CAIRNGORMS NATIONAL PARK AUTHORITY

Paper 1
02/06/06

Annex 2

Draft Update of the Cairngorms Forest and Woodland Framework

[Please note: To minimise paper use, the two Appendices to this Update are **not** included. If Board members specifically wish to receive paper copies of the Appendices, this can be arranged.]

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Review and update of the Cairngorm Forest and Woodland Framework

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Report for the Cairngorms National Park Authority

May 2006

Foreword

The woodlands of Strathspey, Deeside, Donside and the Angus Glens form an extensive and valuable forest resource. The extent of this forest, together with the close proximity and connectivity of individual woodlands combines to form one of the most valuable ecological networks in Britain, and is one of the widely recognised special qualities of the Park.

Well-managed forests and woodlands deliver a wide range of social, economic and environmental benefits. They support biodiversity, provide opportunities for recreation, contribute to the visual quality of the landscape, take up carbon from the atmosphere, improve air quality, regulate water supply and water quality. They provide the raw materials for many industries obtaining a direct economic gain from forest management and they provide the landscape upon which much of the tourist industry within the National Park depends.

The original Cairngorms Forest and Woodland Framework (CFWF), written in 1999, was seen by some as a ground-breaking document which provides valuable guidance and information to help deliver forest and woodland management.

There have been a number of significant policy developments since it was produced, not least: the formation of the Cairngorms National Park. The draft update of the CFWF takes account of many new policies including, the four statutory Aims of the National Park, the Strategic Objectives for Forestry listed in the newly drafted National Park Plan, the Indicative Forestry Strategies of Moray, Aberdeenshire and Highland, plus the Draft Scottish Forestry Strategy.

In line with the draft National Park Plan, increased understanding of the importance of integrated land management within the National Park is emphasised within the update. The CFWF is aimed at making the best use of the forest and woodland resource and looking at ways of enhancing it that are not detrimental to other legitimate land management interests.

In addition to providing a review of recent policy changes, the update makes use of the latest modelling tools for assessing how best to enhance forest and woodland habitat networks within the National Park. BEETLE (*Biological and Ecological Evaluation Tools for Landscape Ecology*) are used to map the potential for species to disperse between separate habitats; thus highlighting where links between existing forest habitats may potentially be enhanced.

The original framework document was developed through an extensive consultation process which resulted in a number of 'locational priorities' for the Cairngorms. These priorities remain largely unchanged. The original document and maps remain relevant and are included as appendices.

It is important that the Cairngorms Forest and Woodland Framework accurately addresses the need to reflect the four aims of the National Park. The Draft update of the CFWF is to be finalised around the same time as the National Park Plan (towards the end of 2006). In the meantime, views on the draft will be very welcome.

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Appendix 1: The Cairngorms Forest and Woodland Framework: Volume 1

Appendix 2: The Cairngorms Forest and Woodland Framework: Volume 2

1. Introduction

1.1   Introduction to the update

1.1.1 Background

The CFWF was written in 1999 following a thorough consultation exercise and outlines a range of environmental, economic and social objectives and priorities for woodland management in the Cairngorms. The framework follows the over-riding principle *that woodland expansion and management should be environmentally, economically and socially sustainable and integrated with other land* uses (Towers et al. 1999). However, the CFWF was written before the National Park had been developed and the policy context has significantly changed in a number of relevant areas. Although the existing framework already acknowledges the need for an integrated approach to land use, the stronger recognition of the need for integrated land management is one of the most important changes in recent policy discussions and developments. For example, the important role of integrated land management, in particular in National Parks, was pointed in a report on New Directions for Land Management Schemes in Scotland's National Parks (Land Use Consultants et al., 2003). Ross and Smith emphasise the need for stronger land use integration between agriculture and forestry in their final report of the Deeside Economic and Technical Study (Ross and Smith, 2001).

