contamination and away from the most sensitive locations such as aquifers.

3.61 Water quality is also an important measure of environmental health and it is generally accepted that this has been improving over the last two decades and is good overall. SEPA has recently completed the first comprehensive assessment of the condition of our water bodies, for which it established new, risk-based monitoring programmes in 2006. The assessment methods used were developed jointly with the rest of the UK. A number of the methods have also been compared with those being used by other European Union countries, and all are based on criteria set out in the Water Framework Directive. As a result, for the first time Scotland's water environment has been classified on the same basis as that of rest of the UK and the European Union. SEPA continues to work towards specific targets such as levels of compliance for licences issued under the Water Environment (Controlled Activities) (Scotland) Regulations 2005, and diffuse pollution remains a problem. The main cause of diffuse pollution is agriculture. The next most important causes are urban development, forestry, production of

[23] Scottish Water (2006) Public Water Supplies in Scotland: Water Resources Survey 2004-2005.
[24] SEPA (2005) Scotland River Basin District: Characterisation and impacts analyses required by Article 5 of the Water Framework Directive
[25] http://www.sepa.org.uk/water/idoc.ashx?docid=c2e7861e-4414-4ebd-9867-cfdf8d09d392&version=-1

power and transport resulting in acidification, and sea and coastal water transport.[26]

3.62 For the Scotland RBD, it is predicted that almost one third of water bodies will not reach the required 'good ecological status' by 2015. SEPA's assessment maps the sources of pressure in relation to water bodies at risk and shows the effects of urban development in generating diffuse pollution that impacts on water bodies in and around most of Scotland's most urban areas, primarily in the Central Belt but also extending southwards into Ayrshire. It also notes that the firths of Forth and Clyde are being adversely affected by sea and coastal water transport. Climate change adds a further dimension to the challenge of improving water quality, with potentially substantial reductions in ground water flows in the east of the country and increased water temperatures putting further pressure on their ecological status and increasing their susceptibility to pollution.

3.63 Research undertaken for SEPA and SNH in 2004[27] explored the links between strategic development proposals and the water environment. It identified a total of 691strategic development sites at the time of the study, and showed that these were concentrated largely within the central belt and south and low lying areas of the North East. Of these sites, 39% were for housing, 22% were industrial and 15% comprised mixed use. 61% of the sites were in greenfield locations, with this share being highest within the Highland Council area. The study estimated that between 24% and 38% of strategic development sites were within 1km of water dependent wildlife receptors. Of these 152 sites were considered to be high risk as a result of their relationship with biodiversity features or due to their susceptibility to flooding.

Flood Risk

3.64 Rising sea-levels could see a further loss of land to the sea as well as decreasing functionality of existing drainage systems. The difference in level between terrestrial drainage systems and the sea level is reduced as the sea level rises, which can result in reduced functioning of the drainage system and an increased risk of surface water flooding. In the absence of mitigation, increasing development pressure will result in an increasing number of buildings and larger areas of land being exposed to flood risk. Work is underway on several river catchments, including the Cart and the Clyde, to develop solutions to increasing flood incidence and the effects of climate change.

3.65 The implications of climate change create pressures to change the physical environment to create preventative flooding measures, such as engineering works and river bank management. Under current local development plans, this is addressed on a development by development basis. Although these measures do aim to protect people, property and infrastructure from they can have indirect consequences such as detrimental impacts on river and

[26] SEPA (2005) Scotland River Basin District: Characterisation and impacts analyses required by Article 5 of the Water Framework Directive

[27] ENEC (2004) Identification of Pressure and Impacts Arising from Strategic Developments Proposed in National Planning Policy and Development Plans, research undertaken on behalf of SEPA and SNH.

river bank habitats. These are issues that will be dealt with at a local level but the FWS can also help by encouraging natural flood risk management by afforestation in upper catchments.

3.66 SEPA has produced flood maps[28] which show areas with a 0.5% (1:200) or greater probability of being flooded in any given year. This shows areas at risk of flooding by rivers and the sea and will help decision makers to understand flood risk when considering new development. The flood map is based on modelling to best present the data at a national level and is intended as an indicative tool which will be reviewed as and when further, more detailed data becomes available.

3.67 Drainage is a key issue in urban areas because development reduces surface permeability and increases levels of run-off which can lead to issues with water quality and quantity. The sustainable management of drainage and flood management issues is undertaken through the use of Sustainable Urban Drainage Systems (SUDS) which reduce the rate of surface run-off and improve water quality and amenity. At the end of 2001 there were in total 3,913 SUDS and 767 sites around GCV area. The growth in the number of SUDS has been rapid since 1996.[29]

3.68 National planning advice sets out the impacts of climate change on flood events and sea level rise. The UKCIP09 low emissions scenario predicts that Scotland will experience net sea-level rise of around 1 cm to 18.6 cm by the 2080s, depending on the emissions scenario. Extreme winds and storminess, influencing tidal surges and waves, may be modestly affected; very severe winter gales are predicted to become a little more frequent. However there are significant uncertainties around these three factors, especially the future surge and wave conditions.

[28] http://www.sepa.org.uk/flooding/mapping/

[29] SNIFFER, SEPA and the University of Abertay Dundee (2002) 'SUDS in Scotland – the Scottish SUDS database' (SNIFFER Final Report number SR(02)09.

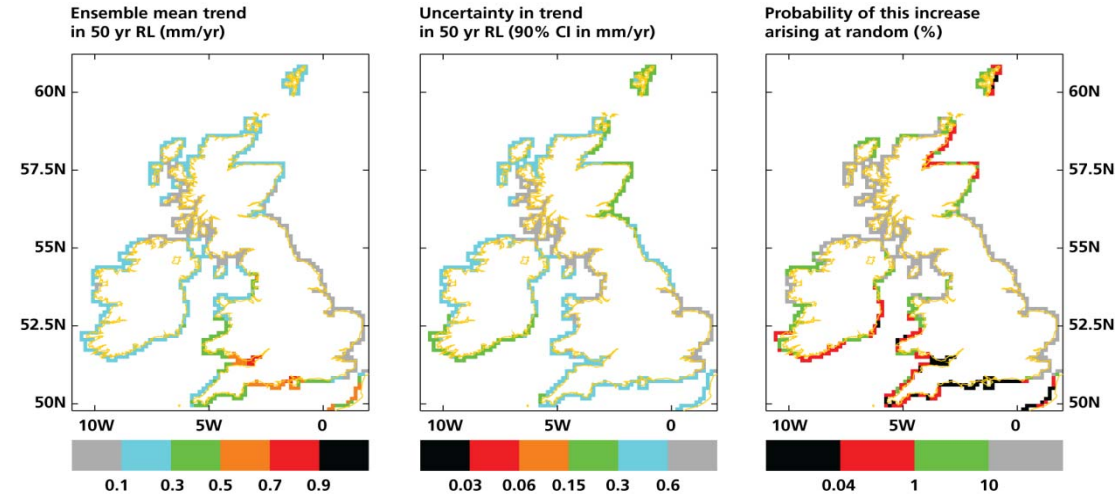


Figure 3.3: Future marine flood risk (UKCP09)

The ensemble mean trends in 50 year skew surge return level from the storminess component only. Negative trends are included in the grey shading.

3.69 UKCP09 find that the physical significance of the trends in the storminess-driven component of extreme sea level is small. (It must be noted that at this stage we have not combined these with mean sea level change.) For example the maximum fitted trend in the PPE ensemble mean for any of the four return periods considered (2,10, 20 and 50 year), at any location around the UK coastline, represents an increase of less than 0.9 mm yr. This can be compared with observed global mean sea level rise during the period 1961-2003 of around 1.8 mm year (IPCC, 2007) or the top-end absolute sea level rise projected for the UK for the 21st century of around 75 cm in 100 yr.

Air

3.70 Air pollution can adversely affect human health, quality of life and biodiversity. Targets set by the UK Air Quality Strategy have generally been met, including in relation to PM10, NO_2 and SO_2. Record levels of ozone depletion were recorded over Scotland in 2005, with a 5% decline in stratospheric ozone recorded over the last 20 years.

3.71 Ground level ozone levels are a growing problem and ozone has impacts on human health, irritating the lungs and increasing the symptoms of those suffering from asthma and lung diseases. It also affects plants. Annual mean trends for ground level ozone[30] indicate that, on average, the concentrations of ozone in rural areas appear to be gradually increasing, perhaps related to the recent warm summers.

[30] http://www.scottishairquality.co.uk/trends.php

3.72 As noted previously, key sources of air pollution include the energy sector, and transport. Whilst many pollutants have decreased as a result of a shift to unleaded fuel and the installation of catalytic converters in vehicles since 1990, SEPA predict that an increase in vehicle use will offset any further gains achieved through reductions in emissions. Overall, although air quality is improving, further measures will be required to avoid secondary impacts from air pollution on health, ecosystems and water quality[31].

3.73 Air pollutant concentrations vary due to climate and geography[32]. In general the north west is remote from this problem, but the more densely populated Central Belt has the highest concentrations of poor air quality. Air Quality Management Areas (AQMA) have been declared in Aberdeen City, East Dunbartonshire, Glasgow, North Lanarkshire and Renfrewshire. A large proportion of these were designated in 2005/2006 partly reflecting better monitoring and tighter standards. The sources[33] and distribution of emissions levels for particulates, nitrogen oxides, carbon monoxide and sulphur dioxide across the UK in 2005[34] are as follows:

- PM10 particles (the fraction of particulates in air of very small size (<10 µm) are of major current concern, as they are small enough to penetrate deep into the lungs and so potentially pose significant health risks. The principal source of airborne PM10 matter in European cities is road traffic emissions, particularly from diesel vehicles. For PM10s the emissions data for 2003 shows higher concentrations across the major urban areas, with highest concentrations in the larger towns and cities and along major roads such as the A9.
- Nitrogen oxides are formed during high temperature combustion processes from the oxidation of nitrogen in the air or fuel. The principal source of nitrogen oxides is road traffic, which is responsible for approximately half the emissions in Europe. Other important sources are power stations, heating plants and industrial processes. The distribution of nitrogen oxides as NO_2 is concentrated in the urban areas, with highest levels in the Central Belt, but the data also shows slightly higher levels across some upland areas including the north west and Cairngorms plateau.
- Carbon monoxide (CO) is a toxic gas which is emitted into the atmosphere as a result of combustion processes, and is also formed by the oxidation of hydrocarbons and other organic compounds. In European urban areas, CO is produced almost entirely (90%) from road traffic emissions. It survives in the atmosphere for a period of approximately one month but is eventually oxidised to carbon dioxide (CO_2). Emissions of carbon monoxide are localised in their extent to the immediate urban areas and major roads with highest concentrations in the major cities and the widest extent of higher levels of pollution in the Central Belt.

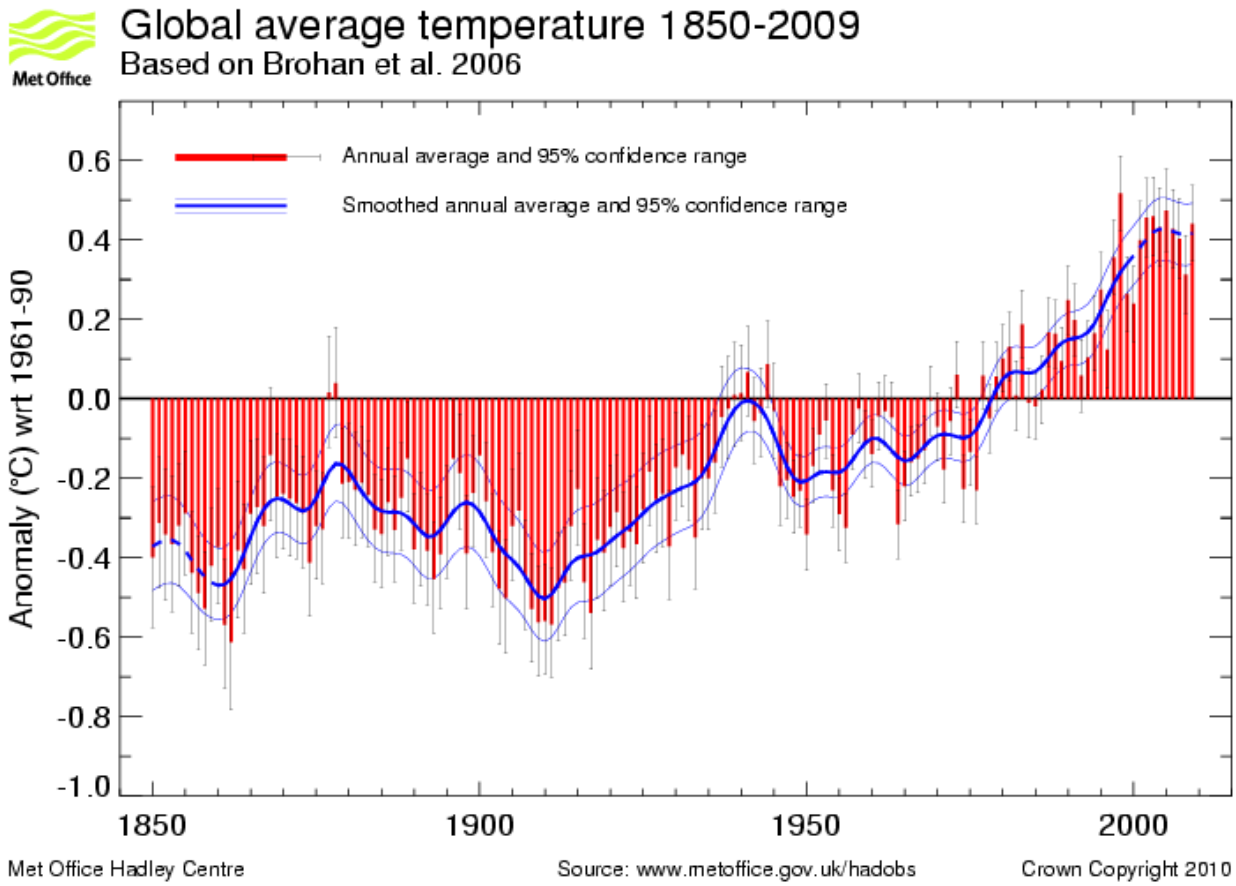
[31] Scottish Environment Protection Agency, (2006) State of Scotland's Environment 2006, SEPA: Stirling.
[32] SNH 2004 Natural Heritage Trends – Air Pollution
[33] http://www.airquality.co.uk/archive/what_causes.php
[34] http://www.naei.org.uk/mapping/mapping

- Sulphur dioxide (SO_2) is an acidic gas which combines with water vapour in the atmosphere to produce acid rain. Both wet and dry deposition have been implicated in the damage and destruction of vegetation and in the degradation of soils, building materials and watercourses. SO_2 in ambient air can also affect human health, particularly in those suffering from asthma and chronic lung diseases. The principal source of this gas is power stations burning fossil fuels which contain sulphur. SO_2 emissions are again localised in the urban areas with higher concentrations across the Central Belt.

Climatic Factors

3.74 Figure 4 shows the overall rise in global temperatures since 1850. The recent IPCC report states that man made GHG emissions have played a significant role in that.

Figure 4: Global Average Temperatures Between 1850-2009



3.75 All climate change projections build into them a range of potential forecasts based on average temperature rise. This section of the SEA Report uses the UKCP09 low emissions scenario for West of Scotland. It should be noted that this is a relatively cautious emissions scenario.

Figure 5: Scotland West: Annual Mean Temperature at 10% Emission Scenario

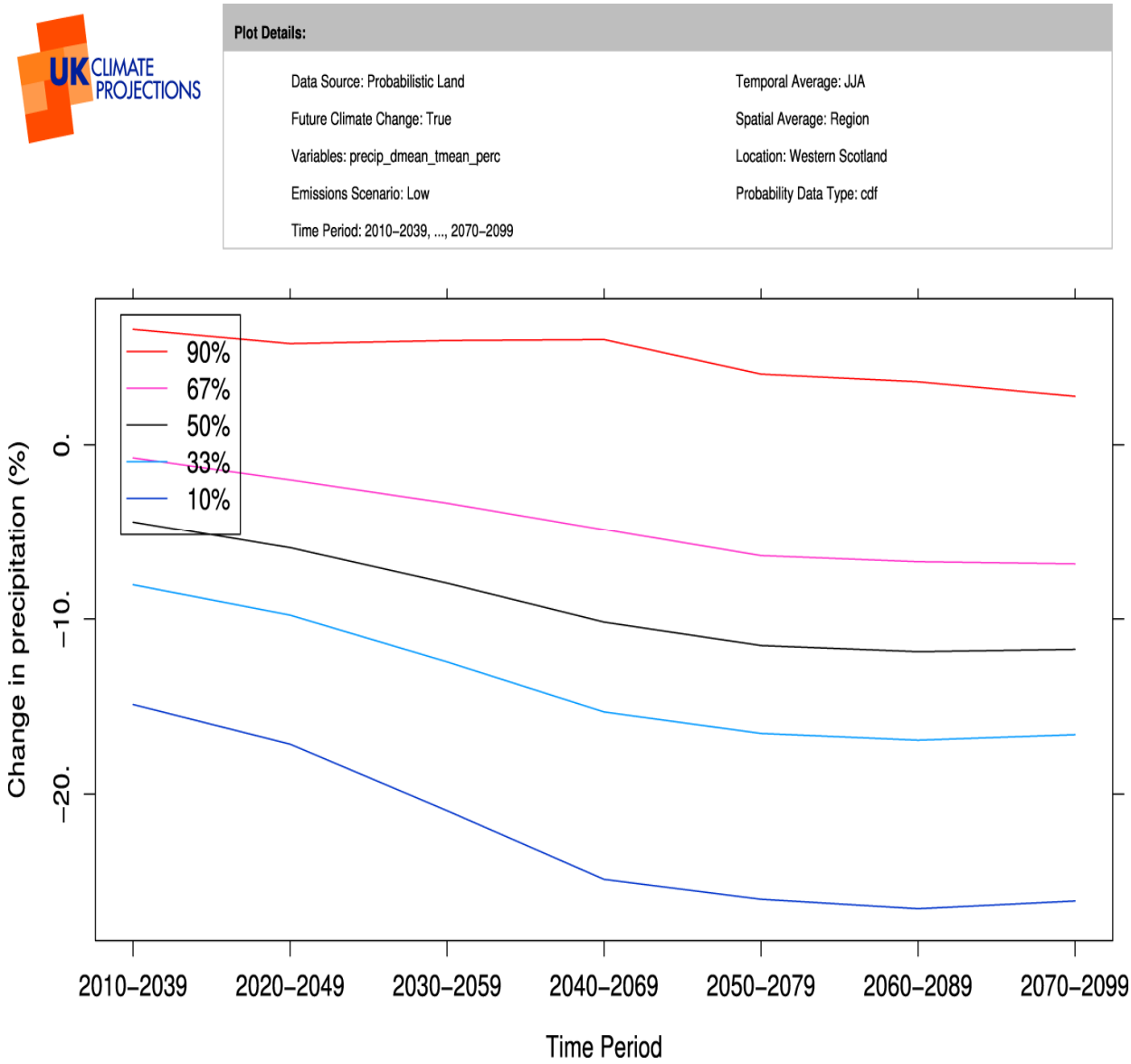
Note on interpretation of graph: The 50% line on the chart, for example, indicates that there is a projected 50% likelihood that the increase in mean temperature above the 1961-1990 baseline period at the specified location will be equal to or less than the amount shown on the vertical axis.

- Under low emissions, the central estimate of increase in winter mean temperature is 1.8°C; it is very unlikely to be less than 0.8°C and is very unlikely to be more than 2.8°C. A wider range of uncertainty is from 0.8°C to 3.3°C.
- Under low emissions, the central estimate of increase in summer mean temperature is 2.2°C; it is very unlikely to be less than 1°C and is very unlikely to be more than 3.6°C. A wider range of uncertainty is from 1°C to 4.4°C.
- Under low emissions, the central estimate of increase in summer mean daily maximum temperature is 2.8°C; it is very unlikely to be less than 0.9°C and is very unlikely to be more than 4.9°C. A wider range of uncertainty is from 0.9°C to 5.9°C.
- Under low emissions, the central estimate of increase in summer mean daily minimum temperature is 2.2°C; it is very unlikely to be less than

0.9°C and is very unlikely to be more than 3.8°C. A wider range of uncertainty is from 0.9°C to 4.7°C.

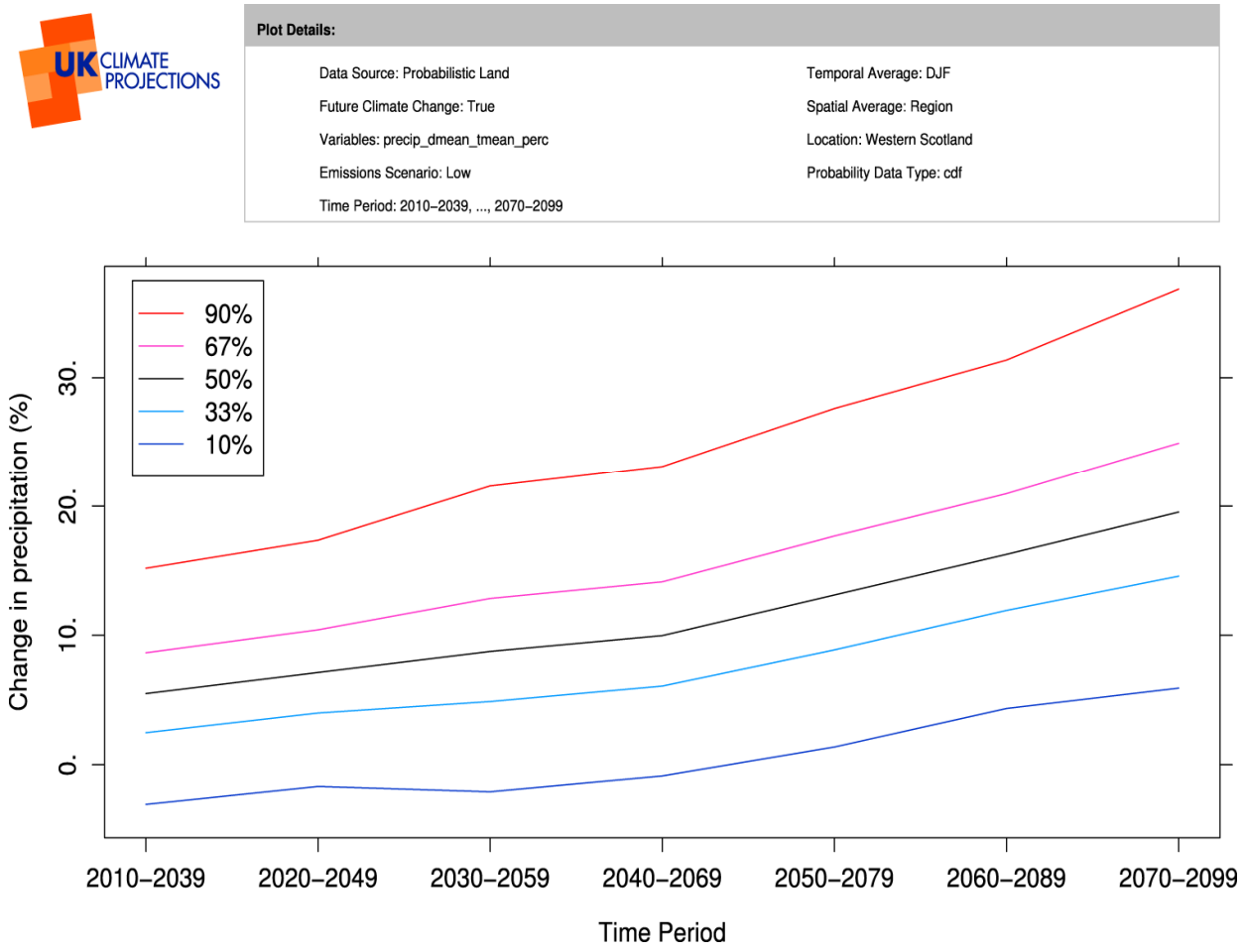
- Under low emissions, the central estimate of change in annual mean precipitation is -2%; it is very unlikely to be less than -8% and is very unlikely to be more than 5%. A wider range of uncertainty is from -8% to 6%.

Figure 6: Scotland West: Change in summer mean precipitation (%)



- Under low emissions, the central estimate of change in summer mean precipitation is -10%; it is very unlikely to be less than-25% and is very unlikely to be more than +6%. A wider range of uncertainty is from -28% to +6%.

Figure 7: Scotland West: Change In Winter Mean Precipitation (%)



- Under low emissions, the central estimate of change in winter mean precipitation is 10%; it is very unlikely to be less than -1% and is very unlikely to be more than 23%. A wider range of uncertainty is from -1% to 31%.

3.76 Overall these trends suggest warmer wetter winters and hotter, drier summers for the GCV area.

3.77 The GCV region is expected to experience increasing impacts of climate change as the decades go on. This could potentially include greater levels of rainfall and increased incidences of flooding, rising sea levels affecting coastal areas/river basins and an accentuation of a range of potential natural hazards i.e. landslides etc. Flooding is expected to be more frequent, particularly within existing flood plains, river basins and on coastal areas. In current development plans, flooding is likely to increasingly impact on land for development opportunities unless steps are taken to adapt to the changing circumstances.

3.78 In current development plans, efforts are being focused on reducing the GCV area's GHG emissions in line with the Scottish Government targets. It has so far proved difficult to take forward a coordinated approach to tackling GHG emissions at a city region level and there has been little co-ordination with

other public and private bodies to address the issue. In the absence of a strategic approach there is likely to be limited reduction in the region's GHG emissions

3.79 The Climate Change Act 2009 establishes a legal framework for emissions reductions by 2050. The SDPA has adopted the Tyndall Institute for Climate Change Research's GRIP methodology (www.grip.org.uk) which will help evaluate how the SDPA might meet the requirements of the Climate Change (Scotland) Act 2009.

Table 8: Summary Of The Emissions For Each Of The Four Sectors Across The GCV Area - Total Emissions (x1,000 tonnes)

		CO_2	CH_4	N_2O	HFC	PFC	SF_6	CO_2e
Energy sector	Total	**12,199**	**40.44**	**0.25**	**0**	**0**	**0**	**13,126**
Domestic		4,666	1.53	0.10	0	0	0	4,729
Industry		2,247	0.25	0.08	0	0	0	2,277
Services		1,479	0.18	0.04	0	0	0	1,495
Fugitive Emissions / Energy Transformation		412	38.40	0.00	0	0	0	1,218
Transport		3,395	0.07	0.03	0	0	0	3,406
Industrial sector	Total	**0**	**0**	**0**	**242.86[2]**	**2.65[2]**	**0**	**322**
Waste sector	Total	**12.50**	**23.20**	**0.4**	**0**	**0**	**0**	**750**
Agriculture sector	Total	**0**	**14.24**	**1.37**	**0**	**0**	**0**	**606**
Total (all sectors)		**12,211[3]**	**77.88[3]**	**2.02[3]**	**242.86[2]**	**2.65[2]**	**0**	**14,719**
GCV Population: **1,747,080**								
Per capita (tonnes)		6.99	0.04	0	0.14	0	0	8.42
GVA **€42,954.2m**								
Per unit GVA		0.28	0	0	0.01	0	0	0.36

1 *These figures have been estimated using a combination of national, regional and local data and although they are deemed to be the most accurate data available currently, the results carry a degree of uncertainty.*

2 *Figures for HFC and PFC relate to GWP100 rather than kilo tonnes.*

3 *Figures require to be multiplied by their global warming potential (GWP100) to derive the CO_2 equivalent value total.*

3.80 On a per capita basis, domestic emissions in the GCV area are high relative to the rest of the UK; the GCV area is responsible for a low level of industrial process emissions; emissions from waste are in line with the national average and agricultural emissions are higher than average due to a proportionally larger dairy farming sector in the GCV area. Overall emissions from the region work out at 8.4 tonnes per person; this is below the national average and reflects the region's economic profile. The GCV area greenhouse gas emissions equate to 0.3 tonnes per £ of GVA.

3.81 The SDPA carried out work with the Tyndall Centre on the Greenhouse Gas Regional Inventory Project or GRIP model[35]. This work is supporting discussions on a longer-term strategic response to climate change mitigation within the Glasgow and the Clyde Valley (GCV) metropolitan area, and the meeting of the 80% by 2050 Contraction & Convergence target for the six main greenhouse gas emissions (GHGs). The concepts of contraction and

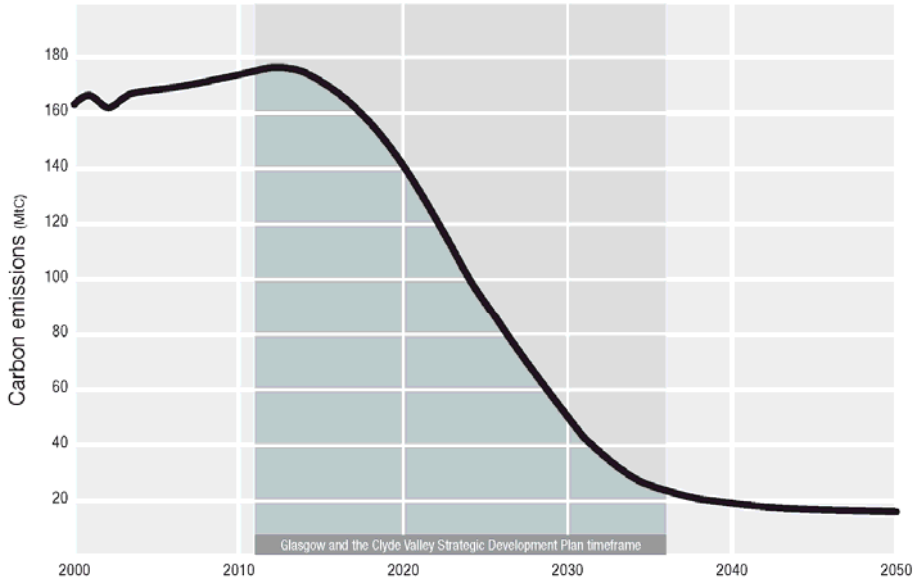
[35] http://www.rtpi.org.uk/download/5329/Issue-126-081218-ScotPlanner-Dec08-final-electronic-version.pdf

convergence relate to reducing the overall emissions of GHGs to a scientifically agreed safe level (contraction) and to an equitable process where all countries end up emitting the same effective quantity of GHGs per capita (convergence).

3.82 In order to give an idea of the scale of the challenge, by 2010 the UK will have emitted since 1990 the equivalent of 1.8 Gt of carbon, so that if we are going to achieve the 80% reduction by 2050 only a further 2.8 Gt can be emitted. This equates to the start of a continuing decline in emissions post-2015 so FWS policies to achieve such a trajectory will have to be successfully implemented.

3.83 The inventory project has provided a context for the development of all strategic plans by the Glasgow and Clyde Valley SDPA. It sets a strategic baseline for future policy and project development to achieve, both, the Climate Change (Scotland) Act 2009 target and sustainable economic growth. It also goes some way to identifying which partner agencies need to develop policy and projects in each emissions sector. This type of governance approach to the development and implementation of spatial strategies is in line with the Scottish Government's recent announcements on streamlining the planning system and involving agencies directly in plan development. The inventory has shown that transportation is responsible for 24% of all emissions. Land-use distribution and development density impact on the origins and destinations associated with the need to travel, and so can contribute much to the reduction of emissions; along with the planning and provision of new transport infrastructure. The existing built environment has been calculated to be responsible for around 50% of all GCV emissions. Planners can seek to achieve energy efficiency in new development through the principles of zero carbon or even negative carbon. However, planners have less direct influence in adapting the existing built environment. A conservative estimate for the renewal of the GCV housing stock might be 130 years; three times the time period to 2050. This puts the emphasis on the need for joint-working, and the project has been useful in providing a context for engaging with non-spatial planning departments and authorities.

Figure 9: GCV Carbon Emissions Reduction Trajectory to Achieve Contraction & Convergence Target of 80% by 2050



Historic environment

3.84 Glasgow and the Clyde Valley has a rich and varied cultural heritage, ranging from prehistoric settlements to the legacy of the region's industrial past.

3.85 The strong influence of the region's rivers, including the Clyde itself, provide a focus for a significant element of the region's heritage – creating communication routes and providing key resources from the earliest times.

3.86 Long thought to be a critical link between the east and west of Scotland (via the Tweed and Clyde river corridors), recent discoveries of Mesolithic remains have highlighted the significance of the Biggar Gap and South Lanarkshire more generally in understanding the hunter-gatherer communities of post-glacial Scotland. Work in this area is also making an important contribution to understanding the nature of the transition to farming in southern Scotland, most notably through extensive investigations on Biggar Common. Many of these discoveries have been made in advance of, or in parallel with, development of commercial forestry – reinforcing the importance of appropriate pre-afforestation investigations.

3.87 A series of Bronze Age and later prehistoric settlements, enclosures and forts perch on the slopes overlooking the floodplain of the Clyde, the Daer and the Annan. Cutting a swath through the prehistoric landscape, the Roman road and sequence of forts following the watershed above the Annan valley, before breaking off west over Beattock summit to follow the edge of Clyde floodplain to Biggar, represents the main route into Scotland in the west for the Roman army. Complementing Dere Street (running through the Borders and Lothian), this was a key artery supplying the major installations in the Forth-Clyde isthmus – including the Antonine Wall. Constructed in the years following AD140, the Wall served as the northern frontier of the Roman

Empire for a generation. It represents the 'high water mark' of Roman domination in Britain and was the latest, most complex and most heavily defended of the frontier systems that defined the Empire in the 2nd century. The surviving two-thirds of the Wall is protected as a Scheduled Monument and was inscribed as an extension of the transnational Frontiers of the Roman Empire World Heritage Site, joining Hadrian's Wall and the Upper Raetian *limes* (in Germany) on the UNESCO list. While the fabric of the Wall and associated installations enjoy protection as noted above, its setting is vulnerable to adverse impacts from development – and inappropriate woodland expansion. However, existing trees and woodland have an important part to play in contributing to the character and significance of the Wall and, in some locations, are key features in aiding its appreciation in the wider landscape.

3.88 The foundations of the current settlement pattern were laid during the medieval period, with the establishment of a series of earthwork, and later stone, castles distributed throughout the region, with particularly strong concentrations in Renfrewshire. The medieval origins of a number of towns and villages are still readily apparent in their plan – although much of Glasgow's medieval layout was lost during 18th and 19th century reorganisation. The development of medieval power centres also laid the foundation for the pattern of later estates and designed landscape that are a feature of the region's historic environment.

3.89 These landscapes, and the country houses with which they are associated, were founded by the region's nobility – often significant figures in Scottish history, such as the Dukes of Hamilton. The wealth of these influential individuals, and the emerging mercantile class, spurred the early development of industry across the area during the late 18th century, harnessing the power of the region's rivers to drive textile mills. The most famous of these – founded in 1786 by David Dale, one of Glasgow's self-made 'burgher-gentry' – is New Lanark. Now a World Heritage Site, New Lanark is rightly famous as an iconic of Scottish industry and also of the socially enlightened philanthropism of its later proprietor Robert Owen.

3.90 Trees and woodlands are a major aspect of the character and significance of these landscapes. In the case of policy woodlands, these frequently represent generation of design effort and contain a range of important ancient woodlands (such as Hamilton High Parks) or exotic species gathered from across the world.

3.91 Archaeological remains of all periods can be damaged by inappropriate woodland development – both as a result of deliberate planting and uncontrolled natural regeneration. Many sites were lost to forestry during the 1950s-70s when assessment processes were less rigorous. However, the region contains a prime example of how seemingly 'lost' relics can be revitalised by careful restructuring and management of woodland. Wilsontown Ironworks in South Lanarkshire – the second earliest coke-fired ironworks in Scotland – was overplanted with conifers in 1977, but has recently been clearer of trees and consolidated. The addition of access and interpretation facilities by Forestry Commission Scotland has transformed a

previously overlooked site into an important attraction and a means of reconnecting communities with their industrial heritage.

Landscape

3.92 The European Landscape Convention states that landscapes across Europe are being transformed as a result of a number of factors, including settlement expansion, transport, infrastructure and the economy.[36]

3.93 Collectively, the series of landscape character assessments prepared by SNH provides a useful 'snapshot' of the characteristics of Scotland's landscapes and this is translated to a strategic level in SNH's Natural Heritage Futures Statements. As part of this work, SNH prepared a broad assessment of Scotland's landscapes which identifies nationally significant resources, pressures and opportunities.[37] The report notes that landscapes are constantly evolving, but that forces for change vary between gradual natural processes and human activity which results in more pronounced and often negative change. Key challenges include land use change, incremental change arising from development and changes in perceptions.

Contribution of woodland and forests

3.94 Forests, woodlands and trees make an important contribution to the character of landscapes across Glasgow and the Clyde Valley. Equally, there are a range of ways in which the extent of woodland, and the range of benefits it provides, could be increased in line with the objectives of the Scottish Forestry Strategy, CSGN and Glasgow and the Clyde Valley Green Network, and the framework of strategic and local policies and individual councils' Single Outcome Agreements.

3.95 Trees can be an important component of the urban environment, contributing to the quality of large urban greenspaces such as Pollok Country Park, Glasgow Green or Queen's Park, formal squares and gardens such as those found across the West End, key river corridors including the Kelvin, Leven and the White Cart through Linn Park in Glasgow and East Renfrewshire. New towns such as Cumbernauld, by contrast, have an extensive planned greenspace network, much of which includes woodland which is now starting to mature. Trees and woodlands are, however, much less characteristic of large areas of social housing and some of the newer suburbs. There is significant potential to increase tree cover across the area's townscapes, linking and extending existing habitats, providing stepping stones and corridors through the urban area, providing shelter and improving the physical environment. There are opportunities to link into existing programmes including WIAT, local food growing (e.g. orchards) and wood fuel projects.

3.96 The middle Clyde valley, and its series of deeply incised tributaries, has some of the most intact and ecologically rich woodlands in the Glasgow and Clyde Valley area. The Clyde Valley has a legacy of orchards, many of which have

[36] Council of Europe, European Landscape Convention, http://www.coe.int/t/e/Cultural_Co-operation/Environment/Landscape/

[37] SNH (2002) Natural Heritage Zones

been lost or stand derelict, and a series of designed landscapes many with distinctive policy woodlands. Here, the emphasis may be on managing and restoring woodlands and orchards, developing woodland related businesses and increasing opportunities for public access and interpretation.

3.97 Neighbouring areas of plateau farmland are, by contrast, more open and exposed, with woodland cover often limited to lines of field boundary trees and small farm woodlands. Here there is a need for positive management and replacement of existing trees, but also potential for new woodland planting, possibly linked to habitat networks and wood fuel production.

3.98 Across significant parts of Lanarkshire the pattern of coal mining and associated industrial activity has left a legacy of vacant and derelict land with a wider fragmented rural landscape. Over the past decade, the Central Scotland Forest has made a significant positive contribution to these landscapes, using woodland planting and other enhancements to improve a damaged landscape and secure significant benefits for communities across the area. This provides lessons which could be used to inform the strategy across much of the study area. There is significant potential to further increase woodland cover in these areas to transform post industrial landscapes while contributing to a broader range of policy outcomes.

3.99 Productive forestry is an important feature of many rural areas, particularly in plateau and upland areas where geometric blocks of even aged conifers often contrast with the apparent wildness of the surrounding area. Examples are found on the Kilpatrick Hills, Clyde Muirshiel, parts of the Campsie and Kilsyth Fells, the Southern Uplands and the plateau moorlands bordering Ayrshire to the south west and Falkirk and the Lothians to the north east. Restructuring is beginning to have an enhancing effect on these areas, with more varied species and age structures and an increase in the diversity of habitats. Some of these area offer significant potential for recreation, with areas such as the Carron Valley already accommodating a regionally important mountain biking facility.

3.100 Scotland's landscape provides many different benefits, and these are highlighted by the Scottish Landscape Forum[38]. Accessible attractive landscapes support health and well-being through encouraging physical activity, and landscapes provide a huge range of opportunities for enjoyment and recreation. The restoration of degraded landscapes is an important aspect of community regeneration and they also provide a resource for learning about the natural and cultural heritage. Tourism is vital to the economy, contributing around £4.2 billion and employing nearly 9% of the workforce. The economic benefits of tourism are important for rural areas, and high quality landscapes also attract economic development and investment.

3.101 Landscapes are constantly changing as a result of human activity, and SNH has identified key drivers of change[39]. Climate change may add to these changes

[38] Scottish Landscape Forum (2007) Scotland's Living Landscapes Places for People The Scottish Landscape Forum's Report to Scottish Ministers

[39] SNH (2003) Scotland's Future Landscapes? Encouraging a wide debate A discussion paper from Scottish Natural Heritage

through the adaptation of habitats and agricultural systems and the development of renewable energy projects. Wider aspects of change include a loss of diversity and distinctiveness and a decline of natural features within the landscape. There has been continued loss of remote and wild countryside. Poor standards of design, the loss of cultural features, and reduced management of landscape features results in changes in the condition of elements of the landscape. There are threats to the rural character of lowland Scotland through continued development, infrastructure, noise and lighting.

ENVIRONMENTAL ISSUES

3.102 The Environmental Assessment (Scotland) Act 2005 requires that the Environmental Report includes a description of existing environmental problems, in particular those relating to any areas of particular environmental importance. The purpose of this section is to explain how existing environmental problems will affect or be affected by the FWS and whether it is likely to aggravate, reduce or otherwise affect existing environmental problems.

3.103 Environmental problems that affect the PPS were identified through an initial analysis of the baseline environmental data for Glasgow and the Clyde Valley. Relevant environmental problems are summarised in Table 3.2.

3.104 Forestry-related activities will be subject to the UK Forest Standard and Forest Guidelines (currently being revised) and these guidelines should address many of the potential impacts identified.

3.105 The following table draws on that prepared for the SEA of the GCV Main Issues Report, but has been amended to reflect the status and function of the FWS.

Table 3.2: Summary of environmental issues relevant to GCV FWS

Regionally identified issues	Regionally relevant to GCV area?	Key elements	Data source	Significance for the FWS?
Biodiversity				
Condition of designated sites or significant gaps in habitat networks Continuing need to protect designated sites and to enhance their condition where possible (95% in favourable condition by 2010 target has already been missed)	Yes	Responsibility of the Scottish Government, fulfilling European responsibilities. Will not be directly addressed by FWS	UKBAP; LBAP SNH site condition monitoring reports	Woodland planning and management processes can have a significant impact on biodiversity. Protection of species and habitats is dealt with in lower tier plans. UKBAP and LBAP priorities will be reflected in FWS policies and spatial frameworks
Climatic factors				
Increasing energy demand	Yes	Increasing demand for fossil fuels for timber transport, forest operations and, indirectly, for processing Increasing demand for low carbon fuels for heat and power (i.e. woody biomass) Increasing use of private cars to access recreation facilities	Timber Transport Forum; Strategic transport models FCS	Encouraging modal shift where possible is a key requirement of the SFS Encouraging the uptake of biomass for renewable heat offers important opportunities for carbon saving – and markets for forest products Encouraging active/sustainable travel to and from woodland based recreation will feature in the FWS
Impacts of climate change on the environment (biodiversity,	Yes	Potential effects on significance of designated	UKCP09 projections	Climate change mitigation through carbon sequestration,

Regionally identified issues	Regionally relevant to GCV area?	Key elements	Data source	Significance for the FWS?
landscape, water, soils and the historic environment)		assets Changes in environmental and landscape character Ecological succession		protection of carbon stores (soils, standing timber, timber in buildings etc) and renewable energy a key aspect of the FWS Adaptation through sustainable flood management, green/habitat networks to facilitate ecological adaptation; choice of suitable tree species to provide climate resilience
Population and human health				
Population	Yes	Ageing population – potential for increasing severity of fuel poverty etc. as increasing population on fixed income? Number of households in GCV projected to increase above the Scottish average – pressure on land for development (particularly housing); potential for restricted access to natural resources/greenspace	Census; GROS Neighbourhood statistics; SIMD 09	Potential for biomass to provide low cost sustainable heat Links into Green Network thinking, via GCV Green Network and Central Scotland Green Network
Continuing high levels of preventable disease/early death arising from low levels of physical activity	Yes		SG Health Statistics; Glasgow Centre for Population and Health	Links into Green Network objectives to encourage active travel and recreation

Regionally identified issues	Regionally relevant to GCV area?	Key elements	Data source	Significance for the FWS?
Continuing significant health inequalities	Yes	Participation rates in exercise and active recreation across GCV are highly variable, with correlations to level of opportunity	SG Health Statistics; SIMD 09	Links to GN objectives – potentially more appropriate to deal with in lower tier plans
Concentrations of social exclusion linked to environmental factors (e.g. proximity to vacant and derelict land)	Yes	Links between VDL and SIMD lower quartile	SNIFFER Environmental Justice research; Glasgow Centre for Population Health (?)	Links to regeneration; woodland as a positive interim use for vacant land and stalled development sites
Soil				
High levels of brownfield and derelict land – a potential resource for urban forestry, urban fringe biomass development and greening of problem sites to further GN aims	Yes	Quantity and long-term nature of some sites	GCV Structure Plan monitoring reports; VDL Surveys	FWS can contribute to SDP objectives in relation to remediation of VDL and offer a sustainable, relatively low cost use
Changing soil quality functionality and stability, with issues arising from climate change, loss of organic matter, soil sealing and cultivation.	Yes	Prevent further degradation and preserve function and restore degraded soils to a level of functionality. Land management practices e.g. agriculture and forestry. Land stability. Vacant and Derelict Land. Mineral workings and landfill sites require completion and	SEPA/Scottish Government Forestry Commission Environmental Monitoring (Minerals)	FWS can target areas at risk of soil erosion or with poor soil quality: - land cover by woodland shelters soils from wind and rain, reducing erosion. - forestry generally has lower chemical inputs and lower soil disturbance than intensive agriculture, improving quality

Regionally identified issues	Regionally relevant to GCV area?	Key elements	Data source	Significance for the FWS?
		restoration. The Scottish Soil Framework 2009 Flooding UK Forestry Standard and supporting Forests and Soils Guidelines		and stability. - woodland can restore organic content and reverse soil sealing on brownfield sites. - woodland should be directed away from deeper peat soils.
Water				
Number of water bodies which may not reach good ecological status by 2015.	Yes	Poor water quality in some stretches of watercourses. Urban drainage and diffuse pollution from rural sources and impact of industrial past, point source pollution, abstraction and flow regulation and changes to morphology (Draft Clyde Area Management Plan 2008). Rising mine waters may cause pollution	SEPA River Basin Management Planning Data: Clyde Area	The FWS can benefit water quality by: - addressing soil erosion problems through provision of land cover, reduction of stock access to riverbanks, helping to stabilise riverbanks etc, reducing associated issues of sedimentation and transport of soil chemicals - increasing percolation of rainwater into soil, reducing surface run-off - displacing intensive agricultural land use and associated diffuse pollution - moderating the riparian microclimate and reducing

Regionally identified issues	Regionally relevant to GCV area?	Key elements	Data source	Significance for the FWS?
				thermal stress - creating diversity in channel form and water depth through the action of coarse woody debris
Flood risk, exacerbated by climate change in the long term.	Yes	Flood plain development pressure (add flooding element to environment monitoring). Localised flooding exacerbated by urban drainage Flood Risk Management (Scotland) Act	SEPA River and Coastal Flood Maps. GRIP Model Metropolitan Glasgow Strategic Drainage Plan (MGSDP)	FWS can promote natural flood management as woodland can slow down and reduce run-off at a catchment scale and play a role within SUDS schemes Links to River Basin Management Plans and Flood Risk Management Plans
Air				
Poor air quality within urban areas resulting from concentrations of transport emissions and potential for biomass developments/wider use of woodfuel to impact on local air quality	Yes	2008 (CAFÉ) Directive on Ambient Air Quality and cleaner Air for Europe; 2004 Directive relating to arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air (to be merged with the CAFÉ Directive at a later date); 2001 Directive on National Emissions Ceilings (on 4 key air pollutants; sulphur dioxide, oxides of nitrogen, volatile organic compounds, and	GRIP model Strategic Land-use Transport Model (SITLUM) Air Quality Management Plans Smoke Control / Air Quality Management Areas	FWS role in directing woodland to air quality problem areas as woodland has the potential to benefit air quality by providing space for dilution and dispersion of pollutants; there is also evidence that woodlands can accelerate the breakdown and removal of some air pollutants although species choice is a factor. Number and location of

Regionally identified issues	Regionally relevant to GCV area?	Key elements	Data source	Significance for the FWS?
		ammonia). Report on level and key issues of Air Quality Management Areas.		AQMAs in the GCV area including why they are designated and how woodland could reduce pressure.
Material Assets				
Ongoing requirement for minerals extraction, alongside the need to protect the environment.	Yes	SDPA area forms the principal distribution area for the GCV and Ayrshire region for aggregate provision. It is required to provide at least a ten year landbank.	Report GCV monitoring returns for mineral applications. Scottish Aggregates Survey 2005 British Geological Survey	As a semi-permanent land use, potential sterilisation of mineral resources is less of an issue for woodland than other development uses. Potential role of woodland in land restoration/aftercare, when granting planning permission for mineral extraction.
Continuing growth in waste arising including from the construction sector, offset to an extent by an increase in recycling and composting. Ongoing need to reduce reliance on landfill sites and in particular levels of biodegradable waste going to landfill.	Yes	Levels increasing and diversion from landfill.	SEPA (although there is limited data across all waste streams in licensed sites. National and GCV monitoring returns on progress made and continuing targets	Waste arisings from forestry are sustainable (potential use as a low carbon energy source) relative to other forms of development/land use. Potential role of woodland in site restoration/aftercare, when granting planning permission for landfill.

Regionally identified issues	Regionally relevant to GCV area?	Key elements	Data source	Significance for the FWS?
Cultural Heritage				
Vulnerability of protected and non-protected historic and cultural buildings, sites, areas and landscapes to insensitive developments.	Yes Report on what is known. No GCV-level monitoring. How vulnerable are our valued historic and cultural heritage assets to insensitive developments?	Nationally important historic sites, including ancient woodland, could become focus for woodland-based tourism development. Level of loss of heritage resources of regional and national significance UK Forestry Standard and SFS require forest management to take account of the historic environment.	West of Scotland Archaeology Service; RCAHMS; Historic Land Use Assessment Local authorities	Role of the FWS in ensuring that sensitive aspects of the historic environment are identified and that they are taken into account in the forest design planning process and by sensitive management of forestry operations.
Place-setting and the Built Environment				
Poor settings of urban and peri-urban communities, impinging on well-being and quality of life.	Yes	Locating Community Growth Areas Design issues GN issues but there are difficulties in monitoring this. Coalescence of communities through urban expansion/ribbon development. Air Quality and Noise Management issues. Woods In and Around Towns	Environment Monitoring returns. AQMAs CNMAs SNH Natural Heritage Futures	Role of FWS in specifying well designed and managed woodlands which can contribute (as part of a wider green network) to the regeneration of deprived communities and help build sense of place by: - helping to create places where people want to live and work - providing a valuable learning resource - strengthening communities

Regionally identified issues	Regionally relevant to GCV area?	Key elements	Data source	Significance for the FWS?
		programme		by engaging community groups in the maintenance and improvement of their local environment
Loss of diversity in the landscape and dilution or erosion of distinctive character. Attrition of undeveloped, remote and wild countryside, and coasts.	Yes. This is reported as an issue in most local plan environment reports.	Cross-boundary issues including loss of diversity in the landscape? Vulnerability of key areas to inappropriate development? Poor quality urban fringes. Coalescence of communities through urban expansion/ribbon development. Capacity of landscapes to absorb development and change. Impacts on undeveloped, remote and wild countryside, and coasts.	SNH Candidate Noise Management Areas (CNMAs)	Decisions on woodland location and design should take account of landscape character.
Generally poor standards of design.	Yes. Many Local Authorities report this as an issue in their Environment Reports.	This is a detailed design issue. Specific design issues for particular sites are the responsibility of the Local Authorities.		An aspect of the place-setting agenda of the Metropolitan Development Strategy; however, the solution is essentially a design element which requires a local approach and only in exceptional circumstances would there be a role for the

Regionally identified issues	Regionally relevant to GCV area?	Key elements	Data source	Significance for the FWS?
				FWS.
Erosion of rural character of Lowland Scotland - loss of features, intrusion of noise and artificial light reducing tranquillity, suburbanisation.	Yes	Pressures on land to accommodate the increasing number of households. Green Belt development pressure/quality of greenspace. Need to identify, protect and enhance the greenspace network and important areas of forestry/woodland. Some elements such as artificial light are local issues.	SNH Local Authorities	An aspect of the place-setting agenda of the Metropolitan Development Strategy; the solution is partially a design element which requires a local approach although there is a role for the FWS in specifying new and better managed woodlands as part of a green network which helps to conserve rural character and tranquillity. Potential role of FWS in promoting woodland as a means of conserving and enhancing areas of Dark Skies, with benefits to the environment and potentially tourism.

LIKELY EVOLUTION OF THE ENVIRONMENT WITHOUT THE GCV FWS

Introduction

3.106 The development of the FWS was directly related to the statutory imperatives created by the Planning etc. (Scotland) Act 2006 – requiring the production of Strategic Development Plans – and recent Scottish Government guidance on indicative forestry strategies[40]. It is therefore relatively unlikely that the Region would have gone without an updated policy framework for woodlands and forestry – particularly in light of the importance of the Glasgow and Clyde Valley and Central Scotland Green Networks to the achievement of wider planning and environmental objectives.

3.107 However, for the purposes of this assessment, the 'business-as-usual' policy framework will be provided by the 2005 GCV Forestry Framework, supplemented by the additional requirements of the:

- 2006 Scottish Forestry Strategy;
- the Central Scotland Forest District Strategic Plan; and,
- the strategic aims of the GCV Green Network Partnership.

Likely environmental effects

3.108 In broad terms the existing policy framework, backed as it is by a robust regulatory regime and detailed site-specific assessment, would not result in significant adverse environmental effects. However, as it is based on ageing information – particularly with regard to contributing to climate change targets, delivering woodland in parallel with development and contributing to green infrastructure – it is unlikely to convey as comprehensive a range of benefits as the FWS.

3.109 Similarly, as the existing Forestry Framework is less well-aligned with the aims of the proposed GCV Strategic Development Plan (GCV SDP) it is likely to have been less effective in supporting planning and delivering sustainable development across the city-region.

3.110 While it should be acknowledge that the 2005 Framework has proved to be successful in stimulating the creation of new woodland, the mapping and land categorisation could be considered not be fit for purpose in relation to Scottish Government guidance (i.e. providing clear indication of 'preferred,' 'potential' and 'sensitive' land). This could also prevent land managers taking advantage of the current FCS 10% premium for planting productive woodlands in 'preferred' areas – potentially reducing the overall increase in woodland area that could be delivered.

3.111 In terms of environmental protection and providing clarity and certainty for land managers, the mapping provided in the Framework is also less useful. Environmental sensitivities – beyond deep peat soils and landscape

[40] Forestry Commission Scotland (2010) '*The Right Tree in the Right Place': Planning for woodlands and forestry*

designations – are not included the nearest equivalent to the FWS's land categorisation map. Therefore national and international natural heritage and historic environment designations are not clearly identified as potential sensitivities – creating the potential for significant effects. This is particularly important in relation to key open ground habitats (e.g. those designated for raptors) and historic sites and landscapes (most notably, the setting of the Antonine Wall). It should be acknowledged that the existing site-specific assessment processes required by FCS as part of the SRDP grant process and, for larger schemes, EIA under the Environmental Impact Assessment (Forestry) (Scotland) Regulations 1999 should limit the potential for impacts to occur – however, not highlighting these sensitivities both increases the likelihood of effects and reduces the opportunity for land managers to bring forward appropriate schemes that protect and enhance such sites, while delivering on other objectives.

3.112 As noted above, the Framework would also be less able to deliver on key climate change mitigation and adaptation measures. Less emphasis is placed on carbon sequestration, actions around biomass are not focused for the current policy regime (e.g. Renewable Heat Incentive and Feed-in Tariff) and woodland removal is not highlighted as a key issue. Similarly, the Framework is less able to deliver in relation to aiding species adapt to climate change as, when it was developed, the Forest Habitat Network concept was not as fully developed and integrated.

3.113 It is therefore likely that, while some woodland expansion could be achieved, it is unlikely to be as well targeted or able to deliver on such a broad suite of objectives. Influenced by the Scottish Forestry Strategy, the FWS has a broader policy emphasis that the preceding Framework and aims to raise awareness of the potential of woodland to contribute to a social and environmental, as well as economic, objectives. It therefore has a far stronger community focus, promoting improved access, engagement and local environmental improvement.

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 GCV Forestry and Woodland Strategy.

4.2 This section of the report sets out the approach used in assessing the likely environmental effects generated by the vision and strategic priorities of the FWS.

APPROACH TO ASSESSMENT

Thematic / objective-based assessment

4.3 The 'strategic priorities' identified under each theme of the FWS were assessed against the SEA objectives set out below. The assessment matrices are included as Appendix 1.

4.4 A narrative highlighting any regionally significant effects, recommendations for changes to the FWS and desirable mitigation measures is set out for each theme, along with the alternatives considered during the policy development process.
This will appear as follows:

- **Theme heading** (e.g. '*Enriching the Environment*')
  - **Introduction** to the theme
    - Assessment results (structured by strategic priority where there are regionally significant effects)
    - Alternative(s)
    - Recommendation (sequentially numbered throughout the ER)
    - Mitigation and monitoring

4.5 The following table outlines the framework used for assessing environmental effects, and identifying proposed measures for preventing, reducing or offsetting significant adverse effects.

Table 4.1: framework for assessing environmental effects

Topic	Evaluation	Timeframe	Duration	Commentary	Cumulative or synergistic effects	Mitigation / enhancement
	++/+/?/0/-/--	Short / medium / long	Temporary / permanent			
Biodiversity						
Etc...						