A number of policy changes relating to forestry and woodland management have occurred since 1999 which principally could provide more scope for integrated land management. For example, the Water Environment and Water Services (WEWS) (Scotland) Act 2003 (SEERAD, 2005a) has been implemented. Strategic guidelines for the new Rural Development Regulation have been developed in 2005 (EU-Commission, 2005) which will form the framework for the new Scottish Rural Development Plan to be implemented in 2007. In the context of the latest CAP reform, the Scottish Executive has decided to implement Land Management Contracts (LMC) as the main policy support tool for land managers (SEERAD, 2005b). While Tier 1 of the LMC (single farm payment, with cross-compliance) and a prototype Tier 2 (LMC Menu Scheme) were introduced in 2005, Tier 3 will be introduced in 2007, probably containing elements of existing agri-environment schemes, mainly the Rural Stewardship Scheme, forestry schemes, and Natural Care (Schwarz et al., 2006). Specifically in relation to forestry, the Scottish Forestry Strategy and the Scottish Forestry Grant Scheme are currently under review (Forestry Commission Scotland, 2005a and 2006a). These examples of recent or actual developments change the policy framework for forestry and other land uses in Scotland and the Cairngorms National Park and provide an opportunity for a more integrated approach to land management, with forests and woodlands being an important component.

With respect to the Cairngorms National Park, recent changes in the policy context, such as the recognition of a need for more integrated land management, are already reflected in the draft Cairngorms National Park Plan (CNPA 2005a and 2006) and the development of an Integrated Land Management Strategy Framework (CNPA 2004). In addition, the CNPA Board has decided, based on the CFWF, to develop a new strategic Forest Plan for the National Park fitting within the context of the Cairngorms National Park Plan and the Integrated Land Management Strategy Framework.

Consequently, the CFWF needs to be updated taking into account policy and technological developments since its conception.

1.1.2 Objectives of the update

The overall purpose of this report is to update the CFWF with respect to significant policy and technological developments that have occurred since the existing framework was written in 1999. The updating consists of two parallel projects. This report (Project 1) focuses on the policy review of the existing CFWF and the revisions of the rationale, objectives and locational priorities of CFWF, taking into account the outcome of the policy review and evolving key issues with respect to land management. Within Project 2, Forest Research have developed a GIS-based digital data base for maps using the BEETLE model. A description of the BEETLE model and its application are incorporated in Section 3 of this report.

The specific objectives of this project are:

- To review policy developments since the CFWF was written in 1999

- To review the effectiveness of the existing CFWF in consultation with a range of stakeholders

- To draft an updated CFWF considering the outcome of the policy review.

1.1.3 Methodology

The report is divided into two main parts, the policy review (section 2) and update of the CFWF (section 3), plus an appendix with the original Framework document. The first part consists of a policy review including a stakeholder evaluation of the efficiency of the existing CFWF. The stakeholder consultation (section 2.1) collated information on the efficiency of the Framework from different key organisations with an interest in the CFWF, such as Forestry Commission, Forest Enterprise, Woodland Trust, SNH and forestry consultants. The stakeholder evaluation assessed how useful the CFWF has been in practice in underpinning the forest design process. The choice of stakeholders which have been contacted was made in consultation with CNPA and has been limited to a small number of people because of the short timescale of the project. However, the original Framework was based on a comprehensive consultation process making another larger consultation process at this stage unnecessary.

The stakeholder consultation at this stage was conducted to obtain feedback from the stakeholders on the following three questions:

- To what extent have the objectives and locational priorities of the existing CFWF been achieved?

- In light of recent policy and technological changes, are the existing objectives and priorities still valid?

- What can be done to ensure the updated CFWF helps to maximise opportunities to achieve its objectives?

During the policy review a wide range of different policy documents has been scoped covering recent and proposed policy developments at European, national and regional level with respect to forestry and related land uses. The scoping of recent

policy developments (section 2.2) has mainly followed the suggested documents in the Commissioning Brief, but also considered recent documents and forthcoming developments, such as the "national strategy plan" for the new Scottish Rural Development Plan launched by SEERAD on 8 February 2006 (SEERAD 2006a), the consultation on the Rural Development Programme for Scotland published on 4 April 2006 (SEERAD 2006b), and the recent draft Scottish Forestry Strategy 2006 issued for consultation on 6 March 2006 (Forestry Commission 2006a). The review summarises policy changes since 1999 relating to forestry and woodland management in the Park area and discusses the implications and some evolving key issues such as integrated land management, taking into account the stakeholder evaluation of the objectives and priorities in the existing CFWF. The policy review provides information on the policy context for the updated CFWF.