Table 4.2: Range of potential evaluation scores

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

Map-based assessment

4.6 As the FWS makes a range of spatially-specific recommendations, an assessment method with a stronger spatial component is required. As part of the evidence base for the SDP and 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 (i.e. potential for woodland expansion) is more visually appealing and more accessible than lengthy descriptions.

4.7 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 features local, national and international designations, Integrated Habitat Network data, sensitive habitats etc.

Scenario planning

4.8 In addition, a series of scenarios for woodland expansion were developed to assess the likely environmental effects of different levels of woodland creation. These are as follows:

- 'Low' level expansion: resulting in 19% total cover
- 'CSGN' target of a 50% increase in cover, as set out in the Central Scotland Green Network Prospectus
- 'SFS' target of increasing national woodland cover to 25%
- A scenario based on notional environmental capacity of each landscape zone identified in the FWS

4.9 The scenarios were created using the GIS data developed to show the potential for woodland expansion (based on environmental constraints), as depicted in Figure 5.1, and sub-divided by each of the spatial framework 'zones.' This process therefore provided a detailed breakdown of the areas of each class of land (i.e. 'preferred,' 'potential,' 'sensitive' etc.) in each zone. 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.

4.10 These calculations then generated:

- indicative cover figures for each zone;
- overall regional cover;

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

4.11 The conclusions of this process are set out at 5.39, with a summary of the data presented in Appendix 3.

SEA OBJECTIVES

4.12 Wherever possible, the FWS has been assessed against the same objectives as the GCV SDP Main Issues Report. However, a number were inappropriate to the scope and function of the FWS and have been altered or removed as applicable. Where appropriate, issues have been grouped to facilitate the assessment and sub-criteria have been edited to reflect the specific focus of the FWS. It is considered that the objectives selected adequately reflect the requirements of Schedule 3 of the 2005 Act.

Table 4.3: 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 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

Schedule 3 component	SEA objectives	Sub-criteria for assessment
		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

ASSESSMENT OF ALTERNATIVES

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

4.14 In the interests of maintaining a realistic and focussed assessment, these relate principally to the core policy content of the FWS – the priorities for woodland expansion. 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 the GCV 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 'strategic priorities' identified stem from existing policy, guidance and strategy – frequently subject to SEA in their own right.

5 Assessment of environmental effects

INTRODUCTION

5.1 This section of the ER sets out the results of the assessment of environmental effects that are predicted to result from the implementation of the GCV Forestry and Woodland Strategy.

5.2 As the FWS sits within the overall framework of the Scottish Forestry Strategy, and has strong links to the GCV SDP Main Issues Report – both of which have been subject to SEA – the overall potential for significant environmental effects is relatively low. Similarly, a high level of 'assumed mitigation[41]' is built in to the woodland creation process which makes the occurrence of regionally significant effects very unlikely.

VISION AND STRATEGIC THEMES

5.3 The vision set out for the FWS aims to reconcile the economic, social and environmental imperatives driving the Scottish Government's ambitions regarding woodland expansion. The four supporting themes represent a distillation of the seven Scottish Forestry Strategy themes and the GCV 'Main Issues.'

Assessment

5.4 The vision and strategic themes inevitably represent a compromise between detail, accessibility and usability. The themes were developed in parallel with the SEA objectives to build in a strong degree of internal compatibility – a process aided by the incorporation of the pre-existing SFS themes.

5.5 The themes and strategic priorities are not intended as stand-alone policies, however they ensure that topics are afforded equal weighting and that more detailed 'opportunities for action' cover the full range of areas where trees, woodland and forests can add value.

Alternatives

5.6 The original concept for the FWS was to employ the seven Scottish Forestry Strategy themes[42] in structuring the document, to ensure that read-across within the forestry policy framework was optimised. However, this option was less suitable for integration with the findings of the GCV SDP Main Issues Report. As the FWS will provide supporting information for the SDP – and delivering green network and development-led planting are key means of delivering environmental enhancement, improving place competitiveness and quality of life – the benefits of closer integration are readily apparent. As a document with a national focus, the SFS themes are often less applicable to

[41] 'Assumed mitigation' refers to those factors that can reasonably be taken into account when potential effects are being assessed. For example, the forestry EIA and site-specific assessments required as part of the FCS grant administration process and mandatory compliance with the UK Forestry Standard (UKFS)

[42] Climate change; Timber; Business Development; Community Development; Access and Health; Biodiversity; Environmental Quality

the context of a city-region. (Also, the SFS is now five years old and consideration is being given to whether a review is required in 2011-12).

5.7 Similarly, the 'Main Issues' of the SDP were too development-focussed to allow them to be effectively adopted in the FWS. The four theme adopted therefore represent a compromise between the SFS and MIR topics, ensuring that the relevant forestry and planning issues are covered appropriately while maintaining an accessible format.

POTENTIAL FOR WOODLAND EXPANSION

Introduction

5.8 The land categorisation process, as set out in '*The Right Tree in the Right Place,*' is intended to be a strategic process, giving a general impression of an area's suitability or otherwise for woodland expansion – on detailed examination there will inevitably be small areas that could readily fall into a different category. The FWS therefore states explicitly that it is intended for guidance only, and that site-specific assessment of individual proposals has primacy in determining their suitability.

Analysis process

5.9 The mapping and attendant calculations were prepared using existing datasets in the public domain, as listed in Table 5.1 below.

Table 5.1: IFS map datasets

Category	Dataset	Source
Sensitive	SSSI	SNH
	Special Protection Areas	
	Special Areas of Conservation	
	Wetlands of International Importance (Ramsar sites)	
	National Nature Reserves	
	Sensitive peat soils	FCS (MLURI)
	Local Nature Reserves	SNH
	Scheduled Monuments	Historic Scotland
	Historic Gardens and Designed Landscapes	
	World Heritage Sites	
	Conservation Areas	
Potential	Land capability for Forestry (limited-very limited capability	FCS (MLURI)
	National Inventory of Woodland and Trees	FCS
	Woodland Grant Schemes (1-3: planted/regen. areas)	
	Scottish Forestry Grant Scheme	
	Ancient and Semi-natural woodland	
Preferred (urban fringe)	Woodlands in and Around	FCS

Category	Dataset	Source
	Towns (WIAT) area	
	Scottish Index of Multiple Deprivation (top 15% of datazones + 1km buffer – if not already within WIAT area)	Scottish Government
Preferred	SDP boundary (i.e. area remaining with no significant constraints	GCV SDPA
	Vacant and derelict land	
Urban	Urban areas	Scottish Government
Unsuitable	Land Capability for Forestry (unsuitable class)	FCS (MLURI)
Consulted, but not used in final mapping	Historic Land-use Assessment	RCAHMS / HS
	Less-favoured areas	Scottish Government
	Forest Habitat Network: Core and Target areas	FCS / Forest Research
	West of Scotland Archaeology Service HER polygons	WoSAS
	Listed Buildings	HS
	Land capability for agriculture	MLURI
	Local landscape designations	SNH / local authorities
	Landscape Character Assessment (used in developing the Spatial Framework)	SNH

5.10 Datasets were combined in a constraints mapping exercise to identify areas with significant sensitivities to woodland expansion or removal. Given the regional scale of the FWS, these focus primarily on national designations. It should be noted that this classification is not intended to prevent ALL woodland expansion and management activities within sensitive areas, but to ensure that proposals appropriate to local conditions are developed. Similarly, within areas identified as being 'preferred,' detailed assessment is likely to highlight local sensitivities that will influence the nature and scale of woodland that is appropriate (e.g. watercourses, land uses, settings of built heritage).

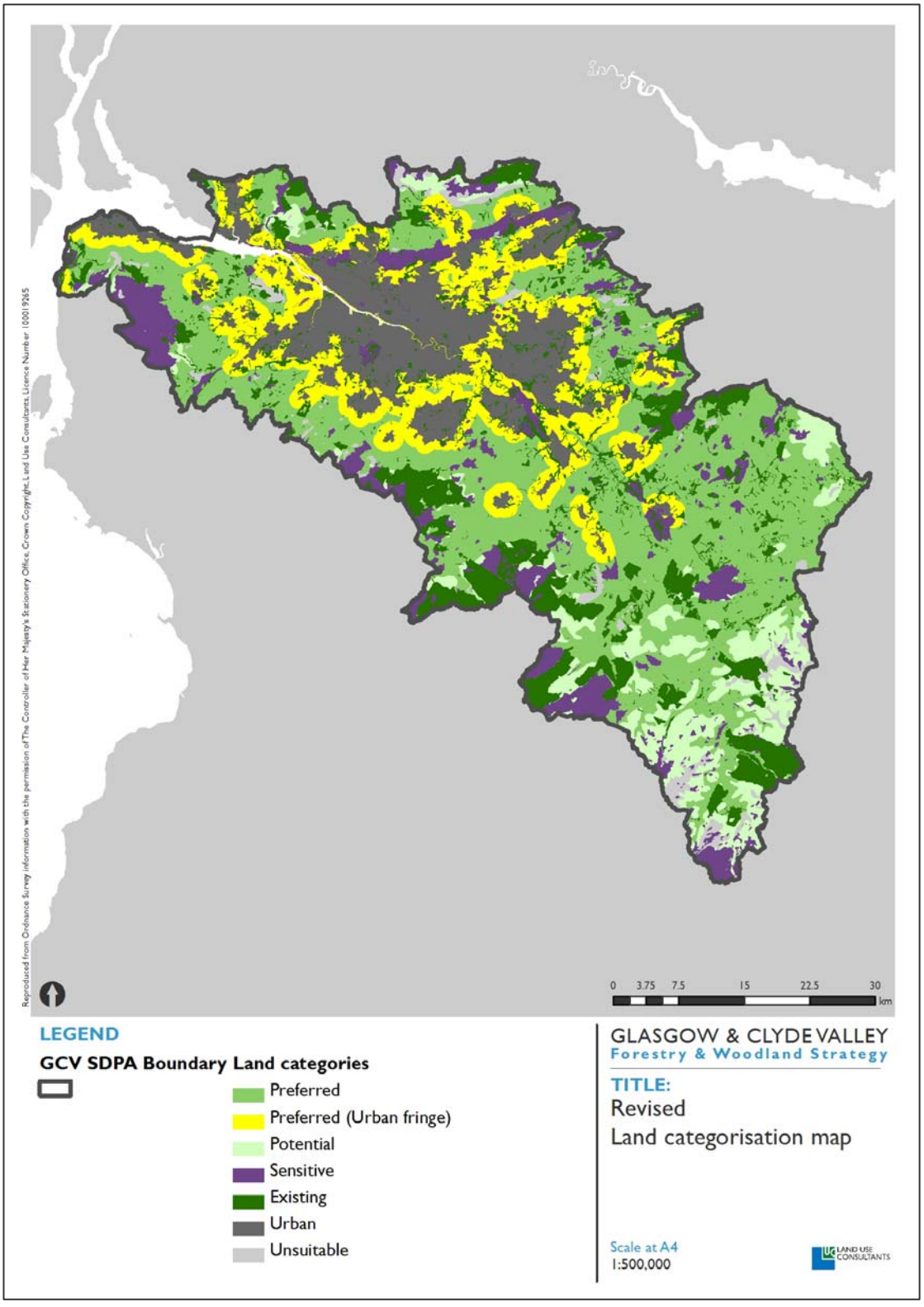


Figure 5.1: Indicative potential for woodland expansion ('IFS map')

Assessment

5.11 By identifying key sensitivities – and areas of least constraint – the 'IFS' map should effectively steer proposals towards appropriate areas and provide a measure of certainty for land managers, decision-makers and consultees.

5.12 It has the potential to generate significant positive effects, particularly in relation to community benefits and local environmental enhancement by prioritising areas close to major settlements in a separate land class (urban fringe preferred). Similarly, there is potential for positive economic effects in relation to facilitating rural diversification, supporting agriculture and development of new productive woodlands.

5.13 Designated natural and cultural heritage interests and peat soils are explicitly highlighted as being sensitive to woodland expansion (and removal) and should therefore serve to trigger appropriate detailed design and assessment of proposals affecting such areas.

5.14 While it is recognised that spatial data relating to the newly-inscribed Inventory of Historic Battlefields was not available at the time when the current iteration of Figure 5.1 was produced, there may be a need to add this information to the 'sensitive' land category in the final iteration. The site of the Battle of Kilsyth (1645) should be added as it lies partially within a 'preferred' area.

5.15 The other Inventory battlefield in GCV is that of Bothwell Bridge (1679), but this lies within an urban area.

5.16 'Preferred' land takes in a considerable range of environments and current land uses which, while they do not register as constraints at the regional scale, will have a strong influence on the type and scale of woodland that is appropriate. While this is made clear in the supporting text, it relies on assumed mitigation for the avoidance of adverse effects – particularly in relation to landscape impacts and potential conflicts with existing land uses. (However, it is judged to be reasonable to assume that FCS assessment processes are robust. Additional safeguards are built in through the consultation process). The level of interpretation and site-specific judgement required when bringing forward proposals in the 'preferred' area could be viewed as a weakness in the approach – although this was judged to be necessary to ensure that a suitable range of woodland creation proposals were facilitated and were eligible for grant support. No regionally significant effects are predicted as a result of this trade-off.

5.17 The FWS acknowledges that the majority of planting opportunities within the 'urban' area are too small to be depicted at the regional scale – but does not discourage appropriate expansion where this is feasible.

5.18 The chosen option is therefore assessed as representing a model that protects the key environmental interests in the region, but provides considerable scope to facilitate appropriate woodland expansion to meet the requisite range of objectives.

Alternative 1 – 'Business-as-usual'

5.19 The 'business-as-usual' scenario would be represented by continued application of the 2005 GCV Forestry Framework (as discussed in *Evolution of the environment without the GCV FWS* in Section 3 above and illustrated in Figure 5.2 overleaf).

5.20 As noted above, the diagrams provided by the Framework do not meet the needs of the current guidance. Similarly, they are less well informed by key environmental constraints (notably natural heritage and historic environment designations) and appear to be largely based on physical land capability. While a similar level of assumed mitigation can be ascribed to the implementation of these maps, they inevitably increase the potential for impacts on the basis of probability (i.e. the more proposals that come forward in appropriate locations, the higher the likelihood of impacts occurring even with assumed mitigation). The supporting text is less clear regarding environmental protection and lacks specific objectives to safeguard the historic environment and is generally less positive in promotion of community opportunities, despite prioritising urban fringe woodland.

5.21 Sensitive peat soils are identified, ensuring that proposals are steered away from this resource, however broader 'sensitive' areas appear to be identified largely on landscape character grounds (i.e. upland areas of Clyde Muirshiel, the Pentlands, the Campsie/Kilpatrick Hills and the foothills of the Southern Uplands).

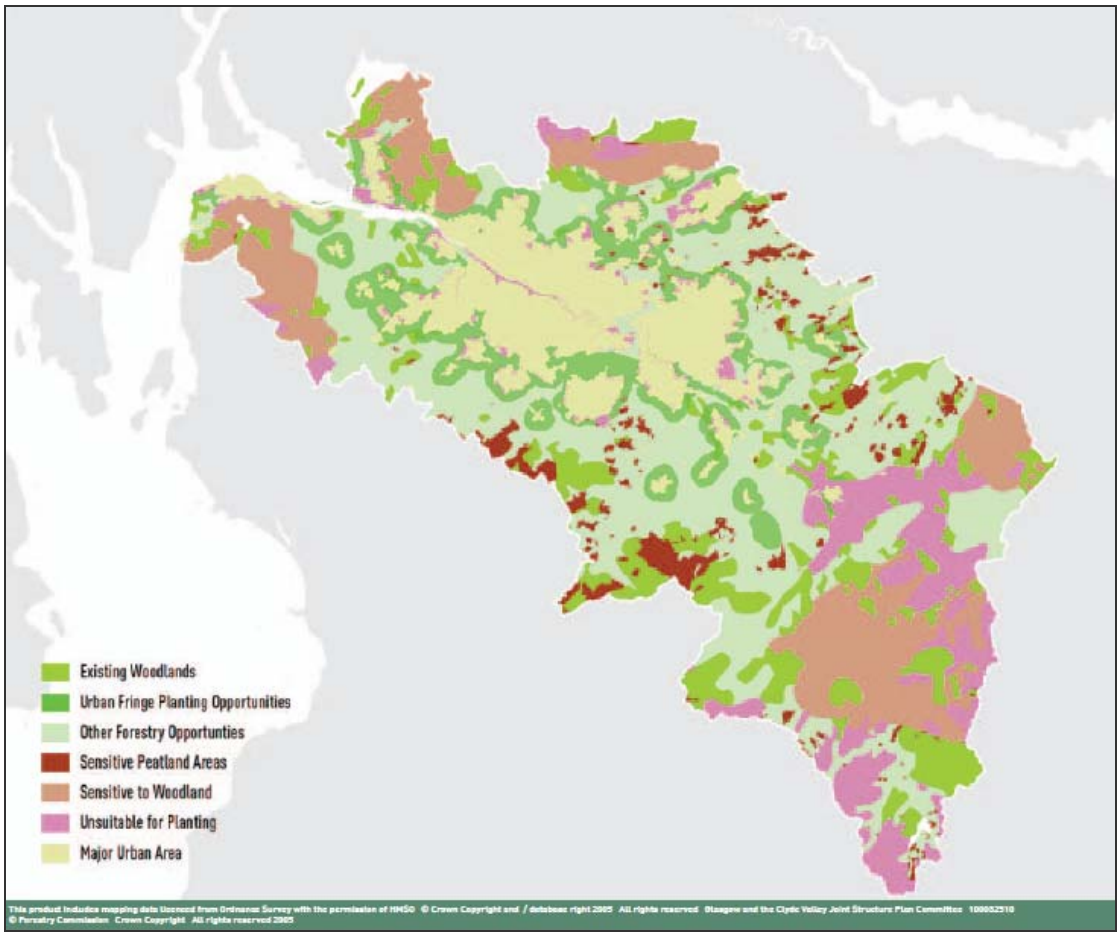


Figure 5.2: Alternative 1- Forestry Framework Map 2

5.22 Relatively large areas of land are identified as being 'unsuitable for planting' which appears overly pessimistic from a physical capability perspective, and also potentially reduces value that could be added by appropriate planting in some of these areas (particularly the foothills of the Southern Uplands and the upper Clyde Valley). This could discourage smaller scale riparian and farm woodlands that could make a small but significant contribution to climate change adaptation measures and enhance landscape character.

5.23 It is therefore assessed that the GCV FWS will have a more positive all round effect on the environment as it more effectively acknowledges the sensitivities of parts of the region as well as providing a slightly more positive outlook in terms of woodland creation opportunities. This effect is reinforced through the application of the supporting 'strategic priorities' which offer a more balanced vision for the role of woodland in the region.

Alternative 2

5.24 Produced as part of the 2010 rapid update of the Forestry Framework, this 'IFS' diagram meets the requirements of '*The Right Tree in the Right Place*' and provides a more focussed model for promoting woodland expansion that Alternative 1.

5.25 This was the first iteration of 'IFS' map for the FWS, but following assessment against the environmental baseline spatial data was subject to significant editing. The assessment findings are summarised below.

5.26 This alternative scenario is far stronger in highlighting natural heritage sensitivities, reducing the reliance on assumed mitigation – and also potentially enabling more focussed proposals to enhance key values. However, historic environment designations are again absent. Potential for adverse impacts are potentially strongest in relation to the setting of the Antonine Wall WHS. While its immediate setting is protected by extensive landscape buffer zones, it runs through a substantial swath of 'preferred' area. While large-scale afforestation is unlikely in this area, the potential for small-scale proposals to result in incremental adverse effects is significant. Although World Heritage Sites and Scheduled Monuments are identified as 'sensitive areas' under the Environmental Impact Assessment (Forestry) (Scotland) Regulations 1999, there is the potential for smaller schemes below the EIA threshold to slip through the net as buffer zones are not specifically covered. (Neither is depicted on the FCS Land Information Search online service). Similarly, gardens and designed landscapes are excluded.

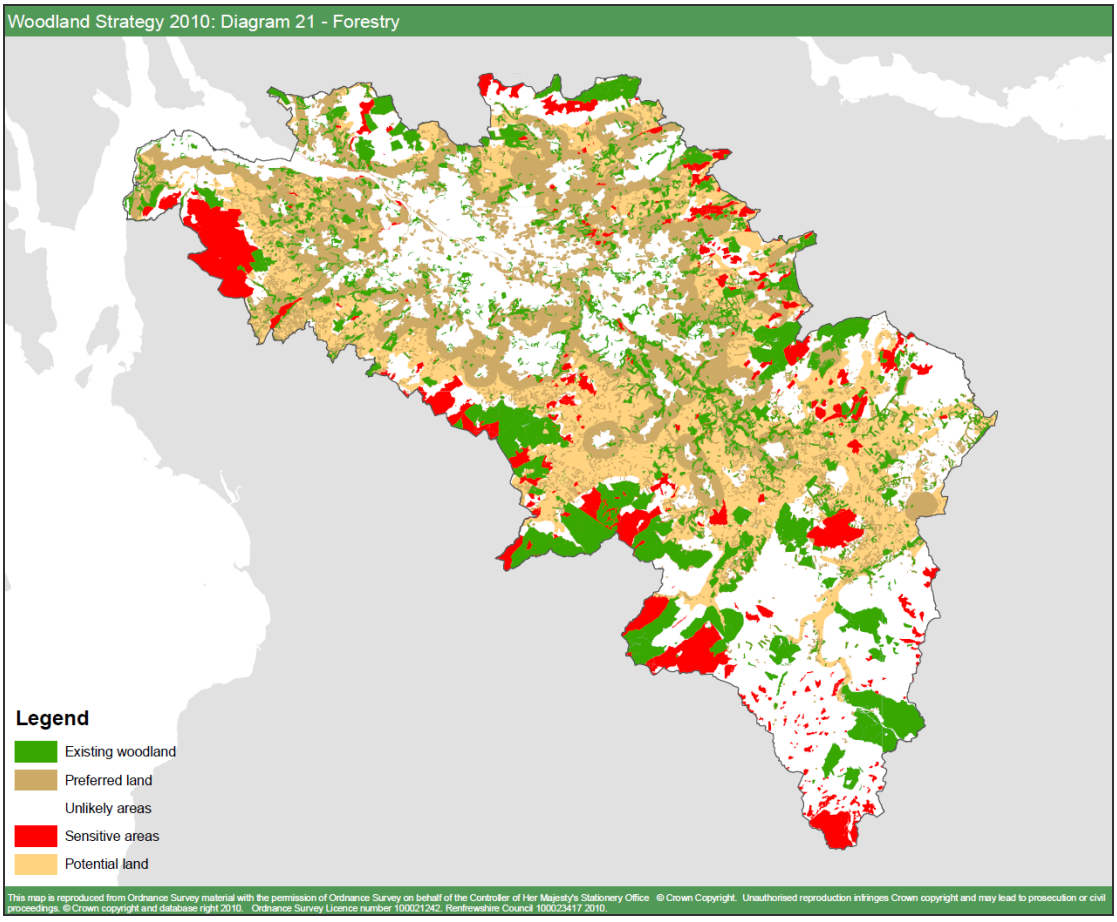


Figure 5.3: Alternative 2 - 2010 IFS map

5.27 While this approach to the IFS would result in a similar strong positive effect on degraded peri-urban landscapes and socio-economic objectives, no other areas of the region are identified as being 'preferred.' This could result in lower levels of appropriate expansion activity, potentially reducing the wider contribution of the FWS to achieving climate change goals, contributing to the rural economy and providing the necessary productive woodland to meet future needs. This is likely to be particularly significant in areas where current agricultural land use is marginal and woodland expansion could provide much-needed opportunities for diversification, and could also deliver landscape benefits.

5.28 Like Alternative 1, this scenario depicts a significant area as being 'unlikely' targets for woodland expansion. Again, this appears to be an overly-pessimistic assessment based on the Macaulay Land Capability data. While much of this area would be unsuitable for commercial tree crops, they could readily support native woodlands to enhance biodiversity values, contribute to habitat networks and improve slope stability and river corridor landscapes. Likewise, the urban area is included within this 'unlikely' category. While much of this area is indeed built up, it also includes significant areas of urban greenspace, potential and stalled development sites and existing green corridors. While it is readily acknowledged that many planting opportunities within the urban area are too small to be depicted at a regional scale, dismissing the metropolitan area as 'unlikely' could represent a brake on

green network development and hamper the effectiveness of the FWS as part of the green network 'toolkit.'

5.29 It was assessed that the depiction of the peri-urban 'WIAT' area as 'preferred' land was also potentially misleading and could result in inappropriate proposals coming forward. While this is unlikely to result in significant adverse effects because of the assumed mitigation already discussed, it could unnecessarily restrict planting in the remainder of the region.

5.30 In the terms of '*The Right Tree in the Right Place*' a preferred area is:

land that 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. Sensitivities are limited and it should be possible to address any site-specific issues within well-designed proposals that meet the UK Forestry Standard and associated guidelines.

5.31 This is clearly not the case for much of the WIAT area, as it encompasses the settings of settlements, a range of land uses and development potential.

5.32 It is therefore judged that the FWS provides a more positive and flexible model for woodland expansion than this alternative scenario

Alternative 3

5.33 Alternative 3 represents the next step in the evolution of the IFS map from Alternative 2 to the final option (Figure 5.1). It was developed as one of a series of options presented to the project steering group for comment and was duly subject to the assessment process.

5.34 It incorporates a wider set of 'sensitive' areas, encompassing natural and cultural heritage designations, and therefore scores more positively in terms of protecting these assets. It was also specifically intended to drive the development of habitat networks, with Forest Habitat Network 'target' areas added to the 'preferred' class. However, this exposes the model to the same weaknesses as outlined in relation to Alternative 2. Despite having positive outcomes in relation to biodiversity, climate change, water quality and quality of life objectives it is less well balanced than the final FWS option. The rest of the region outside of the constrained area is grouped within the 'potential' class. While this still enables woodland expansion, it could be viewed as restricting new productive planting in appropriate location, potentially affecting economic outcomes and scoring less positively against carbon sequestration targets. Although this was conceived as a means of protecting agricultural land, it was assessed as potentially having the opposite effect on agri-business – discouraging farmers and land managers from taking advantage opportunities to diversify through receipt of the FCS 10% premium for planting in preferred areas. It was therefore thought that this could have an adverse effect on the achievement of targets for farm woodlands, restoring landscape structure and developing local biomass markets.

5.35 Alternative 3 is therefore assessed as being more restrictive that the final option and therefore less able to deliver the necessary range of woodland types.

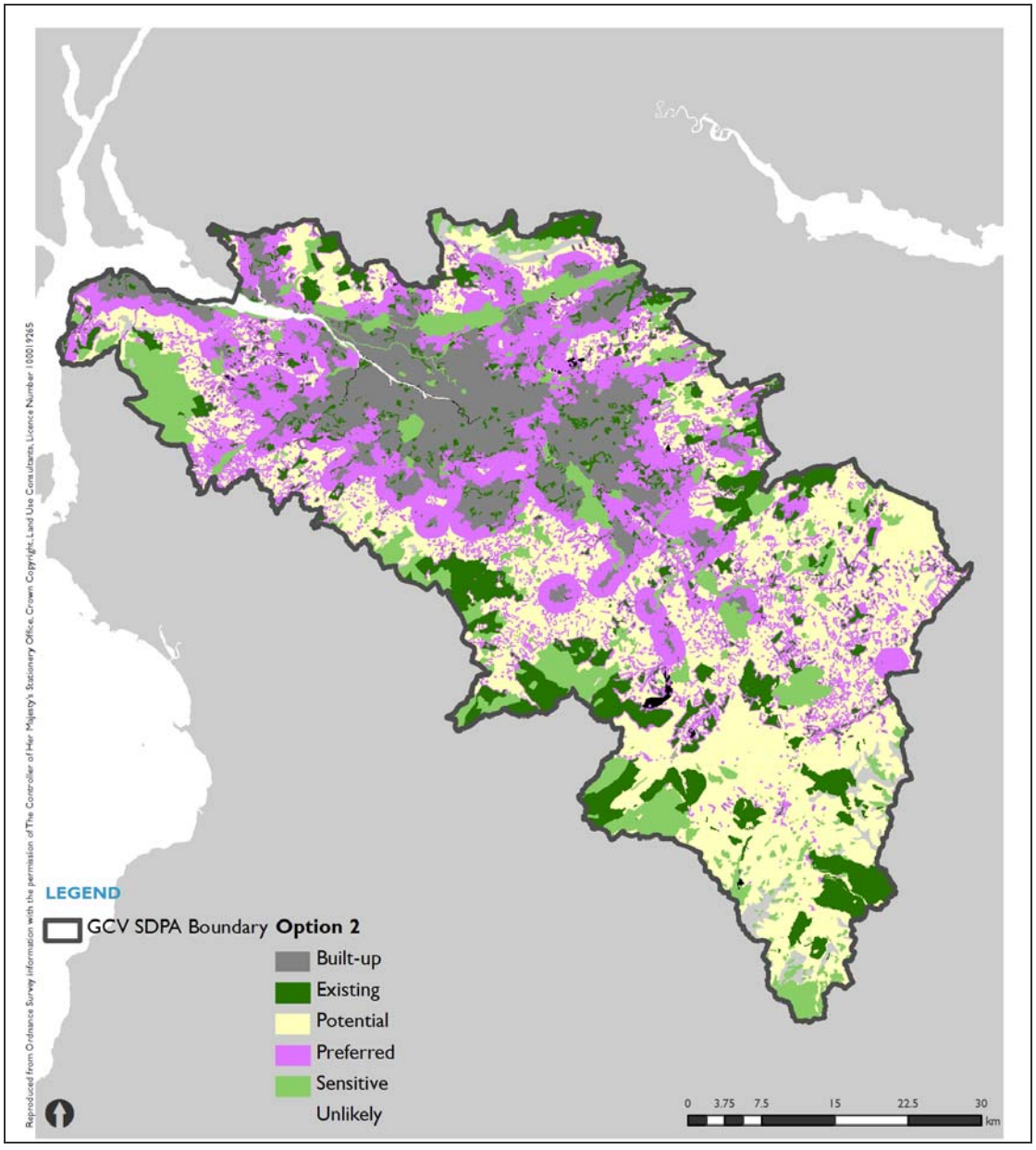


Figure 5.4: Alternative 3

Recommendations

5.36 There is a need for the FWS to be more explicit regarding the existing regulatory framework that provide the main environmental safeguards in relation to woodland expansion and management.

5.37 While no significant environmental effect have been identified in relation to the IFS map, it is important to stress that it is a key filter through which the themes and strategic priorities of the FWS will be implemented. In and of itself, it can have little bearing on the environmental impacts of woodland expansion and instead depends on the rigorous application of pre-existing systems over which it has limited influence. Its principal value therefore lies in providing a pre-screening function, steering land managers away from vulnerable environmental assets and providing a 'toolkit' to help optimise the value added by new woodlands.

5.38 It provides certainty as far as national and regional sensitivities are concerned, but should highlight those local sensitivities – such as the presence of LBAP habitats or undesignated heritage assets – that may affect the type or scale of appropriate woodland creation. The FWS should also provide information on where this information can be obtained.

SCENARIO PLANNING

5.39 The following scenarios were developed, as outlined above, to test like likely effects of woodland expansion at the regional scale. As the FWS does not, in itself, set a target for expansion in GCV a range of possible approaches were assessed based on current national and supra-regional aspirations and tested against a more spatially-specific methodology.

5.40 As it is not possible to accurately predict the precise locations of new woodland, given the number of variables influencing the process, inferences are necessarily restricted to likely regionally significant effects on each broad character zone.

5.41 *It is assumed that each scenario is implemented through the filter of the FWS policies, spatial recommendations and the relevant regulatory framework.*

Current distribution of woodland

5.42 At present, GCV's woodland resource is unevenly distributed throughout the region, with some zones having far higher levels of woodland cover than others.

5.43 The Clyde Valley is noteworthy as by far the smallest zone, but with proportionally the highest level of woodland cover – much of this relating to ancient riparian woodland. Similarly, the Plateau Moorlands and, to a lesser extent, other upland areas contain the bulk of the region's productive forests.

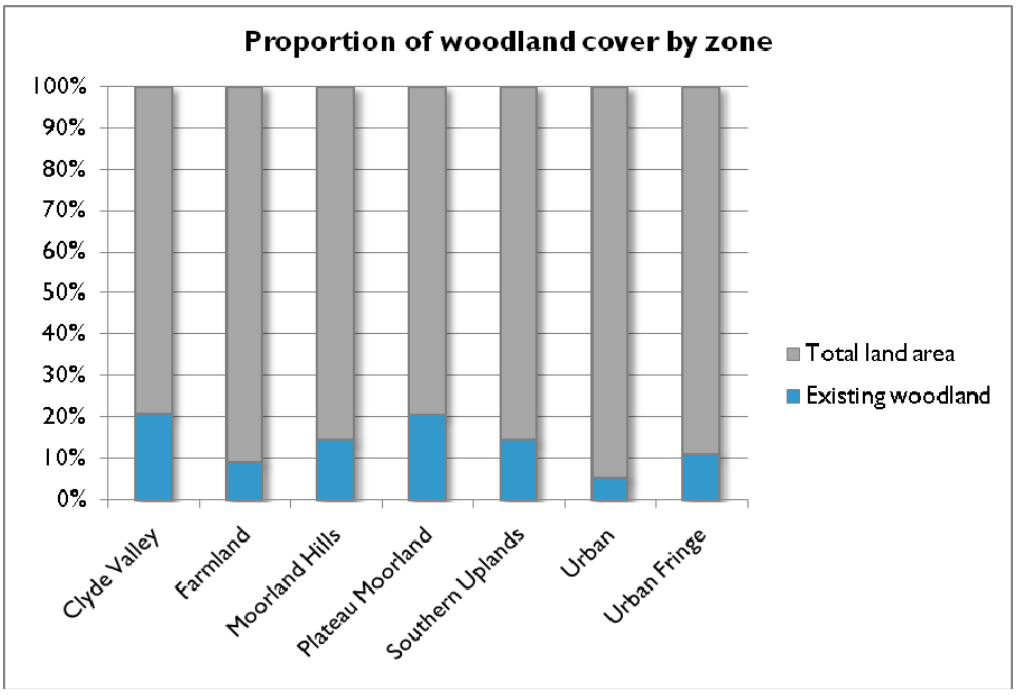


Figure 5.5: current proportion of woodland cover

5.44 Figure 5.5 above clearly illustrates that overall levels of cover are relatively low – particularly in farming areas and in the urban fringe.

5.45 Figure 5.6 below depicts the geographical distribution of the existing woodland resource.

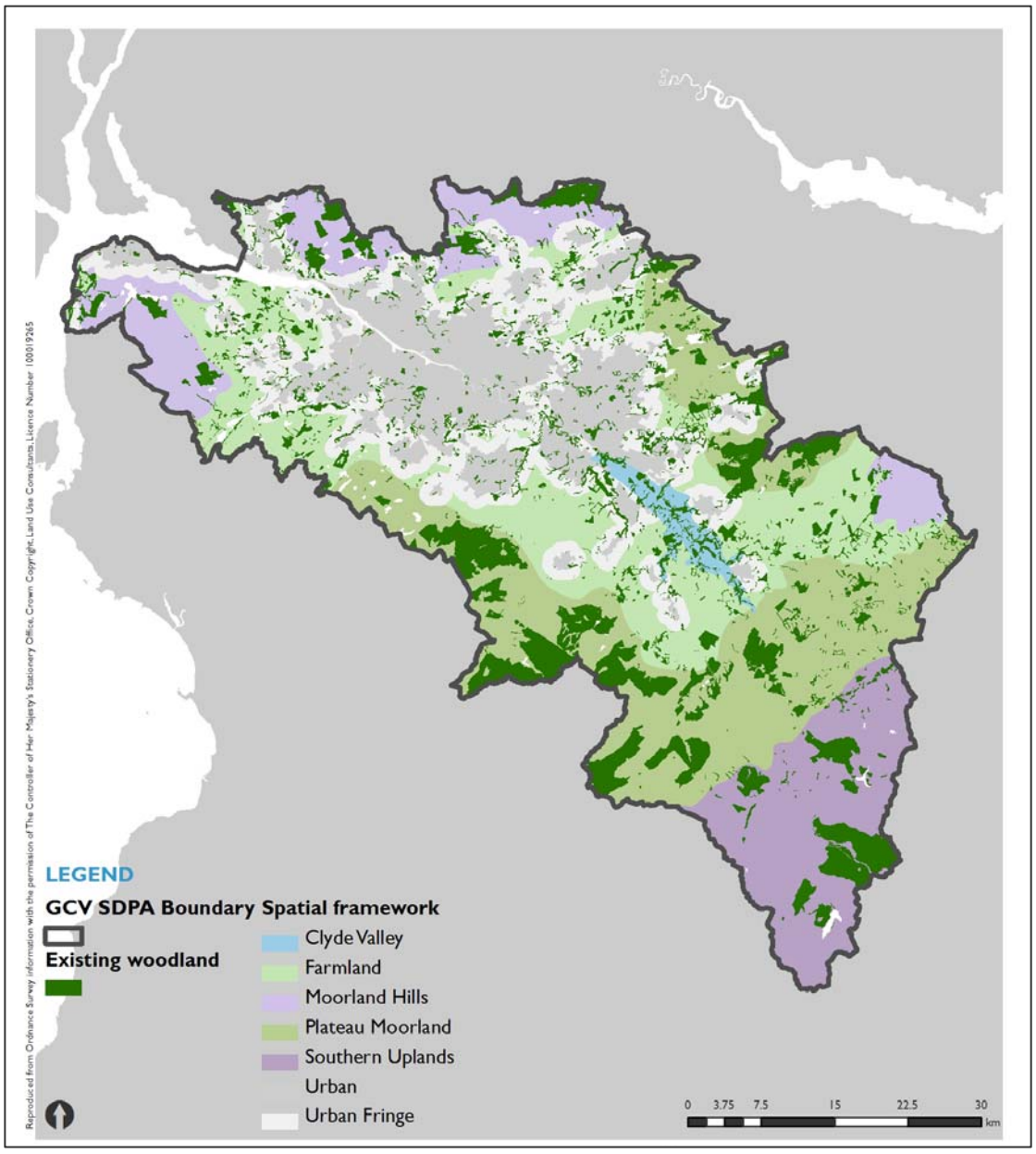


Figure 5.6: distribution of existing woodland by zone

Distribution of potential for expansion

5.46 The potential for new woodland is similarly unevenly distributed, with significant potential in areas of low existing cover – most notably the farmland areas, where even a modest conversion of 'preferred' land could achieve a significance proportional increase in woodland cover. Similarly, the Plateau Moorlands, although comparatively well-wooded, have significant potential to accommodate new woodlands of various types.

5.47 The Urban Fringe has a huge area of 'urban fringe preferred' land that could be at least partially utilised for woodland creation – although it should be acknowledged that the range of woodland types suitable for this location is less diverse than elsewhere.

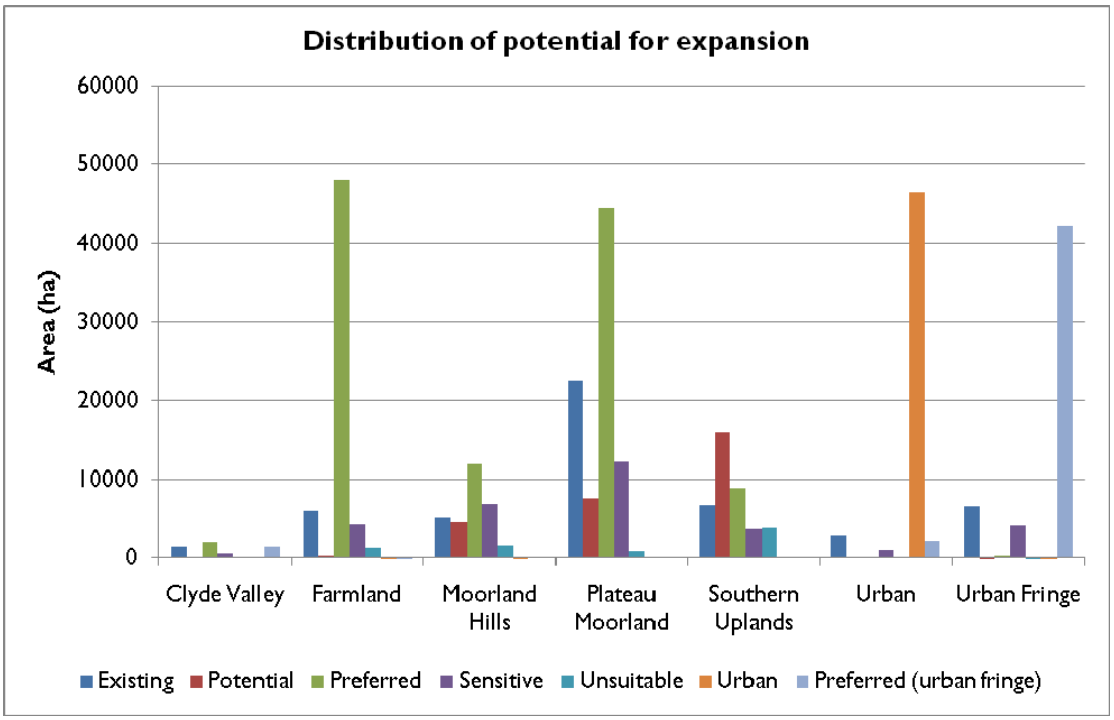


Figure 5.7: Distribution of potential for woodland expansion

Scenario 1: low-level expansion

Key assumptions

5.48 This scenario is based around a relatively low-level increase in woodland creation activity, achieving a modest increase in overall cover – from 16% to 19%, representing an increase of 25% of current area.

5.49 This could be readily achieved and would require an indicative planting rate of c. 323ha per annum.

Table 5.2: Scenario 1 conversion rates and assumptions

Land category	Conversion rate	Assumptions
Existing	**95%**	Limited loss in area due to restructuring of productive plantations and continued wind energy development

Potential	**4%**	Very modest conversion
Preferred	**8%**	Relatively low level of activity in developing new woodlands of all types
Preferred (urban fringe)	**10%**	Slightly higher level of activity due to continuation of WIAT programme and GCV / CSGN activities in degraded urban fringe areas (focus on VDL etc)
Sensitive	**0%**	
Urban	**1%**	Greening activity within the urban fabric

Assessment

5.50 Implementation of Scenario 1, although based on a relatively modest increase in total woodland cover, would deliver a noticeable increase in woodland cover that could deliver significant environmental benefits.

5.51 The biggest increases in cover would be experienced in the urban fringe and farmland areas – arguably the two zones that could benefit most from an increase in woodland cover and that start from the lowest baseline level.

5.52 This could convey significant benefits in reinforcing existing and establishing new habitat networks through the development of small farm woodlands, riparian planting and shelters belts. However, the increase in area (c.3500ha) is unlikely to have an adverse effect on the landscape – instead it is likely that this could significantly enhance landscape character in areas of under-used farmland, particularly where this is subject to bracken inundation or the effects of poorly-planned and managed horse-keeping[43]. The change in the landscape is also likely to be effected over a relatively long timescale, allowing for the 40 year time horizon of the FWS' policies and the relatively slow growth of the predominantly broadleaved woodlands that would be appropriate in this context.

5.53 Planting in farming areas could also make a substantial contribution to climate change adaptation objectives, including sustainable water management and provision of shelter for crops and shading for livestock.

5.54 In this scenario, woodland in the urban fringe would increase to represent 20% of land cover (a 59% increase on current levels). Again, although this could be viewed as representing a substantial increase it would be delivered over a relatively long time-period as part of the wider regional drive to expand green networks in urban and peri-urban areas. As a small but significant proportion of the urban fringe area comprises vacant, derelict and under-used land and appropriate woodland expansion could make a substantial contribution to enhancing environmental quality.

[43] Often referred to as 'Horsiculture' – keeping horses for leisure purposes Extensive, often poorly-planned, equestrian facilities that have an adverse impact on landscape character as a result of intensive field sub-division, obtrusive electric fences and field shelters, inappropriate stable buildings and ancillary structures, visual cluttering from jumps, artificial surfaced exercise yards and other paraphernalia. In addition, impacts on environmental quality can occur, ranging from poaching of fields, leading to ruderal weed infestation and over/under-grazing to uncontrolled storage of animal waste.

5.55 The more 'traditional' areas with the bulk of the existing productive forest resource will experience a relatively low level increase that could be easily accommodated in the preferred areas. In addition to compensating for the c.5% likely to be lost through restructuring and projected wind energy development this will represent a key resource in supporting wider sustainable development and biomass objectives. As these new woodlands would be planned, created and managed in accordance with UKFS and other key standards, they are likely to deliver increases in native woodland habitat and support wider biodiversity enhancement measures. This would also sequester significant amounts of atmospheric carbon.

Scenario 2: CSGN target

Key assumptions

5.56 This scenario is based on achieving the Central Scotland Green Network aspiration of a 50% increase in woodland cover across the whole network area. While it is recognised that GCV represents only a part of the CSGN area, as it has significant capacity for woodland expansion it is important to understand the potential regional implications of fully meeting this target.

5.57 Implementing this scenario would result in woodland cover increasing to 23.4% of total land area. A more ambitious indicative planting rate of 645ha per annum would be required to make this happen. This is significantly greater than recent rates of woodland creation in GCV.

Table 5.3: Scenario 2 conversion rates and assumptions

Land category	Conversion rate	Assumptions
Existing	**95%**	Limited loss in area due to restructuring of productive plantations and continued wind energy development
Potential	**5%**	Modest rate of conversion
Preferred	**15%**	Higher level of activity in areas of lowest constraint – where funding is easiest to access
Preferred (urban fringe)	**17%**	Reflecting key CSGN aims of improving peri-urban environments, enhancing degraded landscapes and delivering greening with new development
Sensitive	**1%**	Limited enhancement of suitable sites (e.g. reinforcing ancient woodland networks and replacement planting in designed landscapes)
Urban	**3%**	Greening delivered within the urban area as part of the CSGN programme

Assessment

5.58 Implementation of this scenario would more than double woodland cover in the 'farmland' zone – increasing cover to 22% of land area. This would

inevitably result in fairly significant landscape change, particularly in the more open plateau farmland areas between East Kilbride and the Avon Valley. In areas of more complex topography and where riparian networks already exist, for example around Lanark, small scale woodlands, shelterbelts and habitat networks could achieve a substantial increase in cover while still avoiding significant adverse effects.

5.59 Given the CSGN's focus on enhancing environmental quality in urban areas, the 'Preferred – Urban Fringe' and 'Urban' categories are prioritised in this scenario, resulting in substantial increases in woodland cover (by 104% over existing levels in urban fringe areas). This represents a major change and is likely to have significant effects of the environment. While the majority of these effects are likely to be positive – relating to enhanced provision and quality of greenspace in areas that currently experience high levels of dereliction and social exclusion; reinforcing habitat networks; contributing to sustainable water management; creation of additional resource for local biomass energy – there is also potential for adverse impacts.

5.60 The level of woodland cover predicted for the urban fringe in this scenario (25%) could potentially result in the loss or degradation of key views to and from settlements that are currently an important aspect of their character and setting. However, it is likely that the benefits conveyed will outweigh landscape impacts and can be mitigated through appropriate design processes that are sensitive to key local values. Areas of particular concern would be those with strong visual relationships to landscape features, such as the Campsie Fells or Kilpatrick Hills, where inappropriate development of woodland could create a more homogenous, less distinctive character.

5.61 Increasing woodland cover in the upland areas (particularly the 'Plateau Moorland' zone) is likely to generate tension between existing and proposed land uses. Much of the 'preferred' area in this zone lies within the SDP 'area of search' for wind energy. Although traditional productive forestry and large-scale wind farms are likely to be incompatible simultaneous uses, there may be potential to accommodate the development of habitat networks and other ecologically appropriate woodland in parallel with wind power – particularly where it can be delivered as part of compensatory planting measures. Similarly, as turbine technology improves there may be scope to accommodate short-rotation woodlands beneath turbines.

5.62 This scenario is also likely to result in significant change in the 'farmland' zone – bringing cover up to 22% (an increase of 115%). Although a sizeable proportion of the area is currently under-utilised and or relates to former mineral working sites, there is potential for some conflict with existing agricultural land use. The area is predominantly pastoral, with little high quality arable land. However, some of this resource may increase in capability and importance as predicted climate impacts occur. Care must therefore be taken to safeguard key resources and identify areas where social, economic and environmental benefits can be optimised. This mitigation will largely be delivered through the FCS regulatory process – however, should expansion on this scale be deemed desirable a more strategic approach could usefully be advocated.

Scenario 3: SFS target

Key assumptions

5.63 This scenario is based on a regional application of the Scottish Forestry Strategy aspiration to increase woodland cover to 25% nationally by the second half of the century. It should be noted that nowhere is this level of cover advocated for GCV – but as an agreed and widely recognised target understanding the likely effects of regional application is a sensible approach in order to help define an appropriate pro rata contribution.

5.64 Implementation of this scenario would result in woodland cover increasing to 25% (a 61% increase on existing levels) and would require an average annual planting rate of around 801ha pa to be met within 40 years.

Table 5.4: Scenario 3 conversion rates and assumptions

Land category	Conversion rate	Assumptions
Existing	**95%**	Limited loss in area due to restructuring of productive plantations and continued wind energy development
Potential	**10%**	Higher rate of conversion
Preferred	**20%**	High level of activity in areas of lowest constraint – where funding is easiest to access and larger woodlands could be accommodated
Preferred (urban fringe)	**15%**	High priority afforded to urban fringe areas, but recognition of lower potential for larger-scale woodlands
Sensitive	**1%**	Limited enhancement of suitable sites (e.g. reinforcing ancient woodland networks and replacement planting in designed landscapes)
Urban	**2%**	Greening delivered within the urban area as part of the GCV and CSGN programmes

Assessment

5.65 Converting 20% of the 'preferred' area to woodland would inevitably result in significant levels of landscape change. Woodland creation on this scale is likely to exceed the region's volume of 'easy win' sites and begin to generate adverse effects on landscape values and the setting of some of the region's more sensitive settlements. Particularly in areas with currently low woodland cover – such the 'farmland' zone – this level of increase would have a significant effect on landscape character and affecting longer views. Even in areas with currently higher levels of woodland cover there could be adverse effects, reducing the mosaic of land uses and cover that is an important aspect of character.

5.66 There is also potential for such large-scale woodland development to encroach on areas where planting could exacerbate existing flooding issues – although in others it could still make a significant contribution to positive water management. Similarly, expanding woodland in this area could convey some major benefits to biodiversity over current land uses, particularly in areas of lower capability where land is under-used and frequently degraded by bracken inundation.

5.67 In upland areas, the majority of woodland creation under this scenario is likely to relate to large-scale productive forest, resulting in significant landscape change and potential effects on biodiversity. Although 'sensitive' assets (such as peat soils and areas designated for their natural heritage value) would be protected, it is likely that peripheral habitat values could suffer – particularly for priority open ground species that may make use of moorland and farmland in this area for foraging.

5.68 The conversion rate of 'Preferred – urban fringe' land was reduced slightly (in comparison with the Scenario 2) to reflect the area's lower capacity for larger-scale woodland, which could make meeting Scenario 2's target difficult. However, converting 15% of this area to woodland would still result in locally significant environmental and landscape change – albeit largely positive. This would logically be focussed on areas with currently low environmental quality where new woodland could add most value.

5.69 The planting rate required to achieve 25% woodland cover represents a major increase on existing activity in the region. While the industry could potentially draw in personnel and equipment from elsewhere in Scotland in the short term, it is possible that a number of jobs would be created and sustained to facilitate planting and managing woodlands. This level of activity would also have an impact on the funding mechanisms for woodland creation (currently SRPD) – although currently around 32% of funds set aside for new woodland is allocated annually against an aspirational target of 10,000ha pa.

5.70 It can therefore be surmised that 25% cover is an unrealistic target for Glasgow and the Clyde Valley, and has the potential to result in unacceptable environmental impacts.

Scenario 4: notional capacity

Key assumptions

5.71 Unlike the other three scenarios, this approach is based on expansion figures tailored to the broad environmental capacity of each of the 'zones' defined in the FWS. These figures are based on strategic judgements, rather than empirical studies, but capture the broad suitability of each area. A full breakdown of conversion rates for each zone is provided in Appendix 3.

Table 5.5: Scenario 4 assumptions and projected cover figures

Zone	Assumptions	Projected cover	% increase
Clyde Valley	· Already well-wooded by comparison · Limited potential for large-scale woodlands – concentration on habitat networks linking high quality ancient woodland and farm woods	33%	25%
Farmland	· Comparatively low woodland cover · Significant 'preferred' area · Major potential for farm woodlands, biomass, flood management and habitat networks · Some potential for larger-scale woods	18%	80%
Moorland Hills	· Relatively low woodland cover · Fairly sensitive landscapes · Considerable potential for a range of woodland types, from productive forests to habitat networks	21%	24%
Plateau Moorland	· Major productive forests · Potential for expansion of productive resource · Losses through restructuring / harvesting / wind energy · Habitat networks along riparian corridors	33%	27%
Southern Uplands	· As above, but with likelihood of proposals taking in more 'potential' land	24%	39%
Urban	· Re-use of vacant and derelict land and planting in 'preferred – urban fringe' · Greening within built up area as part of green network delivery / in parallel with new development · Reinforcing / expanding	11%	92%

Zone	Assumptions	Projected cover	% increase
	planting in urban greenspace and parks		
Urban Fringe	· Relatively modest conversion of 'Preferred – urban fringe' (15%) taking into account outcomes of other Scenarios assessed	25%	96%

5.72 The application of this scenario would result in a 47% increase in woodland cover, representing **22.9%** of land cover.

Assessment

5.73 Applying this scenario would also concentrate activity in areas with lower levels of woodland cover – but using a more measured and responsive approach. The 'farmland' area would again experience the greatest increase in woodland cover, rising to 18% of land area (representing an 80% increase on current levels). A relatively modest conversion rate of 10% of 'preferred' land in farming areas will enable substantial increases in woodland cover, contributing to habitat networks, sustainable water management, enhancing existing landscape character and feeding into the nascent biomass industry. However, activity is pitched at a realistic level that should not generate unsustainable conflict with other important land uses – reinforcing the FWS' message that woodland should support, rather than supplant, agriculture.

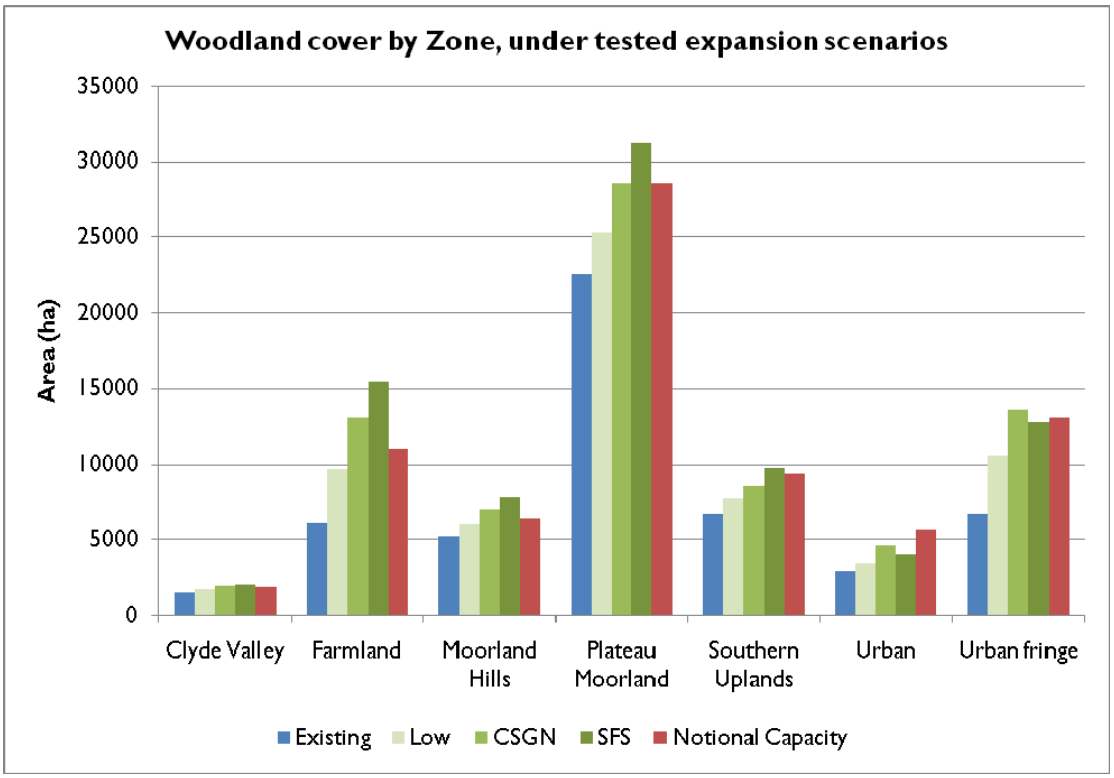
5.74 In upland areas, this realistic approach reflects the lower capacity (particularly in relation to landscape character) in the 'Moorland Hills' of the Campsies, Kilpatricks, Pentlands and Clyde Muirshiel/Renfrewshire Heights, and also the slightly higher capacity of the 'Plateau Moorlands' and foothills of the Southern Uplands. Expansion at this level would provide a sustainable timber resource for the future, but would also ensure that new productive woodlands make a substantial contribution to wider environmental objectives and protect key landscape values, habitats and ecosystem services.