Following the review of recent policy developments, a synthesis (section 2.3) summarises the policy review and discusses some of the emerging key issues. These key issues comprise, for example, a stronger emphasis on integrated land management in the Park including the issue of transitions between different land uses, e.g. between forestry and agriculture.

Based on the policy review an update of the existing CFWF is given in section 3 of the report. Initially, it was anticipated that the scope of the updated CFWF will be similar to the existing version with updated maps in both volumes. But new technological developments with the application of the BEETLE model have provided the opportunity to use a flexible software tool which can produce digital maps for each grant application. The updating of the Framework document is mainly restricted to section 1 of volume 1 of the original document (compare with appendix 1). Hence, this report provides an updated rationale (section 3.1), objectives (section 3.2) and locational priorities (section 3.3) for the Framework incorporating new developments in the policy context for the Park where applicable. The update takes into account and reflects the strategic objectives defined in the draft National Park Plan. **Since the underlying principles of the original CFWF were developed based on an extensive consultation process, the importance of maintaining these principles has been acknowledged in the updated version. Most of the overall aims, objectives and locational priorities are still valid, so these only required minimal updating.**

With respect to the geographic scope of the updated framework, the draft naturally concentrates on the National Park as the core area. However, similarly to the original CFWF, the updated version also covers adjacent areas outside the National Park area as important habitat and forest networks extend beyond the park boundaries (compare with section 1.2.2). The updated geographic scope for the Framework is reflected and considered in the BEETLE model. A brief explanation of the BEETLE model is provided in section 3.4 including an outline of examples for the application of this methodology. It is important to note that the maps in the appendix attached to the original document have not been updated in the same manner for the above reason. The predictions of the potential forest cover shown in the original maps remain valid.

This update follows a similar lay-out to that in the original CFWF, e.g. highlighting the important details, and continues to use explanatory text in combination with text boxes which provide an easily-accessible summary of the objectives and priorities within the Cairngorms National Park.

1.2   The Cairngorms National Park

1.2.1   The aim of the Cairngorms National Park and strategic forestry objectives

Two National Parks have been established in Scotland: the Loch Lomond and the Trossachs in 2002 and the Cairngorms National Park in 2003. The National Parks (Scotland) Act 2000 (Scottish Parliament, 2000) defines four aims for Scottish National Parks as summarised in box 1 below.

Box 1 The National Parks (Scotland) Act 2000: Aims for Scottish National Parks

- To conserve and enhance the natural and cultural heritage

- To promote the sustainable use of natural resources

- To promote understanding and enjoyment (including enjoyment in the form of recreation) of the Park's special qualities

- To promote the sustainable social and economic development of the Park's communities

The Draft Park Plan identifies a range of different strategic objectives which can be grouped into three broad themes: Conserving, enhancing and managing the Park, Communities living and working in the Park and Understanding and enjoying the Park. Strategic objectives in relation to forestry and other land use issues such as agriculture and integrated land management are included in the first theme.

Box 2 Strategic objectives for forestry in the Draft National Park Plan

- Maintain existing native woodland cover and expand to develop habitat networks that complement the landscape character of the Park

- Support multi-objective woodland management that includes timber production, fuel wood, recreation and nature conservation

- Encourage a mix of tree species, ages and woodland structure to complement the landscape character of the Park

- Encourage a gradation of tree and scrub cover from valley floor to tree-line in targeted areas and the re-development of woodland types that have declined

- Support the development of local markets, processing and supply chains for forest products

- Promote community participation in woodland planning and management and an understanding of local woodland characteristics and distinctiveness

Forests and woodlands are described as one of the main qualities of the Park, with the extensive areas of woodland in Strathspey and Deeside as particular characteristics of the Cairngorm area forming an iconic identity. The woodlands include the largest area of semi-natural woodland in Britain (25% of the Scottish resource) and the largest extent of Caledonian pine woodland, the western-most relict of the extensive northern European boreal forest. The extent of this forest, together with the close proximity and connectivity of individual woodlands, combines

to form one of the most valuable ecological networks in Britain, and is one of the widely recognised special qualities of the Park. The CFWF plays an important role for the conservation and enhancement of these networks assessing the potential implications of proposed grant applications and plantings, for example to enhance the connectivity of woodlands. The enhancement of the forest networks needs to be integrated with work to support the production, processing and local use of timber in pursuit of broader objectives, including sustainable design and construction and renewable energy. The Plan points out the need for public support and policy to encourage the wide range of economic, environmental and social benefits provided by forests, including timber production, landscape enhancement, nature conservation, sport, recreation and water management and carbon sequestration (CNPA, 2005). The strategic objectives for forestry, identified in the Park Plan, are outlined in box 2 above.