5.75 The metropolitan area and the urban fringe would experience major woodland expansion under this scenario. Urban fringe woodland cover would increase to 25%, but would be achieved in a subtly different way to the CSGN scenario. 15% of the 'Preferred – urban fringe' land could be planted (rather than 17%), making use of significant areas of vacant, derelict and under-used land. Similarly, the focus on the SDP core development areas (frequently within the urban fringe) as Green Network priorities is likely to deliver substantial woodland creation in this area. Similarly, because of the local flexibility of this Scenario, the fact that woodland removal is unlikely to be an issue in this area can be taken into account. As much of the 'Sensitive' areas within the urban fringe relate to historic gardens and designed landscapes, including Country Parks and well-used urban greenspaces, there is considerable potential for planting to enhance existing values, to facilitate succession of climate appropriate trees and to provide connections to habitat networks. Increasing cover by 2% in this area could make a major

contribution to the future robustness of these assets. Similarly, this area also incorporates areas of under-used, low quality farmland in the buffer zone of the Antonine Wall World Heritage Site. Sensitively planned and designed woodlands could make an important contribution to improving the setting of the monument in degraded areas.

5.76 As with the CSGN scenario, care must be taken to avoid compromising landscape character and impacting on the setting of existing settlements.

Figure 5.8: woodland cover by Zone for each expansion scenario



STRATEGIC PRIORITIES

Introduction

5.77 The following section sets out the findings of the full assessment of the Strategic Priorities identified to implement the FWS vision. In common with structure of the FWS, assessment findings are laid out under the relevant Theme. In line with the guidance provided by PAN 1/2010 this will concentrate on regionally significant effects and key opportunities for enhancement.

5.78 Broadly, the Strategic Priorities set out in the FWS are assessed as having a positive overall effect on the environment of Glasgow and the Clyde Valley. No regionally significant environmental effects have been identified as a result of the assessment process. This can be attributed partly to the success of the preceding rapid assessment process that highlighted key areas of tension early in the development of the FWS, and the early engagement with the Consultation Authorities which also raised key points covered by the FWS.

5.79 Recommendations for mitigation measures, in the form of enhancements to the FWS text as made in parallel with highlighting areas of concern.

Supporting the economy

5.80 In general, the priorities defined to help support and enhance the regional economy will have a positive overall effect on the environment.

5.81 There is some uncertainty around the potential effects of efforts to support the local biomass industry on air quality. While there is potential for substitution of biomass for non-renewable fuels, there is potential for impacts as a result of increased particulate emissions from boilers/generators. Similarly, expanding the use of domestic biomass boilers could affect air quality in urban areas – which may already experience poor air quality as a result of transport emissions. While the existence of Smoke Control Zones and Air Quality Management Areas could reduce the potential for impacts in vulnerable areas, the FWS could usefully make recommendations as to the need for careful planning and installation of the technology.

5.82 Local air quality may also be affected by the overall increase in forestry activity precipitated by the economic priorities. The ambition to achieve a significant increase in woodland cover, coupled with additional vehicle movements and machinery use, is likely to result in an overall increase in fossil fuel consumption by the sector – with potential knock-on effects for air quality and carbon emissions. Sustainable transport measures that are helping to reduce sectoral emissions in other parts of Scotland (i.e. modal shift to sea or rail transport) are not feasible in GCV, given the distribution of the forest resource and processing infrastructure and the composition of the strategic transport network. However, the FWS could highlight the role of improvements in vehicle technology (e.g. central tyre inflation systems) in improving fuel economy – in addition to reducing erosion of forest roads and damage to the public road network from timber vehicles.

5.83 The FWS could therefore make stronger links between this section and the policies promoting greater energy efficiency in the sector. In particular, prioritising the use of renewable energy to power processing infrastructure could be a key means of reducing overall carbon emissions.

Improving quality of life

5.84 As many of the strategic priorities and subsidiary actions are focussed on capacity-building and awareness-raising, their potential for environmental effects is low.

5.85 There is significant potential for positive synergistic effects through the implementation of these priorities, creating a virtuous cycle whereby communities are assisted in taking ownership of environmental problems and provided with the skills and opportunities to tackle them. In general, improving awareness of the potential benefits of woodland to communities – ranging from access to sources of employment – will make a contribution to improving economic, social and environmental outcomes.

Responding to climate change

5.86 In common with the priorities identified under other themes, the climate change adaptation and mitigation priorities would benefit from stronger links to other themes to maximise the benefit of new woodland creation.

5.87 Although the FWS is realistic about the potential for major wind farm development affecting the total productive area of woodland, it may be possible to highlight the potential for other types of planting to share sites. Crops with a lower overall height, such as short rotation forestry, or coppice on suitable sites, could represent a compromise between reducing 'surface roughness' to the satisfaction of wind farm operators and maintaining a productive woodland resource.

Enriching the environment

5.88 As expected, the environment-focussed priorities of the FWS return strong positive scores again the majority of SEA objectives. Developing green networks are particularly positive as they have the capacity to convey perhaps the widest range of benefits.

5.89 In relation to biodiversity, although the assumed mitigation provided by FCS regulatory functions is likely to avoid the majority of impacts, the FWS should highlight the need for Appropriate Assessment under the Habitats Regulations for proposals likely to have a significant adverse effect on a Natura 2000 site.

5.90 As impacts on important environmental interests, such as designated natural heritage sites, historic environment assets and key watercourse are highly location specific, the need for strong cross references between the IFS map and the strategic priorities is reaffirmed.

6 Mitigation and monitoring

MITIGATION

6.1 As the FWS has no operational focus, it is inappropriate to recommend practical mitigation measures. However, as noted above there is potential for strengthening the internal links of the document to ensure that actions undertaken under one strategic priority take into account the requirements of other relevant themes.

6.2 In addition to the detailed changes set out above in relation to individual themes, the following key changes are therefore recommended

Recommendations

6.3 A key recommendation in relation to the suite of priorities relates to the need to make stronger links between the thematic section of the FWS and the 'Potential for Woodland Expansion' section and 'IFS map.' As noted above, this is the key spatial component of the FWS and will affect how the priorities are applied on the ground. Including a 'catch-all' statement directing users of the FWS that the strategic priorities should be read as a whole, and that woodland expansion proposals will be expected to fulfil as many of these as possible may also be advisable.

6.4 Highlighting the assumed mitigation measures that apply across all types of woodland creation will both raise awareness of obligation and provide reassurance to consultees. This could be accomplished by making links from the policy context section – which should outline the key regulatory and consultation processes – to the 'Potential for Woodland Expansion' and thematic sections. References to the need for Appropriate Assessment could usefully be included in this way.

6.5 Similarly, the FWS would benefit from stronger links between the strategic priorities across the themes to reinforce internal compatibility and ensure that individual priorities and actions are not read in isolation. This is perhaps a more pragmatic solution than extensive cross-references, which could increase the length of the FWS and compromise usability and impact.

Role of lower-tier plans, programmes and strategies

6.6 As a regional level strategy, the role of the FWS in influencing woodland creation and management 'on the ground' is relatively limited. Although it provides a broad framework within which land managers and regulators will operate, it cannot provide suitably detailed guidance to capture all eventualities. Therefore lower tier plans and policies – and particularly Local Development Plans, and associated supplementary guidance – will be critical in ensuring that the priorities of the FWS are carried through to the site level.

6.7 The FWS provides general guidance on key issues that FCS and Local Authorities – as well as those proposing woodland creation – should consider in preparing and assessing grant proposals. Similarly, it should provide a framework to assist in the development of the next generation of Forest

District Strategic Plans that will guide the management of the National Forest Estate.

Key issues requiring guidance

6.8 The following issues require special attention, and could benefit from the publication of context-specific guidance to support FCS, local authorities and land managers in developing and assessing proposals:

- **Design**:
  - Understanding and supporting landscape form and character is key in designing visually appealing woodlands
  - Making use of available tools, such as Forest Research Integrated Habitat Network data, can ensure that new woodlands protect important habitat resources and build connectivity in the right places
  - Understanding the role trees and woodland play in contributing to the character and significance of the historic environment can create opportunities for interpretation and to improve the settings of key assets
  - Maximising the potential for trees and woodland to contribute to sustainable water management and habitat networks in new development and to help root schemes within the wider landscapes
  - Guidance regarding species choice, stocking densities and silvicultural systems to help 'climate proof' future woodlands could be valuable
- **Balance with other land uses**:
  - Understanding the distribution of under-used and (functionally) derelict land in agricultural areas may help clarify where new woodlands can add most value – or help target support for appropriate woodland creation
  - Guidance tailored to specific conditions in each local authority area may be useful for clarity, and can support wider sub-regional sustainable development goals
  - Acknowledgement that coincident/intersecting 'areas of search' for windfarms and new woodlands only reflect potential suitability, rather than indicating a preferred land use. Proposals for either will be judged on their merits and wider social, economic and environmental value added
- **Multi-objective management**:
  - May be important to acknowledge that specific areas will be subject to different pressures and priorities, and that it may not be possible to apply all of the FWS' recommendations to every site. However, developing more detailed guidance for assessing the potential contribution of new woodlands to each of the FWS' key themes may prove useful in helping local authorities guide developers in the planning, implementation and long-term management of new woodlands

MONITORING

6.9 Regulation 21 of the Environmental Assessment of Plans and Programmes (Scotland) Regulations requires the Responsible Authority to monitor significant environmental effects of the implementation of the PPS. However, as no significant effects were identified monitoring activity is likely to focus on the broader successes and failures of the FWS's policies.

6.10 The success, or otherwise, of implementing the FWS will require monitoring against key objectives. However, no information on how this will be conducted is provided in the FWS itself. For the purposes of this assessment it is therefore assumed that core progress will be at least be monitored through Forestry Commission Scotland funding and regulatory processes.

6.11 The Glasgow and Clyde Valley Green Network Partnership and the Central Scotland Forest Trust are likely to play an important role in implementing woodland expansion projects in the region, and may therefore make a substantial contribution to monitoring the effectiveness of the FWS.

Potential indicators

6.12 While there is no need to monitor significant effects, there is significant value in attempting to quantify the relative success of the FWS. A series of potential indicators are therefore proposed below that could be used to measure progress against strategic priorities. This information should be used to inform future FWS and target additional resource where figures indicate significant value added – or where existing schemes appear to be faring less well.

	Themes and strategic priorities	Indicator
I	Supporting the economy	
A	An environment for investment	
A1	Enhancing economic investment locations	Area of woodland created / number of schemes delivered as part of masterplans / number of planning conditions or S75 agreements applied requiring green infrastructure and planting
A2	Encouraging temporary planting on stalled sites and derelict land	Number of / area of VDL and stalled sites planted Relative success in attracting investment on sites subject to temporary greening vs. those left in existing condition
A3	Greening vacant, derelict and underused land	
A4	Enhancing transport corridors	Length of transport corridor planted / area of new woodland created in transport corridors
A5	Promoting rural development and diversification	(monitor through SRDP grant applications)
A6	Supporting the tourism sector	(Internal FCS figures on woodlands' contribution to tourism)
A7	Shaping new communities	Number of development schemes brought forward with green infrastructure plans / advance landscape schemes
B	A healthy timber production and processing sector	
B1	Maintaining and increasing timber production	(FCS / FE figures on industry activity)
B2	Encouraging hardwood production	Area of productive hardwoods funded through SRDP
B4	Biomass	Area of new woodland planted for biomass production; Quantities of forestry waste recovered for woodchip/pellet production; Woodland brought into positive management through SRDP

	Themes and strategic priorities	Indicator
B5	Timber transport, processing and local markets	(monitor through Timber Transport Forum and Strategic Timber Transport Fund applications; FCS figures on 'timber miles')
2	**Improving quality of life**	
C	Improving local environments where it is needed most	
C1	Woodland in and around towns	Number of WIAT schemes / area of woodland created through WIAT / area of woodland brought into positive management
C2	New woodlands on derelict and underused land	As A3
D	Involving and empowering communities	
D1	Community participation in woodland planning and management	Number of consultations received on Forest Design Plans / next generation of Forest District Strategic Plans
D2	Community ownership	Number / area of woodland taken into community ownership; area of new woodland created by community groups
D3	Woodland based social enterprise	Number of new woodland-based social enterprises established
D4	Access and health improvement	New access infrastructure created; Number of GP exercise referrals
D5	Education and skills	Number of school visits facilitated by FCS and local authority rangers to woodland sites; Number of Forest School lessons;
3	**Responding to climate change**	
E	Mitigating climate change	
E1	Increasing carbon sequestration	Balance of total woodland created and lost; Quantity of timber from the region used in permanent construction (i.e. lifespan >50 years); Area of peatland restored;
E2	Energy efficiency and the forestry sector	Gather data to aid approximate calculation of sectoral fuel use; Processing sites using renewable energy
E3	Woodfuel and biomass	As B4
E4	Contributing to renewable energy development	Number of renewable energy installations on forest land; Area and type of woodland lost to renewable energy development vs. area and type of compensatory planting (and location i.e. whether inside GCV)
F	Adapting to climate change	
F1	sustainable flood management	Area of woodland created as part of 'soft' flood alleviation schemes; Area of floodplain woodland restored/created
F2	Expanding habitat networks	Area of woodland created within FHN 'target' areas
F3	Managing trees and woodlands in a changing climate	(FR monitoring of success of tree species)
4	**Enriching the environment**	
G	Diverse species and habitats	
G1	Improving the condition of nationally important woodland habitats	(SNH SSSI condition surveys)
G2	Contributing to Local Biodiversity Action Plan targets	(Local authority monitoring against LBAP targets)
G3	Restoring ancient and semi-natural woodland	Area of ASNW brought into positive management through SRDP
G4	Developing habitat networks	As F2
G5	Expanding native woodlands	Area of native woodland created through SRDP
G6	Protecting and enhancing other important habitats	(Local authority monitoring against LBAP targets) Habitat enhancement delivered through SRDP in parallel with woodland creation

	Themes and strategic priorities	Indicator
H	Better townscapes and landscapes	
H1	Improving townscapes and landscapes	
H2	Enhancing damaged landscapes	As A3
H3	Maintaining important designed landscapes and specimen trees	
H4	Protecting the historic environment	
I	High environmental quality	
I1	Contributing to a high quality water environment	Operational and regulatory monitoring
I2	Maintaining good air quality	
I3	Reducing the impact of noise	
I4	Conserving soils	

7 Next steps

7.1 The Forestry and Woodland Strategy will be edited in line with the content of this Environmental report – which will then be adjusted accordingly, recording the continuing process of iteration.

7.2 Following confirmation of the consultation timescale with the Scottish Government SEA Gateway, the FWS and ER will be made available online for a period of four weeks for public review and submission of comments.

7.3 The responses of the Consultation Authorities and the public will then be collated and, where appropriate, taken into account in the finalised FWS. How and where consultation responses have been taken into account will set out in an SEA Post-adoption Statement, to be published at the end of this process.

APPENDIX 1

ASSESSMENT TABLES

THEME	SUPPORTING THE ECONOMY
	AN ENVIRONMENT FOR INVESTMENT • **Enhancing economic investment locations** • **Encouraging temporary planting on stalled sites and derelict land** • **Growing the Green Network** • **Enhancing transport corridors** • **Promoting rural development and diversification** • **Supporting the tourism sector** • **Shaping new communities.**

Topic	SEA objectives	Sub criteria for assessment	Evaluation	Timeframe	Duration	Commentary	Cumulative or synergistic effects	Mitigation / enhancement
Biodiversity	To conserve and enhance the diversity of habitats and species	Expand habitat networks	+	M	L	Strategic approach to developing green networks in parallel with economic development will assist in expansion of habitat networks		Could be more specific in highlighting role of native tree species – although this is mentioned elsewhere
		Conserve and enhance key habitats and species	0/+	M	L	FWS has no effect on location of development Key development areas identified in SDP already		

						subject to SEA. Additional greening will benefit a range of species		
Population & Human health	To avoid further blight in disadvantaged communities	Target woodland expansion in areas where benefits can be optimised	++	M	L	Greening of stalled sites and VDL likely to contribute to improved outcomes in disadvantaged communities		Opportunity to make links with 'Improving quality of life' strategic priorities
	To promote and develop Green Network thinking	Contribute to community and health benefits by promoting access, recreation and active travel using the green network	+	S-L	L	Well planned development, with associated GI (in accordance with FWS policies) should provide opportunities for active travel etc		Dependence on quality of development planning and design for quality of outcomes – outwith remit of FWS
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	++	M-L	L	VDL planting and temporary greening will result in a significant improvement in soil quality on degraded sites		
		Steer woodland expansion away from sensitive soil resources (i.e. peat) to minimise the potential for pollution and loss of	0			No sensitive peat soils in areas likely to be affected by this suite of policies		

		soil carbon						
		Safeguard prime agricultural land	0/+	M	L	Prime quality agricultural land is identified as a sensitivity in the IFS map – highlighting need for site-specific assessment / appropriate design of proposals.		Location of development will be determined through the planning process and is unlikely to be directly influenced by FWS policy – however prime agricultural land is safeguarded by the SDP and local policies.
Water	To protect and improve relevant waterbody status	Contribute to the delivery of River Basin Management Plans, Area Action Plans and flood management	+	S-L	L	Trees and woodlands' contribution to sustainable drainage is identified as an opportunity for action. Integrated planning of greenspace, drainage and development could reduce runoff, pollution and reduce pressure on hard infrastructure		Opportunity to make links with Environmental Quality policies
		Continue to support sustainable water management	+	S-L	L	The parallel sensitive approach to existing trees on development sites, and encouragement of		

						new greenspace provision (including explicit references to sustainable water management) will help to improve the contribution of new development to water quality		
Air	To protect and enhance air quality	Contribute to a reduction in air pollution	+	S-L	M	Prioritised planting in transport corridors could help intercept pollutants (especially PM_{10} particulates); Prioritising integrated development of Green Infrastructure should increase opportunities for sustainable travel Significant increases in use of VDL and stalled sites for biomass could result in local air quality impacts as a result of machinery use – although likely to	Potential for cumulative effect with biomass policies	Transport corridor action could be strengthened with explicit references to benefits to air quality – would give a stronger positive score

						be short term and relatively minor		
		Reduce the potential for unnecessary 'timber miles' and associated emissions	0			Unlikely to have a bearing on timber transport		
		Contribute to sustainable travel and transport objectives	0/+	M-L	M-L	Approach of setting new development within the Green Network should create opportunities for sustainable travel (notably cycling).		Should include a specific 'opportunity for action' around sustainable travel under 'Enhancing economic investment locations' – would result in a stronger positive score (and make a more effective contribution to GN aims)
Climatic factors	To reduce GHG emissions	Seek to minimise GHG emissions from the sector	0/+	M-L	L	Opportunities for sustainable travel through well-planned economic development within the GN		As above (although acknowledged that the FWS itself has no bearing on the location of development – just the type of planting employed)
		Seek to prevent new planting on peat soils to maintain carbon stores	0			Economic development priority areas very unlikely to lie within areas of sensitive peat soils		
	To support climate change mitigation	Support appropriate renewable energy development	+	S-L	L	Prioritisation of biomass planting on VDL and stalled sites could help to		

						support the growth of the local biomass energy sector. Similarly, creating opportunities for growing biomass to assist with rural diversification / distributed generation		
		Safeguard the standing timber carbon resource	0/+	S-L	L	Explicitly encourages a 'sensitive approach to existing trees...' and prioritises retention.		Could include a link to the SG Policy on the Control of Woodland Removal – although this is referenced up front and will be a material consideration in decision making.
	To support climate change adaptation	Contribute to sustainable water management and erosion prevention	+	M-L	L	Use of woodland in sustainable drainage is highlighted as an opportunity for action.		
		Contribute to resilience planning objectives	0/+	M-L	L	Reinforcing habitat networks and promoting sustainable water management will contribute to climate resilience;		Potential to make links regarding species choice and management to improve new woodland's resilience
Material assets	To support sufficient infrastructure	Protect key mineral resources from sterilisation through	0			Unlikely that planting will occur overlying extant		

	development	inappropriate afforestation				mineral assets		
	To minimise waste	Contribute to the appropriate re-use of VDL	++	S-L	M	Specific actions to use woodland to tackle VDL either permanently or as a positive interim solution		
		Promote the efficient operation of the sector and the safe treatment and disposal of non-reusable/recyclable arisings	0					
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	0/+	M-L	L	Approach to existing trees and woodland in relation to development will preserve existing character. (Location decisions primarily planning-led, therefore impacts on fabric and setting will be mitigated through the statutory planning process)		
		Contribute to the character and significance of important historic	+	M-L	L	Prioritising retention of existing trees and woodland will help		

		landscapes				maintain the character and significance of historic landscapes, even where new development is proposed within their boundaries		
		Seek to promote responsible access to and appreciation of cultural heritage via the green network	0					
Landscape	Conserve and enhance the character of the region's landscapes	Steer woodland expansion proposals to appropriate locations	++	M-L	L	Explicit references to use of planting in parallel with development to create high quality landscape structure		
		Support measures to promote good woodland design and appropriate diversity	++	M-L	L	'Opportunities for action' promote a strategic and multi-benefit model for planting associated with development		
		Encourage the use of woodland to root new development and existing settlements in the landscape	++	M-L	L	Creating a high quality setting for development explicitly referenced		
		Woodland expansion	+	M-L	L	Strategic approach		Should highlight need for

		should reflect current and future capacity to accommodate change				to planting across the GN will reflect landscape capacity.		'opportunities for action' to be read in conjunction with the IFS map

THEME	SUPPORTING THE ECONOMY
	A HEALTHY TIMBER PRODUCTION AND PROCESSING SECTOR • **Maintaining and increasing timber production** • **Supporting the development of robust supply chains** • **Encouraging hard wood production** • **Encouraging management and expansion of woodland for biomass production** • **Supporting the expansion of timber processing** • **Creating and protecting local markets**

Topic	SEA objectives	Sub criteria for assessment	Evaluation	Timeframe	Duration	Commentary	Cumulative or synergistic effects	Mitigation / enhancement
Biodiversity	To conserve and enhance the diversity of habitats and species	Expand habitat networks	+	M-L	L	Prioritising restructuring of existing productive forests – will include building in native woodland habitat connectivity; Suggestion of move towards more CCF potentially positive; Encouraging planting of native broadleaves to provide a future		

						resource of high quality hardwoods will contribute to habitat networks and create new resources; Utilising VDL for short rotation forestry / coppice could contribute to habitat networks		
		Conserve and enhance key habitats and species	+	S-L	L	Expansion to be conducted in accordance with IFS map – which highlights key biodiversity sensitivities; Restructuring forests in sensitive areas to be prioritised		Should include note referring readers to the IFS map
Population & Human health	To avoid further blight in disadvantaged communities	Target woodland expansion in areas where benefits can be optimised	+	M-L	L	Prioritising positive management of existing woodlands (particularly by local authorities) could contribute to local environmental quality; Planting		Could highlight the potential of the WIAT area to contribute to productive area – particularly through management of existing woodlands and in providing feedstocks for RHI-funded biomass installations in key public/community facilities

						broadleaves for timber can help restore landscape structure in degraded areas (e.g. VDL, areas affected by past mineral workings etc.); Increasing uptake of biomass through RHI may make small-scale local woodlands viable community businesses		
	To promote and develop Green Network thinking	Contribute to community and health benefits by promoting access, recreation and active travel using the green network	0/+	S-L	L	Policies prioritise multi-benefit productive woodland – however, majority of the productive area will be outside the peri-urban area		
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	++	S-M	S-L	Reuse of VDL and stalled sites prioritised – resulting in significant improvement in soil stability and		

						quality; Turning currently marginal and under-used/neglected farmland over to appropriate farm woodlands could result in improvements in soil stability and quality (over bracken-inundated pasture)		
		Steer woodland expansion away from sensitive soil resources (i.e. peat) to minimise the potential for pollution and loss of soil carbon	0/+	S-L	L	Planting to be conducted in accordance with the IFS map – although specific reference required		Need to include a specific reference to the IFS as guide for appropriate planting locations (deep peat included within 'sensitive' category) Worth including a specific reference in 'Increasing the area of productive forestry' to highlight sensitivity of peat soils in the region.
		Safeguard prime agricultural land	0/+	S-L	L	Planting to be conducted in accordance with the IFS map – although specific reference required		Should include specific reference to IFS map (prime quality agricultural land identified as a sensitivity – although generally falls within 'Potential' area to encourage development of appropriate farm woodlands and shelterbelts.

								Could include a specific reference – as prime quality agricultural land a relative rarity in the region. However, complementing rather than displacing existing agriculture is noted elsewhere.
Water	To protect and improve relevant waterbody status	Contribute to the delivery of River Basin Management Plans, Area Action Plans and flood management	0/+	S-L	L	All new planting will be required to meet UKFS and appropriate FCS guidance on protection of the water environment (referenced in policy section of FWS) – although specific reference should be added in timber section for clarity; Promotion of continuous cover forestry could result in improved outcomes for the water environment over clear-fell; Increase in productive woodland area of all types will improve water retention capacity		Would record a stronger positive score through inclusion of links to water protection policy – although in practice significant impacts unlikely as regulatory regime and UKFS (and, ideally, UKWAS) and FCS 'Forests and Water' compliance should design out risk.

						– but also potentially increases the probability of accidental adverse effects		
		Continue to support sustainable water management	+	S-L	L	Promotion of increased broadleaved planting and management, particularly in riparian settings, could make an important contribution to sustainable flood management and slope stability		
Air	To protect and enhance air quality	Contribute to a reduction in air pollution	+/-	S-L	L	All stages of timber industry reliant on fossil fuel-powered machinery. Increased activity will inevitably lead to increased emissions from plant; Potential for some impacts to be offset by improved planting in	Potential for some cumulative impacts on air quality through the wider roll-out of biomass combustion for heat and power	Should be acknowledged that the forestry sector is relatively efficient in comparison with other land-based industries. Wider adoption of appropriate technology (particularly CTI-equipped haulage vehicles) could reduce fuel consumption and associated emissions. Could include a cross-reference to the 'Energy efficiency in the forestry sector'

						transport corridors; 'Opportunities' will ensure that biomass heat/power equipment will not be deployed in areas with already poor/sensitive air quality (SCA and AQMAs)		opportunities Although assumed mitigation provided by AQMA etc. for biomass in urban areas, FWS could usefully state need for careful planning and installation of technology to ensure efficient operation and mitigation of air quality impacts.
		Reduce the potential for unnecessary 'timber miles' and associated emissions	+/-	S-L	M-L	Opportunities for modal shift of timber transport in GCV very limited – road likely to remain principal solution. Increase in productive area and biomass use may result in increased fossil fuel use for planting / harvesting / transport / processing. However, large-scale processors within relatively short distances. Action promoting development of		Opportunity to highlight potential for local processing infrastructure to make use of renewable energy to power machinery (wind; biomass CHP in particular – electricity for machinery, heat for kiln-drying timber/woodchip/pellets. Cf. UPM's biomass powered sawmill in Ayrshire)

						smaller-scale infrastructure to cater to and develop local markets could reduce overall emissions; Similarly, prioritisation of identifying future sites for sector development could reduce transport distances		
		Contribute to sustainable travel and transport objectives	0			Options for modal shift in timber transport within GCV very limited; Increasing local production capacity could reduce overall transport distances / emissions etc.		
Climatic factors	To reduce GHG emissions	Seek to minimise GHG emissions from the sector	+/-			All stages of timber industry reliant on fossil fuel-powered machinery. Increased activity will inevitably lead to increased emissions from plant;	Potential for some cumulative impacts on air quality through the wider roll-out of biomass	Should be acknowledged that the forestry sector is relatively efficient in comparison with other land-based industries. Wider adoption of appropriate technology (particularly CTI-equipped haulage vehicles) could reduce fuel consumption

						Opportunities for modal shift of timber transport in GCV very limited – road likely to remain principal solution. Increase in productive area and biomass use may result in increased fossil fuel use for planting / harvesting / transport / processing. However, large-scale processors within relatively short distances. Action promoting development of smaller-scale infrastructure to cater to and develop local markets could reduce overall emissions; Similarly, prioritisation of identifying future sites for sector development could	combustion for heat and power	and associated emissions. Could include a cross-reference to the 'Energy efficiency in the forestry sector' opportunities Could highlight the potential for renewable energy to displace fossil fuels (or FF-derived energy) in powering processing facilities (e.g. biomass CHP – powering electric machinery, with excess heat utilised for drying timber products)

						reduce transport distances Potential for some impacts to be offset by additional planting to sequester emitted carbon?		
		Seek to prevent new planting on peat soils to maintain carbon stores	+	M-L	L	Prioritised restructuring on sensitive sites could create opportunities for peatland restoration; New planting to be conducted in accordance with the IFS map – which includes peat soils within the 'sensitive' category		Need a headline reference in the timber section highlighting the need for policies to be read in conjunction with the IFS map
	To support climate change mitigation	Support appropriate renewable energy development	+	S-L	M-L	Very supportive of expansion of biomass capacity;		
		Safeguard the standing timber carbon resource	+	M-L	L	Policy designed to increase forest area, improve rates of timber use in construction.		
	To support climate change	Contribute to sustainable water	0/+	S-L	L	All new planting will be required to		Would record a stronger positive score through

	adaptation	management and erosion prevention				meet UKFS and appropriate FCS guidance on protection of the water environment (referenced in policy section of FWS) – although specific reference should be added in timber section for clarity; Promotion of continuous cover forestry could result in improved outcomes for the water environment over clear-fell; Increase in productive woodland area of all types will improve water retention capacity – but also potentially increases the probability of accidental adverse effects		inclusion of links to water protection policy – although in practice significant impacts unlikely as regulatory regime and UKFS (and, ideally, UKWAS) and FCS 'Forests and Water' compliance should design out risk.
		Contribute to resilience planning objectives	0/+	M-L	L	Move toward continuous cover in suitable		Additional positive effects from the addition of a note regarding choice of 'climate proof' timber

						locations could reduce windthrow in increasingly stormy future climate scenarios; Encouraging riparian expansion could contribute to flood attenuation		trees and more resistant native species
Material assets	To support sufficient infrastructure development	Protect key mineral resources from sterilisation through inappropriate afforestation	0			Very unlikely that afforestation would occur on strategic mineral sites – prevented by the planning process		
	To minimise waste	Contribute to the appropriate re-use of VDL	++	S-M	M-L	Positive use of VDL and stalled sites for temporary greening, biomass production and environmental enhancement		
		Promote the efficient operation of the sector and the safe treatment and disposal of non-reusable/recyclable arisings	0			Not currently covered		Include references to waste reduction and efficient resource use in the sector
Cultural heritage	To conserve and enhance the cultural and	Seek to ensure that woodland expansion safeguards the fabric	0/+	M-L	L	Expansion will occur in line with the IFS diagram		Reference required to highlight expansion occurring within the terms of the IFS diagram

	built environment	and setting of heritage assets				(reference required) – designated assets highlighted as 'sensitive' (along with the buffer zone identified for the Antonine Wall WHS)		
		Contribute to the character and significance of important historic landscapes	+	M-L	L	Preservation and enhancement of landscape character is prioritised		Could add explicit reference to the historic environment in 'opportunities for action'
		Seek to promote responsible access to and appreciation of cultural heritage via the green network	+	S-L	M-L	Restructuring of existing forests to improve recreational benefits		Could be more explicitly related to the historic environment (although acknowledge potential for producing unwieldy 'catch-all' policies)
Landscape	Conserve and enhance the character of the region's landscapes	Steer woodland expansion proposals to appropriate locations	+	M-L	L	Policies focussed on securing appropriate woodland expansion – to be read in conjunction with IFS diagram, which highlights opportunities; Landscape values highlighted in relation to hardwoods and		Should include a specific reference to IFS diagram Forest design and planning process will secure appropriate landscape design, but should be made explicit

						restructuring		
		Support measures to promote good woodland design and appropriate diversity	+	M-L	L	Supporting text explaining need for good design and need for restructuring of existing forests		Could include additional 'opportunities for action' against the 'Increasing the area of productive forestry' topic to highlight need to consider design in new commercial woodlands (although, in practice, secured through the grants and forest design planning process)
		Encourage the use of woodland to root new development and existing settlements in the landscape	0					
		Woodland expansion should reflect current and future capacity to accommodate change	0/+	M-L	L	Core approach is based on environmental sensitivity – rather than capacity.		FWS does not seek to define landscape or environmental capacity for woodland expansion. Not appropriate or necessarily feasible at the regional scale. Highlights potential at the strategic level, but capacity will be dependent on detailed, site- and landscape-specific assessment of proposal

THEME	IMPROVING QUALITY OF LIFE							
	IMPROVING LOCAL ENVIRONMENTS WHERE IT IS NEEDED MOST • **Woodland in and around towns** • **New woodlands on vacant, derelict and underused land**							
Topic	**SEA objectives**	**Sub criteria for assessment**	**Evaluation**	**Timeframe**	**Duration**	**Commentary**	**Cumulative or synergistic effects**	**Mitigation / enhancement**
Biodiversity	To conserve and enhance the diversity of habitats and species	Expand habitat networks	++	S-L	L	WIAT and planting of VDL are important means of improving habitat networks in urban areas and achieving environmental enhancement; Action to influence planning and open space policies will add to effect		
		Conserve and enhance key habitats and species	0/+	S-L	L	Community-focussed woodlands likely to make a relatively small contribution to conservation efforts for key		

						species		
Population & Human health	To avoid further blight in disadvantaged communities	Target woodland expansion in areas where benefits can be optimised	++	S-L	L	Policies specifically focussed on benefitting the most disadvantaged communities		
	To promote and develop Green Network thinking	Contribute to community and health benefits by promoting access, recreation and active travel using the green network	++	S-L	L	WIAT is a key components of implementing the social and environmental aims of the GN		
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	++	S-L	M-L	New woodlands on VDL, under-used land and stalled sites will improve soil quality etc		
		Steer woodland expansion away from sensitive soil resources (i.e. peat) to minimise the potential for pollution and loss of soil carbon	++	S-L	M-L	Prioritising previously derelict sites takes pressure off more sensitive sites and resources.		
		Safeguard prime agricultural land	+	S-L	M-L	The WIAT area offers an excellent opportunity to expand		
Water	To protect and improve	Contribute to the delivery of River Basin	+	S-L	L	WIAT schemes in riparian locations		

	relevant waterbody status	Management Plans, Area Action Plans and flood management				can contribute to sustainable flood management objectives and help to protect vulnerable communities from the effects of floodwater		
		Continue to support sustainable water management	+	S-L	L	Planting on VDL and contaminated sites may reduce rates of harmful runoff; WIAT schemes in riparian locations can contribute to sustainable flood management objectives		
Air	To protect and enhance air quality	Contribute to a reduction in air pollution	0/+	S-L	M-L	Urban and urban fringe woodland creation may increase effects of intercepting pollution for transport routes and other emitters (notably in relation to particulate emissions)		
		Reduce the potential for unnecessary 'timber	0					

		miles' and associated emissions						
		Contribute to sustainable travel and transport objectives	+	S-L	M-L	WIAT schemes may increase opportunities for sustainable travel as part of the wider green network; Development of high quality woodland assets close to settlements may also reduce the need for people to travel to participate in outdoor recreation		
Climatic factors	To reduce GHG emissions	Seek to minimise GHG emissions from the sector	0					
		Seek to prevent new planting on peat soils to maintain carbon stores	+			Peri-urban planting and re-use of VDL etc. could take pressure off more sensitive sites, while still increasing woodland cover		
	To support	Support appropriate	0					

	climate change mitigation	renewable energy development						
		Safeguard the standing timber carbon resource	0					
	To support climate change adaptation	Contribute to sustainable water management and erosion prevention	+	S-L	L	Planting on VDL and contaminated sites may reduce rates of harmful runoff; WIAT schemes in riparian locations can contribute to sustainable flood management objectives		
		Contribute to resilience planning objectives	0/+	S-L	L	Peri-urban planting could play an important role in boosting resilience – providing shelter, shade and (in the right locations) flood attenuation		Could highlight the role of woodland in helping communities adapt to climate change (in addition to social objectives) – or include lik to climate change policies
Material assets	To support sufficient infrastructure development	Protect key mineral resources from sterilisation through inappropriate afforestation	0			Urban/peri-urban locations preclude minerals development		
	To minimise waste	Contribute to the appropriate re-use of VDL	++	S-L	L	Strong focus on positive use of VDL		

		Promote the efficient operation of the sector and the safe treatment and disposal of non-reusable/recyclable arisings	0					
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	0/+	S-L		Sensitive WIAT schemes etc. can contribute to the character and setting of historic assets		Could make links with historic environment policies / highlight relevant guidance
		Contribute to the character and significance of important historic landscapes	0/+	S-L		Sensitive WIAT schemes etc. can contribute to the character and setting of historic assets		Could make links with historic environment policies / highlight relevant guidance
		Seek to promote responsible access to and appreciation of cultural heritage via the green network	+	S-L		Access to heritage assets in urban fringe woodlands would be encouraged through WIAT schemes etc		
Landscape	Conserve and enhance the character of the region's landscapes	Steer woodland expansion proposals to appropriate locations	++	S-L		Concentrating on enhancing degraded locations and delivering local environmental enhancement		
		Support measures to	0					

		promote good woodland design and appropriate diversity						
		Encourage the use of woodland to root new development and existing settlements in the landscape	+	M-L	L	WIAT schemes and other urban planting can help create a positive setting for settlements		
		Woodland expansion should reflect current and future capacity to accommodate change	+			Focussing on degraded sites that would benefit from appropriate woodland		

THEME	IMPROVING QUALITY OF LIFE							
	INVOLVING AND EMPOWERING COMMUNITIES • **Community participation in woodland planning and management** • **Community ownership** • **Woodland-based social enterprise**							
Topic	**SEA objectives**	**Sub criteria for assessment**	**Evaluation**	**Timeframe**	**Duration**	**Commentary**	**Cumulative or synergistic effects**	**Mitigation / enhancement**
Biodiversity	To conserve and enhance the diversity of habitats and species	Expand habitat networks	0			Policies focussed on participation and capacity-building; Enhancing biodiversity highlighted in supporting text as a priority for community schemes		Likely that community ownership schemes would include elements of management for biodiversity benefits – in line with the broad themes of the FWS.
		Conserve and enhance key habitats and species	0/+			Policies focussed on participation and capacity-building Enhancing biodiversity highlighted in supporting text as a priority for		

						community schemes		
Population & Human health	To avoid further blight in disadvantaged communities	Target woodland expansion in areas where benefits can be optimised	+			Policies not directly concerned with woodland expansion. However, community ownership could have important benefits particularly in disadvantaged areas (through education, training etc.)		
	To promote and develop Green Network thinking	Contribute to community and health benefits by promoting access, recreation and active travel using the green network	++	S-L	L	Strong role in promoting multi-benefit woodland as part of 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	0			No specific references – however, likely to be concentrated in similar areas and have synergy with WIAT etc.		
		Steer woodland expansion away from sensitive soil resources	0					

		(i.e. peat) to minimise the potential for pollution and loss of soil carbon						
		Safeguard prime agricultural land	0			Likely to be focussed on existing woodlands, rather than in creation of new assets		
Water	To protect and improve relevant waterbody status	Contribute to the delivery of River Basin Management Plans, Area Action Plans and flood management	0			Should be read in conjunction with other policies for maximum benefit		
		Continue to support sustainable water management	0					
Air	To protect and enhance air quality	Contribute to a reduction in air pollution	0/+	S-L	L	Community participation is likely to highlight potential to buffer emissions from transport corridors etc.		
		Reduce the potential for unnecessary 'timber miles' and associated emissions	0					
		Contribute to sustainable travel and	0					

		transport objectives						
Climatic factors	To reduce GHG emissions	Seek to minimise GHG emissions from the sector	0					
		Seek to prevent new planting on peat soils to maintain carbon stores	0					
	To support climate change mitigation	Support appropriate renewable energy development	0/+	S-M	M-L	Potential of woodfuel as a vehicle for community-based enterprise		
		Safeguard the standing timber carbon resource	0/+	S-L	S-L	Likely that community-based plans will incorporate management of standing resource		
	To support climate change adaptation	Contribute to sustainable water management and erosion prevention	0					
		Contribute to resilience planning objectives	+	M-L	M-L	Greater community engagement in woodland planning will help to raise awareness of climate change and should help to boost community resilience and		

						promote active planning for adaptation		
Material assets	To support sufficient infrastructure development	Protect key mineral resources from sterilisation through inappropriate afforestation	0			Peri-urban locations likely to preclude minerals development		
	To minimise waste	Contribute to the appropriate re-use of VDL	+			Likely to be opportunities for community schemes to help in the remediation and positive reuse of VDL		
		Promote the efficient operation of the sector and the safe treatment and disposal of non-reusable/recyclable arisings	0					
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	0/+	S-L	S-L	May be opportunities for communities to take on positive management of historic assets within woods acquired through NFLS; Synergy with community-based		

						cultural heritage projects (cf. 'Scotland's Rural Past' and community participation in Wilsontown Ironworks projects		
		Contribute to the character and significance of important historic landscapes	0/+			May be potential for communities to participate in management of significant assets – although should be directed by experts to avoid adverse effects		
		Seek to promote responsible access to and appreciation of cultural heritage via the green network	0/+	S-L	L	May be scope for community initiatives to highlight and facilitate access to heritage assets		
Landscape	Conserve and enhance the character of the region's landscapes	Steer woodland expansion proposals to appropriate locations	+	S-L	L	Greater community involvement in woodland planning and management is likely to promote the development of woodland that protects and enhancing key local values, improves		
		Support measures to promote good woodland design and appropriate diversity	0/+	S-L	L			
		Encourage the use of woodland to root new	+	M-L	L			

		development and existing settlements in the landscape				the setting of existing settlements and helps to provide green infrastructure and key amenities for new development		
		Woodland expansion should reflect current and future capacity to accommodate change	+	S-L	L			

THEME	IMPROVING QUALITY OF LIFE							
	PROMOTING ACCESS AND BETTER HEALTH							
Topic	**SEA objectives**	**Sub criteria for assessment**	**Evaluation**	**Timeframe**	**Duration**	**Commentary**	**Cumulative or synergistic effects**	**Mitigation / enhancement**
Biodiversity	To conserve and enhance the diversity of habitats and species	Expand habitat networks	0			Policies focussed on improving participation		
		Conserve and enhance key habitats and species	0					
Population & Human health	To avoid further blight in disadvantaged communities	~~Target woodland expansion in areas where benefits can be optimised~~	++	S-L	L	(Poor fit of SEA sub-criteria) Policies explicitly target provision where needed most		
	To promote and develop Green Network thinking	Contribute to community and health benefits by promoting access, recreation and active travel using the green network	++	S-L	L	Key aspect of implementing the social aspects of the green network		
Soil	To avoid adverse direct and indirect impacts on soil stability,	Where appropriate, seek to re-use VDL for a range of woodland / green network purposes	0/+			May be potential for improved access through woodland creation on VDL sites –		

	structure and quality					although effort likely to be focussed on existing assets		
		Steer woodland expansion away from sensitive soil resources (i.e. peat) to minimise the potential for pollution and loss of soil carbon	0					
		Safeguard prime agricultural land	0					
Water	To protect and improve relevant waterbody status	Contribute to the delivery of River Basin Management Plans, Area Action Plans and flood management	0					
		Continue to support sustainable water management	0					
Air	To protect and enhance air quality	Contribute to a reduction in air pollution	+	S-L	L	Focus on improving provision close to settlements could reduce need for people to travel to participate in outdoor recreation		
		Reduce the potential for unnecessary 'timber	0					

		miles' and associated emissions						
		Contribute to sustainable travel and transport objectives	+	S-L	L	Focus on improving provision close to settlements could reduce need for people to travel to participate in outdoor recreation		
Climatic factors	To reduce GHG emissions	Seek to minimise GHG emissions ~~from the sector~~	+	S-L	L	(limited fit with SEA sub-criteria) Focus on improving provision close to settlements could reduce need for people to travel to participate in outdoor recreation		
		Seek to prevent new planting on peat soils to maintain carbon stores	0					
	To support climate change mitigation	Support appropriate renewable energy development	0					
		Safeguard the standing timber carbon resource	0					
	To support	Contribute to	0					

	climate change adaptation	sustainable water management and erosion prevention						
		Contribute to resilience planning objectives	0					
Material assets	To support sufficient infrastructure development	Protect key mineral resources from sterilisation through inappropriate afforestation	0					
	To minimise waste	Contribute to the appropriate re-use of VDL	0					
		Promote the efficient operation of the sector and the safe treatment and disposal of non-reusable/recyclable arisings	0					
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	0					
		Contribute to the character and significance of important historic landscapes	0					
		Seek to promote responsible access to	0/+	S-L	S-L	Could facilitate responsible access		

		and appreciation of cultural heritage via the green network				to historic environment assets in woodlands close to towns and widely used for recreation		
Landscape	Conserve and enhance the character of the region's landscapes	Steer woodland expansion proposals to appropriate locations	0			Policy not directly related to planting		
		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						

THEME	IMPROVING QUALITY OF LIFE							
	EDUCATION AND SKILLS • **Improving local environments where it is needed most** • **Involving and empowering communities** • **Promoting access and better health** • **Education and skills**							
Topic	**SEA objectives**	**Sub criteria for assessment**	**Evaluation**	**Timeframe**	**Duration**	**Commentary**	**Cumulative or synergistic effects**	**Mitigation / enhancement**
Biodiversity	To conserve and enhance the diversity of habitats and species	Expand habitat networks	0			Education and capacity-building focus		
		Conserve and enhance key habitats and species	0/+			Raising awareness of woodland biodiversity and ecosystem services could help wider conservation activities by stimulating improved participation		
Population & Human health	To avoid further blight in disadvantaged communities	~~Target woodland expansion in areas where benefits can be optimised~~	+	S-L	S-L	(Poor fit with sub-criteria) Targeted education programmes and job-creation	Potential for positive synergistic effects with community	

						activities could make an important contribution to improving outcomes in disadvantaged communities		
	To promote and develop Green Network thinking	Contribute to community and health benefits by promoting access, recreation and active travel using the green network	0					
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	0			Education and capacity-building policies – will not directly result in woodland creation		
		Steer woodland expansion away from sensitive soil resources (i.e. peat) to minimise the potential for pollution and loss of soil carbon	0					
		Safeguard prime agricultural land	0					
Water	To protect and improve relevant waterbody status	Contribute to the delivery of River Basin Management Plans, Area Action Plans and flood management	0					

		Continue to support sustainable water management	0					
Air	To protect and enhance air quality	Contribute to a reduction in air pollution	0/+	S-L	S-L	Likely to be focussed in woodlands close to urban areas – could therefore make use of sustainable transport options		Opportunity to highlight role of sustainable transport
		Reduce the potential for unnecessary 'timber miles' and associated emissions	0					
		Contribute to sustainable travel and transport objectives	0/+	S-L	S-L	Likely to be focussed in woodlands close to urban areas – could therefore make use of sustainable transport options		Opportunity to highlight role of sustainable transport
Climatic factors	To reduce GHG emissions	Seek to minimise GHG emissions from the sector	0					
		Seek to prevent new planting on peat soils to maintain carbon stores	0					
	To support climate change	Support appropriate renewable energy	0/+	S-L	S-L	Training and skills development could include elements		Could highlight the opportunity for the sector to provide training and employment in

	mitigation	development				around biomass (woodland management, technology installation and maintenance etc) to help build capacity in the sector and support the supply chain		emerging parts of the industry
		Safeguard the standing timber carbon resource	0					
	To support climate change adaptation	Contribute to sustainable water management and erosion prevention	0					
		Contribute to resilience planning objectives	0					
Material assets	To support sufficient infrastructure development	Protect key mineral resources from sterilisation through inappropriate afforestation	0					
	To minimise waste	Contribute to the appropriate re-use of VDL	0					
		Promote the efficient operation of the sector and the safe treatment and disposal of non-reusable/recyclable	0					Likely that training for employment in the forestry sector will include elements of energy efficiency and waste reduction – although impacts

		arisings						uncertain
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	0					
		Contribute to the character and significance of important historic landscapes	0					
		Seek to promote responsible access to and appreciation of cultural heritage via the green network	+	S-L		Greater emphasis on outdoor education could promote additional access to key cultural heritage assets in line with the 'Curriculum for Excellence'		
Landscape	Conserve and enhance the character of the region's landscapes	Steer woodland expansion proposals to appropriate locations	0					
		Support measures to promote good woodland design and appropriate diversity	0					
		Encourage the use of woodland to root new development and existing settlements in	0					

		the landscape						
		Woodland expansion should reflect current and future capacity to accommodate change	0					

THEME	RESPONDING TO CLIMATE CHANGE							
	MITIGATING CLIMATE CHANGE • **Increasing carbon sequestration** • **Contributing to renewable energy development**							
Topic	**SEA objectives**	**Sub criteria for assessment**	**Evaluation**	**Timeframe**	**Duration**	**Commentary**	**Cumulative or synergistic effects**	**Mitigation / enhancement**
Biodiversity	To conserve and enhance the diversity of habitats and species	Expand habitat networks	+	M-L	L	Improving habitat values through woodland expansion noted in supporting text, policy refers readers to spatial objectives elsewhere in FWS (includes biodiversity enhancement)		
		Conserve and enhance key habitats and species	+	M-L	L	Improving habitat values through woodland expansion noted in supporting text, policy refers readers to spatial objectives elsewhere in FWS (includes		

						biodiversity enhancement)		
Population & Human health	To avoid further blight in disadvantaged communities	Target woodland expansion in areas where benefits can be optimised	++	M-L	L	References in 'opportunities' ensure that woodlands planted for carbon sequestration will also convey other significant benefits		
	To promote and develop Green Network thinking	Contribute to community and health benefits by promoting access, recreation and active travel using the green network	+	M-L	L	As above. Likely that the majority of new woodland will prioritise public access where appropriate		
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	+	M-L	L	Planting on VDL and contaminated sites can increase the quantity of atmospheric carbon sequestered		
		Steer woodland expansion away from sensitive soil resources (i.e. peat) to minimise the potential for pollution and loss of soil carbon	++	M-L	L	Supporting text explicitly refers to the carbon storage capacity of peat soils and prioritises their protection		

		Safeguard prime agricultural land	+	S-L	L	Cross-references ensure that sensitive assets (including agricultural land) is protected from inappropriate afforestation – however, some planting in these areas will be appropriate to complement existing farming regimes (e.g. to provide shelter for crops and to reduce wind erosion) – therefore the FWS is careful to completely rule out planting		
Water	To protect and improve relevant waterbody status	Contribute to the delivery of River Basin Management Plans, Area Action Plans and flood management	0/+			Although no specific reference in these policies, the FWS highlights the importance of adherence to UKFS and relevant FCS guidelines		In practice, all new planting funded through SRDP will be required to meet UKFS and adhere to the relevant FCS guidance – this should effectively mitigate any adverse effects from increased rates of planting.
		Continue to support sustainable water management	0/+			As above. Likely that additional planting		

						for climate change mitigation (i.e. carbon sequestration) will also contribute to adaptation by reducing runoff and improving soil stability.		
Air	To protect and enhance air quality	Contribute to a reduction in air pollution	0/+	M-L	L	Woodland expansion could make a contribution to reducing air pollution – although this is strongly location-dependent. While increased planting will require additional fossil fuel use (for machinery etc.) this will be relatively short-term and is likely to be mitigated by overall benefits of new woodland; Similarly, energy efficiency policies will require more responsible use of resources and		

						deployment of appropriate technology to reduce the sector's carbon budget (with knock-on benefits for air quality) Increased use of timber in construction could also reduce air pollution by displacing the need for on-site, constantly running, 'readimix' concrete mixers / more carbon-intensive road transport of heavier materials (precast concrete and steel structural members) in favour of locally sourced timber. Biomass policy is structured to encourage use of the technology where this will not impact on areas with already marginal air quality		

						(e.g. AQMA / SCA)		
		Reduce the potential for unnecessary 'timber miles' and associated emissions	0/+	S-M	M-L	Energy efficiency policy will assist the sector in reducing emissions – however, as the opportunities for modal shift in GCV are limited this will only result in relatively small-scale improvement; However, efforts to develop local processing capacity and markets for biomass may reduce overall transport impacts		
		Contribute to sustainable travel and transport objectives	0/+	S-M	M-L	As above.		
Climatic factors	To reduce GHG emissions	Seek to minimise GHG emissions from the sector	0/+	M-L	L	Woodland expansion could make a contribution to reducing air pollution – although this is strongly location-dependent. While increased		

						planting will require additional fossil fuel use (for machinery etc.) this will be relatively short-term and is likely to be mitigated by overall benefits of new woodland; Similarly, energy efficiency policies will require more responsible use of resources and deployment of appropriate technology to reduce the sector's carbon budget (with knock-on benefits for air quality) Increased use of timber in construction could also reduce air pollution by displacing the need for on-site, constantly running, 'readimix' concrete mixers / more carbon-intensive		

						road transport of heavier materials (precast concrete and steel structural members) in favour of locally sourced timber. Biomass policy is structured to encourage use of the technology where this will not impact on areas with already marginal air quality (e.g. AQMA / SCA)		
		Seek to prevent new planting on peat soils to maintain carbon stores	++	S-L	L	Supporting text clearly highlights the importance of peat soils and prioritises their protection	Potential for positive cumulative effects with restructuring of existing forests in sensitive areas – creating opportunities for restoring degraded peatland	
	To support climate change	Support appropriate renewable energy	++	S-L	M	Strong support for wider roll-out of biomass heat and		

	mitigation	development				power, with appropriate policies to support the development of a sustainable supply chain; Support for continued wind energy development where environmental and planning constraints allow		
		Safeguard the standing timber carbon resource	++	S-L	L	Policies prioritise an overall expansion of forest area, protecting key resources and requiring compensatory planting for area lost to development (notably wind farms); Felling is an inevitable part of woodland management, but much of the carbon will remain sequestered through use in		

						building materials. In any case, the majority will be replanted. Role of new native woodlands as longer term carbon store also highlighted in supporting text.		
	To support climate change adaptation	Contribute to sustainable water management and erosion prevention	+	S-L	M-L	It is likely that new and expanded woodlands will make a substantial contribution to soil stability, erosion control and – depending on location – flood attenuation. Enhancing riparian woodlands is a priority (policies require expansion to take key spatial and thematic priorities into account)		
		Contribute to resilience planning objectives	+	S-L	M-L	Well planned woodland expansion can make an important contribution to climate resilience –		

						particularly in relation to water management, but also through planting to provide shelter and shade for settlements, crops and livestock. Supporting the development of renewables will help to reduce reliance on potentially unstable fossil fuel sources.		
Material assets	To support sufficient infrastructure development	Protect key mineral resources from sterilisation through inappropriate afforestation	0			Unlikely that woodlands for carbon sequestration will occur on sites of importance for strategic minerals.		Would be prevented by the existing woodland planning, assessment and consultation processes – will not be changed or influenced by the FWS
	To minimise waste	Contribute to the appropriate re-use of VDL	+	S-L	M	Woodland expansion policies require activity to be targeted on spatial priorities established by the FWS – including the positive reuse of VDL		
		Promote the efficient	+	S-L	L	Explicit		Could be strengthened with

		operation of the sector and the safe treatment and disposal of non-reusable/recyclable arisings				requirement to improve energy efficiency in the sector		references to wider resource efficiency and environmentally responsible sourcing / disposal of essential materials
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	++	S-L	S-L	Expansion policies require activity to adhere to spatial / thematic priorities established by the FWS – which includes protection and enhancement of the historic environment		
		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	+			Promoting responsible access is also a key strand of the FWS that should be taken into account in relation to woodland expansion and management		
Landscape	Conserve and enhance the character of the region's landscapes	Steer woodland expansion proposals to appropriate locations	++	S-L	L	Expansion policies require activity to adhere to spatial / thematic priorities established by the FWS		
		Support measures to	+	S-L	L	Expansion policies		

		promote good woodland design and appropriate diversity				require activity to adhere to spatial / thematic priorities established by the FWS; Importance of securing landscape quality is highlighted in supporting text		
		Encourage the use of woodland to root new development and existing settlements in the landscape	+	M-L	L	Expansion policies require activity to adhere to spatial / thematic priorities established by the FWS – including enhancing sense of place		
		Woodland expansion should reflect current and future capacity to accommodate change	+	S-L	L	Decisions on capacity will be made during site-specific deliberations – the FWS defines broad environmental potential which will influence the nature and scale of new woodland		

THEME	RESPONDING TO CLIMATE CHANGE							
	ADAPTING TO CLIMATE CHANGE • **Contributing to sustainable flood management** • **Expanding habitat networks** • **Managing trees and woodlands in a changing climate**							
Topic	**SEA objectives**	**Sub criteria for assessment**	**Evaluation**	**Timeframe**	**Duration**	**Commentary**	**Cumulative or synergistic effects**	**Mitigation / enhancement**
Biodiversity	To conserve and enhance the diversity of habitats and species	Expand habitat networks	++	S-L	L	Dedicated 'opportunity for action' prioritising development of habitat networks; Reinforcing key riparian woodlands will also occur through efforts to contribute to sustainable flood management		
		Conserve and enhance key habitats and species	++	S-L	L	Managing key woodland habitats highlighted as a priority, particularly in relation to boosting their resilience to the	Cumulative positive effect with restructuring of existing commercial forests	

						effects of climate change; Promotion of continuous cover forestry will improve habitat values		
Population & Human health	To avoid further blight in disadvantaged communities	Target woodland expansion in areas where benefits can be optimised	+	S-L	L	Promoting positive management of existing resource, expansion of riparian woodland and developing resilience in urban woodlands is likely to benefit deprived communities through improved environmental quality		
	To promote and develop Green Network thinking	Contribute to community and health benefits by promoting access, recreation and active travel using the green network	+	S-L	L	Planting to aid resilience to climate change effects is a key aspect of the green network and is therefore likely to happen in parallel with wider enhancements		Although not explicitly referenced, it is likely that GN developments – occurring separately from the development of the FWS – would result in similar effects
Soil	To avoid adverse direct and indirect	Where appropriate, seek to re-use VDL for a range of woodland /	+	S-L	L	It is likely that reuse of VDL will be an important		

	impacts on soil stability, structure and quality	green network purposes				means of expanding habitat networks in urban areas		
		Steer woodland expansion away from sensitive soil resources (i.e. peat) to minimise the potential for pollution and loss of soil carbon	0/+	S-L	L	Woodland expansion will occur in line with the IFS map – which identifies peat soils as being 'sensitive'; In any case, peat soils are of significant value in terms of carbon and water retention – therefore logic dictates that these areas would not be planted as part of adaptation responses		Should include a broad statement at the start of the thematic section stating that all woodland expansion will occur in line with the IFS map, but that existing regulatory processes, policy and guidance will remain the principal means of avoiding environmental impacts
		Safeguard prime agricultural land	+	S-L	L	Woodland expansion will occur in line with the IFS map – prime agricultural land (which is relatively scarce in GCV) is highlighted as a constraint – generally lying within the		FWS should not (and does not) rule out planting in agricultural areas, as development of farm woodland, enhancing riparian woodlands and shelterbelts will be an important means of improving climate resilience in these areas

						'Potential' category; However, some appropriate planting is likely to occur in these areas to support existing agriculture and climate resilience through reinforcement of shelterbelts and development of small farm woodlands		
Water	To protect and improve relevant waterbody status	Contribute to the delivery of River Basin Management Plans, Area Action Plans and flood management	+	S-L	S-L	Specific 'opportunity for action' prioritising sustainable water management		RBMP / AAP highlighted under 'Environmental Quality' as well as being acknowledged in the policy context. However, could be strengthened with a link to these sections.
		Continue to support sustainable water management	+	S-L	S-L			
Air	To protect and enhance air quality	Contribute to a reduction in air pollution	0					
		Reduce the potential for unnecessary 'timber miles' and associated emissions	0					
		Contribute to sustainable travel and	0					

		transport objectives						
Climatic factors	To reduce GHG emissions	Seek to minimise GHG emissions from the sector	0 (+)					Although not explicitly referred to, adaptation policies will be read in parallel with mitigation policies which prioritise emissions reduction (both within the climate change section of the FWS)
		Seek to prevent new planting on peat soils to maintain carbon stores	0 (+)			Planting will occur in line with the IFS map – which highlights the need to protect sensitive peat soils		Importance of peat soils is highlighted in the climate change sections of the FWS
	To support climate change mitigation	Support appropriate renewable energy development	0					
		Safeguard the standing timber carbon resource	0					
	To support climate change adaptation	Contribute to sustainable water management and erosion prevention	++	M-L	L	Sustainable flood management a key policy strand		
		Contribute to resilience planning objectives	++	S-L	L	Whole section is focussed on development resilience to the effects of climate change		
Material assets	To support sufficient	Protect key mineral resources from	0					

	infrastructure development	sterilisation through inappropriate afforestation						
	To minimise waste	Contribute to the appropriate re-use of VDL	+	S-L	S-L	Likely that reuse of VDL will play an important part in achieving expansion of habitat networks in urban areas		May be worth highlighting potential of some VDL sites to become 'easy wins' for green/habitat network development in urban areas. Improving social and environmental outcomes
		Promote the efficient operation of the sector and the safe treatment and disposal of non-reusable/recyclable arisings	0					
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	+	M-L	L	Importance of trees and woodlands in contributing to the significance of assets is highlighted – and promoting appropriate management to safeguard character is a priority		
		Contribute to the character and significance of important historic landscapes						
		Seek to promote responsible access to and appreciation of cultural heritage via the	0/+	S-L	S-L	There is potential for woodland expansion for climate change adaption to include		

		green network				elements of access to heritage assets – particularly in relation to planting in historic landscapes		
Landscape	Conserve and enhance the character of the region's landscapes	Steer woodland expansion proposals to appropriate locations	++	S-L	L	Opportunities highlight the need to reinforce existing key woodlands and respond to environmental conditions (i.e. enhancing riparian woodlands etc.)		
		Support measures to promote good woodland design and appropriate diversity	+	S-L	M-L	Measures to encourage climate-resilient planting and continuous cover practices will help to ensure greater diversity in woodland landscapes; Prioritising appropriate management of existing and historic woodlands/landscapes will help to ensure that distinctiveness is		

						maintained (e.g. preventing inundation by invasive species)		
		Encourage the use of woodland to root new development and existing settlements in the landscape	0/+					
		Woodland expansion should reflect current and future capacity to accommodate change	+	M-L	L	Encouraging woodland managers to plan for future climate scenarios – succession planning etc.		