1.2.2 Park boundaries
The area of the Cairngorms National Park is distributed across four council areas, Highland, Aberdeenshire, Moray and Angus, and covers an area of 3800 km^2.

Map 1 The Cairngorms National Park area
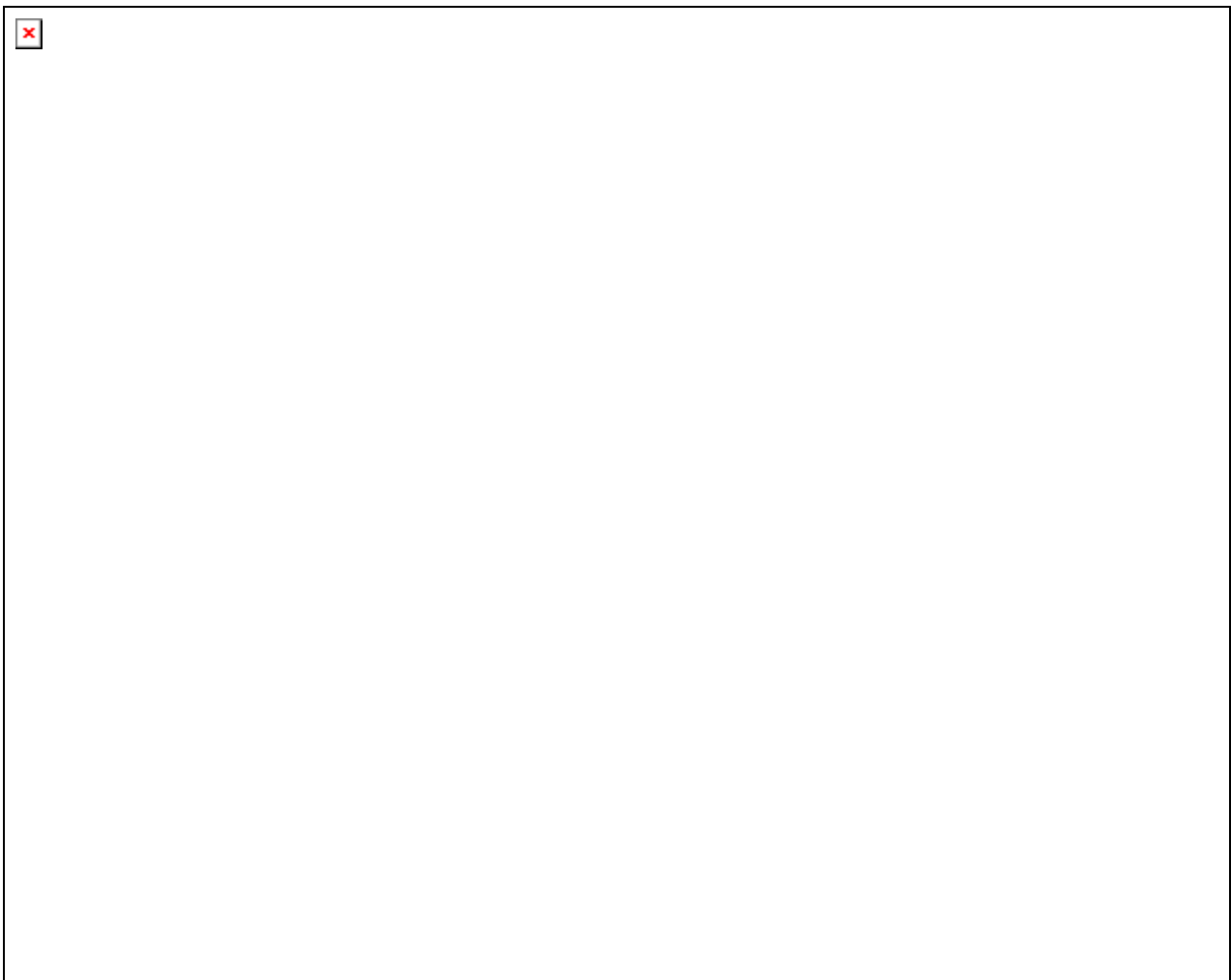
Compared to the Cairngorms Partnership area used as a basis for the original CFWF in 1999, a number of changes in the area can be identified. In particular the southern Park boundary differs from the Cairngorms Partnership area, which included areas in