THEME	ENRICHING THE ENVIRONMENT
	DIVERSE SPECIES AND HABITATS • **Improving the condition of nationally important woodland habitats** • **Contributing to local biodiversity action plan targets** • **Restoring ancient and semi-natural woodland** • **Developing habitat networks** • **Expanding native woodlands** • **Protecting and enhancing other important habitats**

Topic	SEA objectives	Sub criteria for assessment	Evaluation	Timeframe	Duration	Commentary	Cumulative or synergistic effects	Mitigation / enhancement
Biodiversity	To conserve and enhance the diversity of habitats and species	Expand habitat networks	++	S-L	S-L	Developing habitat connectivity is a key strand running throughout the FWS		
		Conserve and enhance key habitats and species	++	S-L	S-L	Specific actions to promote positive management and improve the condition of habitat. Conservation of key non-woodland habitats is also prioritised to		FWS could usefully note that, where proposals have the potential to have a significant adverse effect on Natura 2000 sites, Appropriate Assessment under the Habitat Regulations will be required.

						prevent inappropriate woodland expansion (e.g. into key open ground habitats and bog); Contributing to achievement of LBAP targets also highlighted to ensure focus is not restricted solely to designated sites.		
Population & Human health	To avoid further blight in disadvantaged communities	Target woodland expansion in areas where benefits can be optimised	+	M-L	L	Where key habitat resources are close to centres of population, conservation work promoted by the FWS is likely to enhance local environmental quality		
	To promote and develop Green Network thinking	Contribute to community and health benefits by promoting access, recreation and active travel using the green network	+	M-L	L	Important woodland habitats close to centres of population (e.g. Clyde Valley woodlands SSSI/SAC) have an important role to play in boosting knowledge and appreciation of		

						biodiversity – considerable synergy with wider GN aims.		
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	+	M-L	L	Enhancing habitat networks is a key aspect of the FWS' biodiversity theme, and enhancement and reuse of degraded and derelict land is likely to form an important component of urban greening		
		Steer woodland expansion away from sensitive soil resources (i.e. peat) to minimise the potential for pollution and loss of soil carbon	++	S-L	L	Policies to protect and enhance key (non-woodland) habitats and contribute to wider conservation objectives necessitate the protection of important peatland resources. Explicitly state that woodland expansion should not affect other important habitat resources.		

		Safeguard prime agricultural land	0					
Water	To protect and improve relevant waterbody status	Contribute to the delivery of River Basin Management Plans, Area Action Plans and flood management	0/+	S-L	L	Although not specifically referenced in this sub-section, objectives requiring protection of key habitat resources are likely to have significant synergy with aims to protect the water environment		
		Continue to support sustainable water management						
Air	To protect and enhance air quality	Contribute to a reduction in air pollution	0/+	M-L	L	Enhancement of habitat networks in urban areas and adjacent to transport corridors is likely to result in a minor improvement in air quality as a result of the filtering effects of trees and woodland		
		Reduce the potential for unnecessary 'timber miles' and associated emissions	0					

		Contribute to sustainable travel and transport objectives	0					
Climatic factors	To reduce GHG emissions	Seek to minimise GHG emissions from the sector	0					
		Seek to prevent new planting on peat soils to maintain carbon stores	++	S-L	L	Policies requiring the protection of key non-woodland habitats highlight the value of blanket and raised bog		
	To support climate change mitigation	Support appropriate renewable energy development	0					
		Safeguard the standing timber carbon resource	+	S-L	L	Protection of woodland habitats will safeguard significant carbon stores		
	To support climate change adaptation	Contribute to sustainable water management and erosion prevention	0/+	S-L	L	Protection and enhancement of important riparian woodland habitats will make a small positive contributing to maintaining slope stability, preventing erosion and reducing runoff		

		Contribute to resilience planning objectives	+	M-L	L	Developing habitat networks will make a major contribution to enabling key species to adapt to climate change; Will also contribute to wider adaptation measures such as flood attenuation, provision of shelter and shade etc.		
Material assets	To support sufficient infrastructure development	Protect key mineral resources from sterilisation through inappropriate afforestation	0					
	To minimise waste	Contribute to the appropriate re-use of VDL	+	S-L	L	There is potential for habitat network development to provide positive uses for VDL that could not otherwise be reused (e.g. where contamination is an issue, sites difficult to develop or adjacent to existing		

						resources)		
		Promote the efficient operation of the sector and the safe treatment and disposal of non-reusable/recyclable arisings	0					
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	0/+	S-L	L	While there could be potential for negative impacts from planting solely to develop habitat networks etc., the IFS map highlights the sensitivity of designated assets (Scheduled Monuments, Historic Gardens and Designed Landscapes, Conservation Areas and the Buffer Zone of the Antonine Wall WHS) and the need for appropriate, site-specific assessment of proposals		As before, the FWS could benefit from a statement at the beginning of the thematic section explaining that woodland expansion will occur in line with the IFS map and spatial priorities established by the FWS, and will be subject to site-specific assessment as part of the SRDP grant process (in addition to EIA is above the relevant threshold).
		Contribute to the character and significance of	+	M-L	L	Importance of key ancient woodlands and veteran trees		

		important historic landscapes				as part of the cultural, as well as natural, environment is highlighted – succession planning and restoring ancient woodlands could make an important contribution to maintaining the character of landscapes in which trees play a role (e.g. urban parks, policies)		
		Seek to promote responsible access to and appreciation of cultural heritage via the green network	0					
Landscape	Conserve and enhance the character of the region's landscapes	Steer woodland expansion proposals to appropriate locations	++	S-L	L	Policies requiring the protection of key habitats and species will ensure that they are not adversely affected by woodland expansion		
		Support measures to promote good woodland design and	+	S-L	L	Developing habitat networks, restoring ancient woodlands and		

		appropriate diversity				enhancing other key habitats will be key drivers for building diversity into woodland expansion and management proposals		
		Encourage the use of woodland to root new development and existing settlements in the landscape	0					
		Woodland expansion should reflect current and future capacity to accommodate change	0/+			Expansion based on IFS map and site-specific assessment		

THEME	ENRICHING THE ENVIRONMENT							
	BETTER TOWNSCAPES AND LANDSCAPES • **Improving townscapes and landscapes** • **Enhancing damaged landscapes** • **Maintaining important designed landscapes and specimen trees** • **Protecting the historic environment**							
Topic	**SEA objectives**	**Sub criteria for assessment**	**Evaluation**	**Timeframe**	**Duration**	**Commentary**	**Cumulative or synergistic effects**	**Mitigation / enhancement**
Biodiversity	To conserve and enhance the diversity of habitats and species	Expand habitat networks	++	M-L	L	Requirement for green infrastructure to be developed in parallel with regeneration projects, development of Community Growth Areas etc. will make a major contribution to extending habitat networks in urban areas		
		Conserve and enhance key habitats and species	0/+	M-L	L	'Opportunity' highlighting the potential of SRDP to deliver		

						woodland is likely to result in planting to conserve and enhance key woodland habitats		
Population & Human health	To avoid further blight in disadvantaged communities	Target woodland expansion in areas where benefits can be optimised	++	S-L	L	Highlights need for woodland / green infrastructure as part of regeneration, revitalising degraded landscapes and delivering Community Growth Areas will assist deprived communities across GCV. Enhancing transport corridors will reduce impacts and improve environmental quality		
	To promote and develop Green Network thinking	Contribute to community and health benefits by promoting access, recreation and active travel using the green network	++	S-L	L	Strongly integrated with GN objectives		
Soil	To avoid adverse direct	Where appropriate, seek to re-use VDL for	++	S-L	L	Encouraging planting in former		

	and indirect impacts on soil stability, structure and quality	a range of woodland / green network purposes				industrial areas is a key opportunity		
		Steer woodland expansion away from sensitive soil resources (i.e. peat) to minimise the potential for pollution and loss of soil carbon	0					
		Safeguard prime agricultural land	0					
Water	To protect and improve relevant waterbody status	Contribute to the delivery of River Basin Management Plans, Area Action Plans and flood management	+	S-L	L	Enhancing brownfield regeneration areas through the provision of well-planned and designed woodland, greening transport corridors and expanding tree cover in currently sparsely-wooded areas is likely to contribute to sustainable water management through a reduction in runoff (slowing flow rates and improving infiltration /		
		Continue to support sustainable water management						

						retention capacity)		
Air	To protect and enhance air quality	Contribute to a reduction in air pollution	+	M-L	L	Prioritising planting along transport corridors is likely to deliver local improvements in air quality, particularly in relation to interception of particulate pollution		
		Reduce the potential for unnecessary 'timber miles' and associated emissions	0					
		Contribute to sustainable travel and transport objectives	0					
Climatic factors	To reduce GHG emissions	Seek to minimise GHG emissions from the sector	0					
		Seek to prevent new planting on peat soils to maintain carbon stores	0/+			Planting conducted as a result of these opportunities likely to be confined to urban and urban fringe locations, therefore unlikely to affect peat soils. Similarly, woodland expansion to occur		

						in line with IFS map – which prioritises the protection of sensitive peatlands		
	To support climate change mitigation	Support appropriate renewable energy development	0/+	S-L	S-M	Wider promotion of opportunities afforded by SRDP for woodland creation and management is likely to result in at least a minor increase in growing/managing timber to contribute to biomass supply chains.		
		Safeguard the standing timber carbon resource	+	S-L	L	Range of opportunities to protect and enhance existing important trees and woodland – key carbon stores. Also seeking to increase woodland cover – therefore boosting sequestration		
	To support climate change	Contribute to sustainable water	0/+	S-L	L	Planting in association with		

	adaptation	management and erosion prevention				development is likely to be integrated with SuDS and other GI planning measures. Woodland will contribute to improved soil stability		
		Contribute to resilience planning objectives	+	S-L	M-L	Opportunities to enhance urban environments and improve the climate resilience of park and street trees will contribute to wider adaptation measures – e.g. reducing 'urban heat island' effect		
Material assets	To support sufficient infrastructure development	Protect key mineral resources from sterilisation through inappropriate afforestation	0			Principally urban locations likely to preclude minerals development		
	To minimise waste	Contribute to the appropriate re-use of VDL	+	S-L	M-L	Regeneration efforts and consequent planting likely to focus on key brownfield sites		

		Promote the efficient operation of the sector and the safe treatment and disposal of non-reusable/recyclable arisings	0					
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	++	S-L	L	Specific policies for both fabric and setting of assets		
		Contribute to the character and significance of important historic landscapes	++	S-L	L	Planting to reinforce the character and significance of historic landscapes is prioritised – as is succession planning to ensure that the character of landscapes is preserved over the longer term, utilising more climate resilient species where required.		
		Seek to promote responsible access to and appreciation of cultural heritage via the green network	0/+	S-L	L	Efforts to highlight the importance of trees and woodland as an integral part of the historic environment may		

						have a positive knock-on effect in increasing visitor numbers		
Landscape	Conserve and enhance the character of the region's landscapes	Steer woodland expansion proposals to appropriate locations	++	S-L	L	Strong protection of historic environment should avoid adverse impacts – and steer appropriate expansion and management to historic landscapes that could benefit most		
		Support measures to promote good woodland design and appropriate diversity	++	S-L	L	Planting to enhance setting of assets, preserve character etc. will make an important contribution to ensuring woodlands are diverse and appropriate for the local landscape		
		Encourage the use of woodland to root new development and existing settlements in the landscape	++	S-L	L	Focus on delivering green infrastructure in parallel with development will make a major contribution to		

						enhancing sense of place and distinctiveness		
		Woodland expansion should reflect current and future capacity to accommodate change	+	S-L	L	Sensitive landscapes (i.e. with lower capacity for expansion) are indicated on the IFS and, through the appropriate regulatory processes, will ensure that proposals fit within the landscape		

THEME	ENRICHING THE ENVIRONMENT							
	HIGH ENVIRONMENTAL QUALITY • **Contributing to a high quality water environment** • **Maintaining good air quality** • **Reducing the impacts of noise** • **Conserving soils**							
Topic	**SEA objectives**	**Sub criteria for assessment**	**Evaluation**	**Timeframe**	**Duration**	**Commentary**	**Cumulative or synergistic effects**	**Mitigation / enhancement**
Biodiversity	To conserve and enhance the diversity of habitats and species	Expand habitat networks	+	M-L	L	Planting to enhance water quality, prevent erosion and intercept air pollution will all contribute to the development of habitat networks		
		Conserve and enhance key habitats and species	0/+	M-L	L	Additional planting may make a limited contribution to enhancement of key habitats (e.g. through contributions to LBAP targets etc.)		
Population	To avoid	Target woodland	+	M-L	L	Likely that planting		

& Human health	further blight in disadvantaged communities	expansion in areas where benefits can be optimised				to assist in achievement of sustainable water management and pollution reduction aims will contribute to environmental quality in deprived areas; Specific opportunity to alleviate blight through positive reuse of VDL and contaminated land		
	To promote and develop Green Network thinking	Contribute to community and health benefits by promoting access, recreation and active travel using the green network	0					
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	++	S-L	L	Prioritises rehabilitation and reuse of VDL and contaminated land		
		Steer woodland expansion away from sensitive soil resources (i.e. peat) to minimise the potential for pollution and loss of	0					Although protection of peat soils highlighted elsewhere, should be specifically referenced in relation to soil protection

		soil carbon						
		Safeguard prime agricultural land	0			Safeguarded through the IFS map – although should be highlighted as a key resource in relation to environmental quality; Use of trees and woodland to help stabilise soils will benefit arable agriculture by preventing wind erosion etc.		Should highlight importance of resource in Soils section
Water	To protect and improve relevant waterbody status	Contribute to the delivery of River Basin Management Plans, Area Action Plans and flood management	+	S-L	L			Positive – but should specifically include contributing to improvement in water body status as 'opportunity' (policy)
		Continue to support sustainable water management	++	S-L	L	Key priorities		
Air	To protect and enhance air quality	Contribute to a reduction in air pollution	+/-	M-L	L	Planting in transport corridors and strategic siting of biomass infrastructure will help to safeguard		FWS should highlight the need for careful planning and installation of biomass equipment to ensure efficient operation and mitigation of potential effects on local air quality. AQMA and SCAs will

						air quality; Additional greening in urban areas could contribute to local air quality There is potential for adverse effects in urban areas if there is a significant increase in households making use of biomass (e.g. wood pellet) boilers, in parallel with greater adoption by public bodies		provide a level of assumed mitigation. Important links with the planning system for incorporation of biomass technologies within new build / changes of use etc.
		Reduce the potential for unnecessary 'timber miles' and associated emissions	0					
		Contribute to sustainable travel and transport objectives	0					
Climatic factors	To reduce GHG emissions	Seek to minimise GHG emissions from the sector	0					
		Seek to prevent new planting on peat soils to maintain carbon stores	0					Soils section should highlight importance of peat soils – cross-reference to Climate Change section, as covered in

								detail there.
	To support climate change mitigation	Support appropriate renewable energy development	0/+	M-L	L	Air quality objectives support development of biomass infrastructure in appropriate locations		
		Safeguard the standing timber carbon resource	0					
	To support climate change adaptation	Contribute to sustainable water management and erosion prevention	++	S-L	L	Both highlights role of woodland in contributing to sustainable water management, and the need for forestry practice to safeguard the water environment		
		Contribute to resilience planning objectives	++	S-L	L	Sustainable water management and safeguarding soils against the effects of climate change are key adaptation responses		
Material assets	To support sufficient infrastructure development	Protect key mineral resources from sterilisation through inappropriate afforestation	0					

	To minimise waste	Contribute to the appropriate re-use of VDL	++	M-L	M-L	Strongly supports tree planting on VDL and contaminated land as part of strategic approach to remediation and regeneration		
		Promote the efficient operation of the sector and the safe treatment and disposal of non-reusable/recyclable arisings	0					Environmental quality section could benefit from inclusion of waste reduction and sustainable resource use opportunities
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	0					
		Contribute to the character and significance of important historic landscapes	0					
		Seek to promote responsible access to and appreciation of cultural heritage via the green network	0					
Landscape	Conserve and enhance the character of the	Steer woodland expansion proposals to appropriate locations	+	S-L	L	Efforts to contribute to sustainable water		

	region's landscapes					management and soil protection will steer expansion to areas with low tree cover and which could benefit from trees and woodland		
		Support measures to promote good woodland design and appropriate diversity	0					
		Encourage the use of woodland to root new development and existing settlements in the landscape	0/+	M-L	L	Positive reuse of VDL and contaminated land will help to improve the setting of neighbouring settlements		
		Woodland expansion should reflect current and future capacity to accommodate change	0/+			Expansion will be targeted in areas where woodland can convey most significant environmental benefits – site-specific decisions will be based on local capacity.		

APPENDIX 2

BIODIVERSITY, FLORA AND FAUNA		
Name of PPS	**Environmental requirements of PPS**	**How it affects, or is affected by the Forestry and Woodland Strategy**
Nature Conservation (Scotland) Act (2004)	Introduced a 'duty to further the conservation of biodiversity' for all pubic bodies, and sets out more specific provisions within this (e.g. for SSSIs). Also states a requirement for the preparation of a Scottish Biodiversity Strategy, to which all public bodies should pay regard.	**Biodiversity:** FWS should aim to conserve Scotland's biodiversity for future generations by conserving habitats and species and raising public awareness on the importance of biodiversity.
Scottish Planning Policy (2010)	Protection of international and national environmental designations complemented by local designations. Woodland protection and enhancement.	**Biodiversity:** FWS should aim to conserve Scotland's biodiversity for future generations by conserving habitats and species and raising public awareness on the importance of biodiversity. **Trees and Woodland:** FWS should aim to conserve the ancient and semi natural woodland of the city region whilst recognising the potential of forestry for bio-mass.
The Scottish Forestry Strategy (2006) (and associated SEA). Planning for Forestry and Woodland (May 2010)	Key themes include to: • reduce the impact of climate change; • get the most from Scotland's increasing and sustainable timber resource; • make access to and enjoyment of woodlands easier for all to improve health; • protect the environmental quality of our natural resources; and • help to maintain, restore and enhance Scotland's biodiversity	**Biodiversity:** FWS should aim to conserve and enhance biodiversity. **Population and Human Health:** FWS should aim to improve health and well being by providing biodiversity and green infrastructure benefits. **Climatic Change and Air Quality:** FWS should aim to reduce impact on and adapt to climate change.
Local Biodiversity Action Plans of the GCV Local Authorities	The LBAPs translate national targets for species and habitats into effective local action, stimulates local working partnerships into tackling biodiversity conservation, raises awareness, identifies local resources, identifies local targets for species and habitats ensures delivery and monitors progress.	**Biodiversity:** FWS should support the aims of the LBAPs and avoid adversely affecting key habitats and species as identified therein.
UK Forestry Standard – Forest Nature Conservation Guidelines (1990)	Forests and woodlands are a rich and diverse habitat for wildlife to be recognised and cared for by managers. These guidelines, based on practical measures already being taken, will provide the manager with the advice needed to reach high standards in 'state of the art'	**Biodiversity:** FWS should reflect these guidelines in planning for biodiversity benefits.

	nature conservation in forestry throughout the country.	
Woods for Nature: our biodiversity programme 2008-2011 (2008)	Forestry Commission Scotland policy to enhance or conserve biodiversity, by managing the national forest estate and encouraging good practice and conservation projects in private woodlands.	**Biodiversity:** FWS should seek to implement this policy in the GCV context.

CLIMATIC FACTORS		
Name of PPS	**Environmental requirements of PPS**	**How it affects, or is affected by the Forestry and Woodland Strategy**
Scottish Planning Policy - Renewable Energy, PAN 45 and 84	The Scottish Ministers have set a target of generating 40% (since quantified as 6 GW) of Scotland's electricity from renewable sources by 2020 and confirmed that this target should not be regarded as a cap. The importance of using clean and sustainable energy from renewable sources will continue to increase as a result of global imperatives to tackle climate change and the need to ensure secure and diverse energy supplies. PAN 45 complements SPP and highlights examples of good practice across Scotland. A key role of the planning system is to support a move towards low and zero carbon development through the use of energy efficient, micro-generating and decentralised renewable energy systems. PAN 84 provides information and guidance on implementing the targets set in the SPP.	**Climatic Change and Air Quality:** FWS should support increased production of woody biomass as a low carbon energy source and development, where appropriate, of other renewable energy infrastructure on woodland sites. Forestry operations should be encouraged to use low carbon fuels.
Climate Change (Scotland) Act 2009	The Act creates the statutory framework for greenhouse gas emissions reductions in Scotland by setting an interim 42 per cent reduction target for 2020 and an 80 per cent reduction target for 2050.	**Climatic Change and Air Quality:** FWS should contribute towards the targets set by the bill through the development of renewable energy sources (see above), woodland expansion for carbon sequestration, protection of carbon sinks in deep peat soils, and substitution of high carbon building materials (e.g. concrete) by locally sourced timber.

Biomass Action Plan for Scotland (2007)	The Biomass Action Plan sets out a coordinated programme for the development of the biomass sector in Scotland and aims to: • to provide a summary of the wide range of existing activities, actions and initiatives; • to provide a focus for a strategic coordinated approach to developing biomass for energy production across the heat, electricity and transport sectors; • to identify roles and responsibilities for government, industry and public stakeholders to develop a vibrant bio-energy industry in Scotland; and • to identify future actions and gaps.	**Climatic Change and Air Quality:** FWS should promote increased supply of woody biomass as a low carbon energy source and support development of the biomass fuel processing and supply chain.
Supplementary Guidance for Renewables GCV Joint Structure Plan Technical Report 8/06 North Lanarkshire, South Lanarkshire and Inverclyde Wind Farms Supplementary Planning Guidance	These supplementary guides for renewables support the SPP and set out policies and other advice to assist in positively planning for wind powered renewable energy developments in the GCV city region.	**Climatic Change and Air Quality:** FWS should support and plan for biomass and, as appropriate, other renewable energy developments in woodland areas of the GCV.
Forestry Commission Scotland Climate Change Action Plan (2009)	Describes what the Commission will do to increase the contribution and response of Scottish forestry to the challenges of climate change.	**Climatic Change and Air Quality:** FWS should be consistent with the aims of this policy document.
Scottish Natural Heritage (SNH) Climate Change Policy Statement and associated Action Plan (Draft) 2009	The Policy Statement sets out four key policies for SNH, namely, • helping to understand and publicise the effects and consequences of climate change for the natural environment; • advising on infrastructure and land management practices which help to mitigate climate change; • guiding adaptation so that nature can as far as possible, adapt to a changing climate and so that people can make best	**Climatic Change and Air Quality:** The FWS should set out how forestry and woodlands can mitigate climate change (e.g. increased sequestration by growing trees) and adapt to it (flood management, habitat networks, choice of tree species).

	use of natural processes in preparing for climate change; and • promoting action by organisations and individuals by setting an example in the management of SNH's own operations, and through our wider environmental education work.	
Getting the best from our land A draft land use strategy for Scotland (2010)	To sustain the net amount of carbon sequestered by forestry we need to increase woodland creation rates to 10-15,000 hectares per year and to sustain this rate thereafter. We will also ensure that deforestation is only permitted with compensatory planting. We must recognise the need to balance the gains arising from tree-planting against potential losses of soil carbon, so that the main focus of woodland creation will be away from areas with deeper peat soil (also stated in FCS Rationale for Woodland Expansion).	**Climatic Change and Air Quality:** The FWS should set out how the GCV area can contribute to woodland expansion targets and avoid areas of deep peat soils.

POPULATION AND HEALTH		
Name of PPS	**Environmental requirements of PPS**	**How it affects, or is affected by the Forestry and Woodland Strategy**
Scottish Planning Policy (2010)	Access to good quality open spaces and opportunities for sport and recreation make important contributions to a healthier Scotland. The planning system has a role in helping to create an environment where physical wellbeing is improved and activity made easier.	**Population and Human Health:** outdoor sport and informal recreation are an important part of a healthy life and therefore areas for these activities should be protected and enhanced within the FWS.
Making the Links: Greenspace and the Partnership Agreement, Greenspace Scotland	Green spaces contribute to quality of life, access, health, education, community cohesion, biodiversity and enterprise. They have a significant role to play in relation to housing and the environmental and community services that they offer.	**Population and Human Health:** FWS should seek to protect, enhance and promote woodland as part of a broader green spaces network.
Health Action Plans	Health and wellbeing are fundamental to quality of life. Improving health and addressing health inequality involves wide-ranging action across not just health and care services but also public services including education, employment, housing, community safety and environment.	**Population and Human Health:** FWS should contribute towards improving the health and well being of the GCV area population by providing venues for a wide range of outdoor activities (sport, recreation and quiet enjoyment), safe routes for active travel and measures to encourage participation, especially by sections of the community with poor health and/or low participation rates.
Core Paths and Access Strategies of the GCV Local Authorities	Core Paths Plans and Access strategies look to promote themes of: • green spaces; • human health and well being; • inclusion; • biodiversity.	**Population and Human Health:** FWS should contribute towards improving the health and well being of the GCV area by promoting core paths and accessibility to the countryside and green spaces (GN concept).
Community Planning Partnerships Community Plans of the CGV Local Authorities	Community Plans focus on achieving measurable improvements to the quality of life for all in the local authority area and provides a framework for delivering long term visions for the area. The Community Plan sets the context for continued joint working between the Local Authority Area and the local community and its partner agencies.	**Population and Human Health:** FWS should seek to involve and empower communities in woodland planning and management, supporting the goal of Community Plans to foster engagement between planning authorities and the local community.

Strategic Housing Investment Plans (SHIP) of the GCV Local Authorities	SHIPs set out how investment in affordable housing will be directed over the next 5 years to achieve the outcomes set out in there associated Local Housing Strategy.	**Population and Human Health:** There is a limited role for FWS to support provision of affordable housing on forest land, e.g. to provide key worker accommodation for forest managers, and this should integrate with the SHIPs.
EU Environmental Noise Directive 2002/49/EC	To provide a strategic approach to controlling environmental noise including drawing up strategic noise maps and action plans.	**Population and Health:** It may be possible to address noise hotspots identified by strategic noise maps through tree planting e.g. as a buffer along transport corridors. More generally, woodland conservation and enhancement can help to maintain areas of high tranquillity.
Strategic Noise Action Plan for the Glasgow Agglomeration (Draft 2008)	The three main objectives of the Directive are as follows: • To determine the noise exposure of the population through noise mapping • To make information available on environmental noise to the public • To establish Action Plans based on the mapping results, to reduce noise levels where necessary, and to preserve environmental noise quality where it is good.	**Population and Human Health:** It may be possible to address noise hotspots identified by strategic noise maps through tree planting e.g. as a buffer along transport corridors. More generally, woodland conservation and enhancement can help to maintain areas of high tranquillity.
Better Heath, Better Care (Scottish Government 2007)	It aims to deliver a healthier Scotland by helping people to sustain and improve their health, especially in disadvantaged communities, ensuring better, local and faster access to health care. It endeavours to shift care into communities, raise quality and reduce inequality.	**Population and Human Health:** The FWS to support the work of the Health Boards and The Glasgow Centre for Population and Health in promoting health equality.
UK Forestry Standard – Forests Recreation Guidelines (1992 – currently being revised and updated)	These guidelines outline the principles and standards of good recreation management practice in forests and woodlands. The Forestry Commission encourages owners to make at least part of their woodland accessible to the public, particularly close to towns and cities where woodland is scarce.	**Population and Human Health:** The FWS should take note of these guidelines in planning the role of woodland for outdoor recreation and community use.
Forests for People recreation	Forestry Commission Scotland's	**Population and Human**

framework (2008)	Recreation Framework sets out the vision, priorities and focus for action for access, recreation, and tourism on the national forest estate.	**Health:** The FWS should seek to implement this policy in a GCV context.
Woods In and Around Towns 'WIAT' (2008)	The WIAT programme provides the focus for Forestry Commission Scotland's work on improving quality of life in towns and cities.	**Population and Human Health:** The FWS should seek to implement this policy in a GCV context.
Woods for Health Strategy (2009)	Woods for Health demonstrates Forestry Commission Scotland's commitment to health improvement.	**Population and Human Health:** The FWS should seek to implement this policy in a GCV context.
Woods for Learning - education strategy (2005)	Outlines Forestry Commission Scotland's approach to working with young people both in and outside of school. It provides the foundation for FCS to develop lifelong learning programmes, especially through recreation and health.	**Population and Human Health:** The FWS should seek to implement this policy in a GCV context.
Getting the best from our land A draft land use strategy for Scotland (2010)	Community woodland ownership under the National Forest Land Scheme has helped to build community participation and capacity. The Government will continue to encourage and give appropriate guidance on land ownership models that give local communities a stake in their future, and which support sustainable land use.	**Population and Human Health:** The FWS should take account of opportunities for community woodland ownership.

SOIL		
Name of PPS	**Environmental requirements of PPS**	**How it affects, or is affected by the Forestry and Woodland Strategy**
EU Soil Thematic Strategy 2006	Aims to protect the role of soil in storing CO_2, avoiding water pollution and preserving biodiversity.	The FWS should seek to further the attainment of these soil protection aims e.g. by avoiding forestry on deep peat soils, support for adherence to the UK Forestry Standard and biodiversity measures described above.
PAN 33 Development of Contaminated Land (2000)	Document provides advice with regards to the development of contaminated land, which any developments will need to adhere to.	The SDP should recognise the potential for woodland planting to contribute to remediation of contaminated land into green space or for future development.
The Contaminated Land (Scotland) Regulations (2005)	Details activities that are prohibited to prevent the contamination of land and watercourses.	The FWS should not conflict with these regulations.
The Scottish Soil Framework (2009)	The Framework aims to raise awareness of the services soils provide to society and the pressures they face. Scotland's soils are generally in good health but the most significant pressures are climate change and loss of soil organic matter. Both affect most soil functions with national impacts which are difficult to reverse. In the case of greenhouse gas emissions, the impacts are global. The Framework identifies a wide range of activities that will contribute to thirteen soil outcomes.	The FWS should contribute to the outcomes and related actions where appropriate.
UK Forestry Standard – Soil Guidelines (1998 – currently being revised and updated)	Forests and Soil Conservation Guidelines advise owners and managers how to conserve the soil as a fundamental resource upon which trees and the whole forest ecosystem depend. They deal mainly with the effects of forest operations on the soil itself, although the effects on plant and animal communities supported by the soil have also been taken into account.	FWS should adhere to the UK Forestry Standard and the Forests and Soil guidelines.

WATER		
Name of PPS	**Environmental requirements of PPS**	**How it affects, or is affected by the Forestry and Woodland Strategy**
The Water Environment and Water Services (Scotland) Act 2003 (Designation of Scotland River Basin District) Order 2003	Ensures that all human activity that can have a harmful impact on water is controlled.	**Water Quality:** FWS should follow all appropriate guidance and legislation.
River Basin Management Plans: Scotland River Basin District and Clyde Area Management Plan	• identifying areas of the water environment for protection and improvement; • identifying where current or historic activities are constraining the quality of the water environment and the biodiversity it supports; • details the actions required to ensure waters of special value (e.g. drinking, biodiversity, shellfish, bathing) are up to standard and maintain the quality where they already meet those standards; • set out actions needed to deliver environmental improvements to 2015 and longer to 2027.	**Water Quality:** FWS should support the river basin management plans and seek to enhance the environmental quality of water in the Clyde area.
Scottish Planning Policy (2010) - Flooding and Drainage Flood Risk Management (Scotland) Act (2009)	Statutory and planning policy framework for delivering a sustainable and risk based approach to managing flooding based upon a catchment focus plans	The FWS should promote opportunities for woodland to provide natural flood risk management (e.g. through tree planting in upper catchments to slow the passage of water) and take account of the emerging Metropolitan Glasgow Strategic Drainage Plan (a NPF National Development) as the sustainable approach to flooding and drainage within the city region.
Marine (Scotland) Act 2010	Key measures include: • A new marine planning framework so that increasing use of the seas for energy, fishing, aquaculture, recreation and other purposes is well managed • The new planning system will create a more stable	The potential for secondary effects on the marine environment will be considered as part of the SEA process. Links between marine spatial planning and land use plans are likely to become increasingly important as a result of the Act.

	environment for investment • New Marine Planning Partnerships will involve local agencies, communities and stakeholders to ensure a strong local voice • A simpler licensing system will reduce the administrative burden and cut bureaucracy reducing business costs in key growth areas such as renewable energy • Improved marine nature and historic conservation to safeguard and protect Scotland's unique habitats, wildlife and marine archaeology and wrecks • Full regulation of seal management giving much improved protection for seals and a new comprehensive licence system	**Water Quality:** FWS should take account of the Marine Act when planning anything that could impact on coastal waters and/ or the sea. (Although this is considered unlikely)
Firth of Clyde Marine Spatial Plan Draft (2009)	Aims to improve the sustainable development of activities within the Firth of Clyde by providing a plan-led approach to the management and enabling long-term protection and use of the marine environment.	Limited interaction with the FWS.
Scottish Planning Policy (2010) Coastal Planning	Development plans should identify coastal areas likely to be suitable for development, areas subject to significant constraints and areas which are considered unsuitable for development such as the isolated coast. The identification of coastal locations which are suitable for development should be based on a clear understanding of the physical, environmental, economic and social characteristics of the coastal area and the likely effects of climate change.	This coastal policy may indicate spatial locations which are sensitive to built development but which represent an opportunity for woodland expansion.
SEPA Statement on the Culverting of Watercourses (1998)	SEPA's policy sets out the environmental issues associated with culverting and presents a	**Water Quality:** FWS should take account of the environmental issues associated

	consistent and pragmatic approach to this aspect of river engineering.	with culverting and opportunities for woodland to form part of any plans to restore culverted rivers to a more natural channel form.
Scottish Water Strategic Asset Capacity and Development Plan	Outlines the current capacity at water and wastewater treatment works across Scotland to let local authorities and developers see "at a glance" what capacity currently exists at a particular location in Scotland. It is intended to use this information to decide whether work will have to be carried out by Scottish Water to increase capacity at treatment works to enable a particular development to go ahead.	Limited interaction with the FWS.
Scottish Water, Water Resource Plan (2008)	In this draft Water Resources Plan we set out our strategy to ensure that all our customers, the length and breadth of Scotland, have a secure supply of clear, fresh, safe drinking water to 2031/32 and beyond. The key environment challenge for Scottish water is to adapt to pressures on water resources due to climate change and environmental constraints.	**Water Quality:** FWS should not add any additional pressure to Scottish water resources and should seek to help address water quality issues e.g. by reducing soil erosion and associated sedimentation or by providing an alternative economic land use to intensive agriculture in rural areas.
UK Forestry Standard – Forests and Water Guidelines (2003)	Guidelines on the environmental effects of land-use, pollutant inputs and forest operations, and consideration of the impact of lowland and native woodland expansion on the freshwater environment.	**Water Quality:** FWS should adhere to these guidelines.

AIR		
Name of PPS	**Environmental requirements of PPS**	**How it affects, or is affected by the Forestry and Woodland Strategy**
The Air Quality Strategy for England, Scotland, Wales and Northern Ireland. Working Together for Clean Air (2000)	Sets out the air quality strategy for the UK with objectives and targets, referring to the Environment Act 1995 legislation. It seeks a reduction in the levels of 8 harmful pollutants present in the air, which in turn promote: • the protection of human health; • the protection of vegetation and ecosystems	**Air Quality, Human Health and Safety, Biodiversity:** FWS should contribute to reduction in air pollution e.g. by encouraging sustainable transport choices and by recognising the potential for urban trees to remove pollutants from the air for the benefit of human health and biodiversity.
Local Air Quality Management Act (Part of the Environmental Act 1995)	Sets out duties requiring local authorities to review and assess air quality in their area from time to time, the reviews forming the cornerstone of the system of local air quality management.	**Air Quality, Human Health and Safety:** AQMAs may indicate where potential air quality benefits from tree planting are greatest.
Glasgow Agglomeration Air Quality Action Plan (2008-2010)	Sets out declared Air Quality Management Areas (AQMA) and details the initiatives required to meet targets to improve air quality.	**Air Quality, Human Health and Safety:** AQMAs may indicate where potential air quality benefits from tree planting are greatest.

MATERIAL ASSETS		
Name of PPS	**Environmental requirements of PPS**	**How it affects, or is affected by the Forestry and Woodland Strategy**
Scotland's National Transport Strategy (2006)	• Promote social inclusion by connecting remote and disadvantaged communities and increasing the accessibility of the transport network; • Protect our environment and improve health by building and investing in public transport and other types of efficient and sustainable transport which minimise emissions and consumption of resources and energy; • Improve safety of journeys by reducing accidents and enhancing the personal safety of pedestrians, cyclists, drivers, passengers and staff.	**Material Assets:** FWS should seek to integrate with the aims of the National Transport Strategy e.g. by providing venues for outdoor recreation and woodland-based tourism that are accessible by sustainable modes.
Strategic Transport Projects Review (STPR) (2008)	STPR complements the National Transport Review and seeks to: • improve journey times and connections – to tackle congestion and the lack of integration and connections in transport which impact on our high level objectives for economic growth, social inclusion, integration and safety • reducing emissions – to tackle the issues of climate change, air quality and health improvement which impact on our high level objective for protecting the environment and improving health, and improving quality, accessibility and affordability – to give people a choice of public transport, where availability means better quality transport services and value for money or an alternative to the car	**Material Assets:** FWS should seek to integrate with the aims of the STPR. **Population and Human Health:** FWS should support the STPR interventions aimed at reducing congestion, emissions etc and improving human health. **Climatic Factors and Air Quality:** FWS should support the STPR interventions aimed at reducing congestion, emissions etc such as tackling issues of climate change and the availability of public transport to reduce dependency on cars.
SPT Regional Transport Strategy (2008-2021)	• to develop the economy through improving connectivity for business	**Material Assets:** FWS should seek to integrate with the aims of the transport strategy.

	and freight making transport more effective and efficient, providing access to employment, education, shopping and leisure, by improving transport integration; • promote social inclusion and equality by providing a transport system that is safe, accessible, and affordable to all sections of the community; and, • improve health and protect the environment by minimizing emissions and consumption of resources and energy, by promoting active travel, quality public transport and modal shift.	**Climatic Factors and Air Quality:** FWS should contribute to ensuring that wood fuel and timber transport is achieved in an environmentally sustainable manner, e.g. by encouraging siting of wood production and processing close to markets, reducing air pollutants and thus improving air quality. **Human Health:** FWS should promote a healthier and more active population.
Scottish Planning Policy (2010) - Transport	The SPP supports the reduction of emissions from transport sources as a contribution to achieving Scottish Government greenhouses gas emission targets requires a shift to more sustainable modes of transport.	**Climatic Factors and Air Quality:** FWS should contribute to ensuring that wood fuel and timber transport is achieved in an environmentally sustainable manner, e.g. by encouraging siting of wood production and processing close to markets, reducing air pollutants and thus improving air quality.
Rural Development Programme for Scotland, The Strategic Plan, 2007-2013 (2006)	• promote an environmentally sustainable industry by targeting capital investment to mitigate farm pollution and secure environmental improvement; • developing products that reflect the high quality of the natural and cultural heritage; • supporting the production of feedstock for renewable energy production.	**Material Assets:** FWS should support the rural development programme's strategic plan. **Climatic Factors:** the FWS should support the production of woody biomass for renewable energy production.
Scottish Planning Policy (2010) - Surface Coal	This Scottish Planning Policy (SPP) sets out the national planning policy framework for the working of opencast coal	**Material Assets:** FWS should support this planning policy, where relevant.
Waste Management Zero Waste Plan for Scotland (2010)	The Zero Waste Plan will provide direction and guidance on key waste management issues including: • setting and meeting targets on prevention, reuse, recycling and composting,	**Climatic Factors:** Limited interaction with this policy although FWS should seek to promote use of forestry waste as a low carbon fuel source.

	and setting caps on energy from waste and landfill; • waste management and Climate Change; • complying with the revised EU Waste Framework Directive and the Landfill Directive; • delivery options; • improving waste data, to track progress and stimulate investment; • better waste regulation; • land-use planning for waste management; and, • possible implementation of further Landfill Bans The Scottish Government has targets for municipal waste including: • increasing the proportion recycled or composted to 40% by 2010, 50% by 2020 and 70% by 2025, • a 5% limit on landfill of municipal waste by 2025, • to stop the growth in municipal waste by 2010, and • 25% limit on energy from mixed municipal waste.	
The Timber Development Programme (2007)	The Timber Development Programme (TDP) is a £1million Forestry Commission Scotland initiative which aims to deliver 60 tasks between 2008 and 2011 through a series of partnerships between the forestry and research sectors.	**Material Assets:** FWS should seek to implement this policy in the GCV context.
Non-Timber Forest Products Policy (2009)	This Forestry Commission Scotland document outlines how responsible and sustainable management of products such as berries, lichens, fruits nuts and fungi could bring substantial benefits to rural communities, small businesses and	**Material Assets:** FWS should seek to implement this policy in the GCV context.

	landowners.	
Supporting Business Development Strategy (2009)	This document provides a strategic framework for supporting business development on the Forestry Commission Scotland estate, and for stimulating wider economic development in the Scottish forest industries.	**Material Assets:** FWS should seek to implement this policy in the GCV context.

CULTURAL HERITAGE (INCLUDING ARCHITECTURAL AND ARCHAEOLOGICAL HERITAGE)		
Name of PPS	**Environmental requirements of PPS**	**How it affects, or is affected by the Forestry and Woodland Strategy**
Scottish Historic Environment Policy (SHEP)	SHEP is the overarching policy statement for the historic environment. It provides a framework for more detailed strategic policies and operational policies that inform the day-to-day work of a range of organisations that have a role and interest in managing the historic environment.	**Cultural Heritage:** FWS should safeguard and, where appropriate, enhance the historic environment.
Scottish Planning Policy (2010) - Historic Environment	The historic environment is a vital contribution to Scotland's cultural heritage and contributes to our understanding of the past and present. The Development Plan should set the framework for the protection, conservation and enhancement of all elements of the historic environment to allow the assessment of the impact of proposed development on the historic environment and its setting. This recognises that setting is more than the immediate surroundings of a site or building, and may be related to the function or use of a place, or how it was intended to fit into the landscape or townscape, the view from it or how it is seen from around, or areas that are important to the protection of the place, site or building.	**Cultural Heritage:** FWS should safeguard and, where appropriate, enhance the historic environment. The spatial elements of the strategy should be informed by considerations such as the capacity of the historic landscape to accommodate afforestation without damage to its historic value.
UK Forestry Standard – Forests and Archaeology Guidelines (1995 – currently being revised and updated)	These guidelines set out the Forestry Commission's requirements for archaeological conservation in the creation of	**Cultural Heritage:** FWS should adhere to these guidelines.

	new forests and in the management of existing woodlands.	
Scotland's Woodlands and the Historic Environment (2008)	Forestry Commission Scotland policy setting out how the forestry sector can tap into Scotland's rich cultural heritage and help develop historic sites - including designed landscapes and ancient woodlands.	**Cultural Heritage:** FWS should seek to implement this policy in the GCV context.

LANDSCAPE AND TOWNSCAPE

Name of PPS	Environmental requirements of PPS	How it affects, or is affected by the Forestry and Woodland Strategy
Designing Streets: A Policy Statement for Scotland (2010)	Policy statement on street design changing the emphasis of guidance on street design towards place-making and away from a system focused upon the dominance of motor vehicles.	FWS should recognise the role of urban and peri-urban trees and woodlands in place making and creating a local environment where people want to live and work.
Pan 44 Fitting New Housing Development into the Landscape	• strategically, establishing landscape capacity and the relationship of new to existing urban forms as primary factors in determining the desirability of settlement expansion; and • promoting higher design standards relative to form layout and relation with existing urban areas.	Limited interaction with the FWS.
Pan 52 Planning and Small Towns	• Identifying factors which threaten the important legacy of small towns. • Providing for regeneration and expansion • Enabling lively, active and vibrant town centres within small towns • Enabling efficient and effective transport to support economic growth and accessibility • Promoting high quality design that promotes townscape quality.	Limited interaction with the FWS.
PAN 65 Planning and Open Space (2003)	Provides advice on the role of the planning system in protecting and enhancing existing open spaces and providing high quality new spaces.	**Landscape and Townscape:** FWS should enhance existing open space and provide high quality new spaces.

PAN 71 Conservation Area Management	This provides further advice on the management of conservation areas. It identifies good practice for managing change, sets out a checklist for appraising conservation areas and provides advice on funding and implementation.	**Landscape and Townscape:** FWS should not have a negative impact on conservation areas in the GCV area.
PAN 72: Housing in the Countryside	Advice on design of houses in the countryside with a purpose to create more opportunities for good quality rural housing which respects Scottish landscapes and building tradition.	**Landscape and Townscape:** FWS should promote the role of timber construction in providing high quality and sustainable rural housing.
Pan 74 Affordable Housing	Advice setting out how the planning system can support the Scottish Government's commitment to increase the supply of affordable housing.	**Population and Human Health:** There is a limited role for FWS to support provision of affordable housing on forest land, e.g. to provide key worker accommodation for forest managers, and this should integrate with the SHIPs.
Scottish Planning Policy (2010) - Rural Developments	Support and promote opportunities for environmental enhancement and regeneration in rural areas to maintain and improve the viability of communities and to support rural businesses.	**Landscape and Townscape:** FWS should support sustainable economic development in the rural areas of the city region, e.g. farm diversification into growing woody biomass fuels.
Scottish Planning Policy (2010) - Green Belts	The purpose of green belt designation in the development plan as part of the settlement strategy for an area is to: • direct planned growth to the most appropriate locations and support regeneration, • protect and enhance the quality, character, landscape setting and identity of towns and cities, and • protect and give access to open space within and around towns and cities.	**Landscape and Townscape:** FWS should indicate the role of belts of trees/woodland in defining green belt boundaries within the city region.
UK Forestry Standard – Forest	These guidelines are intended to	**Landscape and Townscape:**

Landscape Design Guidelines (1995 – currently being revised and updated)	provide applicants for the Woodland Grant Scheme and applicants for felling licences with an outline of the principles and practical applications of forest design. They represent the basic standard which will be expected in any application for grant aid in the generally more upland areas of Britain. Comprehensive landscape plans are necessary when new planting is undertaken on a substantial scale or when extensive felling is planned.	FWS should adhere to these guidelines.
Forestry Commission Scotland Policy on Control of Woodland Removal (2009)	Describes the policy direction for decisions on woodland removal in Scotland.	**Landscape and Townscape:** FWS should seek to implement this policy, taking into account specific issues for the GCV area.
Rationale for Woodland Expansion (2009)	Lays out the Scottish Government's thinking on how woodland expansion can best increase the delivery of public benefits from Scotland's land.	**Landscape and Townscape:** FWS should seek to implement this policy, taking into account specific issues for the GCV area.
Forestry Commission Scotland Guidance on Planning for Forestry and Woodlands	Provides guidance to planning authorities on preparing new forestry and woodland strategies to guide woodland expansion, and on how to integrate forestry and woodlands into new development plans.	**Landscape and Townscape:** FWS should seek to implement this policy, taking into account specific issues for the GCV area.

APPENDIX 3

SCENARIO CALCULATIONS

	Current	Low	CSGN	SFS	Notional capacity
					set by Zone
Existing	100%	95%	95%	95%	
Potential	0%	4%	5%	10%	
Preferred	0%	8%	15%	20%	
Preferred (urban fringe)	0%	10%	17%	15%	
Sensitive	0%	0%	1%	1%	
Unsuitable	0%		0%		
Urban	0%	1%	3%	2%	

Scenario

		Current			Low			CSGN			SFS			Notional capacity		
Row Labels	**Sum of ha**						Increase			Increase			Increase			Increase
Clyde Valley	**5630.74**		1483.393			1726.223	16%		1982.91	34%		2057.085	39%		1853.291	25%
Existing	1483.39	100%	1483.393	26%	95%	1409.223	31%	95%	1409.223	35%	95%	1409.223	37%	100%	1483.393	33%
Preferred	2084.47	0%	0		8%	166.7578		15%	312.6708		20%	416.8944		10%	208.4472	
Preferred (urban fringe)	1502.42	0%	0		10%	150.242		17%	255.4114		15%	225.363		10%	150.242	
Sensitive	560.45	0%	0		0%	0		1%	5.604531		1%	5.604531		2%	11.20906	
Farmland	**60334.89**		6095.804			9661.847	58%		13086.27	115%		15508.88	154%		10974.35	80%
Existing	6095.80	100%	6095.804	10%	95%	5791.014	16%	95%	5791.014	22%	95%	5791.014	26%	100%	6095.804	18%
Potential	232.19	0%	0		4%	9.287687		5%	11.60961		10%	23.21922		5%	11.60961	
Preferred	48233.66	0%	0		8%	3858.693		15%	7235.05		20%	9646.733		10%	4823.366	
Preferred (urban fringe)	27.14	0%	0		10%	2.713772		17%	4.613413		15%	4.070658		0%	0	
Sensitive	4356.78	0%	0		0%	0		1%	43.56785		1%	43.56785		1%	43.56785	
Unsuitable	1375.51	0%	0		0%	0		0%	0		0%	0		0%	0	
Urban	13.80	0%	0		1%	0.137995		3%	0.413985		2%	0.27599		0%	0	
Moorland Hills	**30304.96**		5151.848			6038.699	17%		6994.828	36%		7824.511	52%		6393.606	24%
Existing	5151.85	100%	5151.848	17%	95%	4894.255	20%	95%	4894.255	23%	95%	4894.255	26%	95%	4894.255	21%
Potential	4606.62	0%	0		4%	184.2647		5%	230.3308		10%	460.6617		5%	230.3308	
Preferred	11996.40	0%	0		8%	959.7116		15%	1799.459		20%	2399.279		10%	1199.64	
Sensitive	6938.07	0%	0		0%	0		1%	69.38072		1%	69.38072		1%	69.38072	
Unsuitable	1565.31	0%	0		0%	0		0%	0		0%	0		0%	0	
Urban	46.72	0%	0		1%	0.467249		3%	1.401746		2%	0.934497		0%	0	
Plateau Moorland	**87700.95**		22576.97			25311.25	12%		28624.35	27%		31228.23	38%		28624.35	27%
Existing	22576.97	100%	22576.97	26%	95%	21448.13	29%	95%	21448.13	33%	95%	21448.13	36%	95%	21448.13	33%
Potential	7577.07	0%	0		4%	303.0827		5%	378.8534		10%	757.7068		5%	378.8534	
Preferred	44500.49	0%	0		8%	3560.039		15%	6675.073		20%	8900.097		15%	6675.073	
Sensitive	12230.19	0%	0		0%	0		1%	122.3019		1%	122.3019		1%	122.3019	
Unsuitable	816.23	0%	0		0%	0		0%	0		0%	0		0%	0	
Southern Uplands	**39313.68**		6709.402			7729.425	15%		8554.35	27%		9800.473	46%		9352.231	39%
Existing	6709.40	100%	6709.402	17%	95%	6373.932	20%	95%	6373.932	22%	95%	6373.932	25%	95%	6373.932	24%
Potential	15957.61	0%	0		4%	638.3043		5%	797.8804		10%	1595.761		10%	1595.761	
Preferred	8964.85	0%	0		8%	717.1882		15%	1344.728		20%	1792.97		15%	1344.728	
Sensitive	3780.97	0%	0		0%	0		1%	37.8097		1%	37.8097		1%	37.8097	
Unsuitable	3900.85	0%	0		0%	0		0%	0		0%	0		0%	0	
Urban	**52678.51**		2922.837			3464.959	19%		4561.685	56%		4051.61	39%		5604.09	92%
Existing	2922.84	100%	2922.837	6%	95%	2776.695	7%	95%	2776.695	9%	95%	2776.695	8%	100%	2922.837	11%
Preferred (urban fringe)	2227.36	0%	0		10%	222.7364		17%	378.6519		15%	334.1046		15%	334.1046	
Sensitive	975.58	0%	0		0%	0		1%	9.755787		1%	9.755787		2%	19.51157	
Urban	46552.73	0%	0		1%	465.5273		3%	1396.582		2%	931.0546		5%	2327.637	
Urban Fringe	**53412.38**		6670.881			10582.1	59%		13599.37	104%		12767.59	91%		13093.61	96%

Existing	6670.88	100%	6670.881	12%	95%	6337.337	20%	95%	6337.337	25%	95%	6337.337	24%	100%	6670.881	25%
Potential	0.35	0%	0		4%	0.013947		5%	0.017434		10%	0.034869		0%	0	
Preferred	260.74	0%	0		8%	20.85886		15%	39.11036		20%	52.14714		1%	2.607357	
Preferred (urban fringe)	42238.22	0%	0		10%	4223.822		17%	7180.498		15%	6335.734		15%	6335.734	
Sensitive	4219.33	0%	0		0%	0		1%	42.19329		1%	42.19329		2%	84.38658	
Unsuitable	15.74	0%	0		0%	0		0%	0		0%	0		0%	0	
Urban	7.13	0%	0		1%	0.071298		3%	0.213895		2%	0.142597		0%	0	
Water body	**1929.67**		21.23288			21.23288	0%		21.23288	0%		21.23288	0%		21.23288	0%
Existing	21.23	100%	21.23288		100%	21.23288		100%	21.23288		100%	21.23288		100%	21.23288	
Potential	76.77	0%	0			0			0			0			0	
Preferred	240.37	0%	0			0			0			0			0	
Sensitive	213.67	0%	0			0			0			0			0	
Unsuitable	1377.63	0%	0			0			0			0			0	
Grand Total	**331305.79**		51632.37			64535.73			77425			83259.61			75916.76	
Total cover	**51632.37**		**16%**			**19%**			**23.4%**			**25.1%**			**22.9%**	
% increase on existing			0%			25%			50.0%			61.3%			47.0%	
Indicative planting rate						322.5841			644.8156			790.681			607.1097	