Perthshire, e.g. Blair Atholl, and larger areas of the Angus glens. Lower parts of Deeside are not included in the Park area. A new evaluation tool, the BEETLE model, has been developed based on the current Park area, also taking into account a buffer zone around the Park boundary to capture ecological benefits in relation to potential habitat networks on, or close to, the boundary. Since future grant applications may be assessed through maps produced by the BEETLE model, the maps included in the original document (see appendix) have not been updated with current woodland planted since 1999, as stated earlier. However, the original potential woodland cover maps from 1999 are still relevant as a guide for potential grant applications.

2. Policy review

The first part of the policy review (section 2.1) provides a short summary of the stakeholder consultation on the efficiency of the Framework. This is followed by a review of recent policy developments in section 2.2 which summarises examples of recent policy changes at EU, national and regional level relevant for the Cairngorms National Park and forest and woodland management. Section 2.2 starts with developments at EU level, continues by subsequently going down to national and regional level and finally outlines Park specific policy implementation strategies and documents developed since the establishment of the Park. Finally, a synthesis of the review is provided in section 2.3 summarising emerging key issues for forest and woodland management in the Park.

2.1 Stakeholder evaluation

As part of the review of the CFWF a stakeholder consultation has been conducted. The original Framework was based on a comprehensive consultation process, making another larger consultation process at this stage unnecessary; at this stage only a limited number of stakeholders were contacted. Altogether 7 different stakeholder organisations were contacted, but due to time limitations only 4 stakeholders could provide a response. Nevertheless, the small number of responses provides an interesting cross-section of different stakeholder views on the CFWF, including feedback from Forestry Commission, SNH, Scottish Woodland Trust and Forestry consultants. In this report, however, it is only intended to report the feedback, while the incorporation of the stakeholders' views into the CFWF is beyond the scope of this short-term project and would require further discussion between CNPA and stakeholder organisations. The consultation was conducted around the three key questions outlined in section 1.3.

To what extent have the objectives and locational priorities of the existing CFWF been achieved?

Some stakeholders pointed out that work to quantify progress against the objectives and priorities has not been done yet, but would be required to give a detailed answer on this question.

However, one stakeholder organisation emphasised that from their point of view the central assumption in the CFWF was that woodland expansion and management was an ongoing process that needed a strategic context in order to steer it. It was doubted if this assumption has materialised, at least not to the degree anticipated and it had clearly not reached the levels at which the CFWF would have been really useful. It was pointed out that the Site Condition Monitoring, conducted by SNH, indicates disappointing progress in terms of woodland management on many key designated sites. In the absence of the assumed forward momentum, it was further argued that the CFWF has not been sufficient to generate the woodland expansion and management of itself. Therefore, it was concluded that the objectives and locational priorities have not been achieved to the extent as perhaps hoped. A couple of key reasons for this development have been mentioned. Firstly, without convincing financial incentives directed towards the Cairngorms area the CFWF cannot fulfil its potential and the positive impact will remain limited. Secondly, the crucial role of deer was emphasised stating "*the CFWF acknowledged that expansion of the native woodland resource by natural regeneration will only be achieved if the population of red deer is reduced this has not happened enough – and in some places not to any great extent at all - indeed the work of the Joint Agencies (Deer Commission, Forestry Commission & SNH) is substantially focussed on estates within the CNPA*".

On the other hand, it was also recognised that the delivery of the CFWF objectives is a long-term process and requires more time than the 7 years since its publication. It seems debatable if the main role of the CFWF is to promote woodland expansion. In fact, the original CFWF document explicitly states that it is not intended as a tool for woodland expansion as such. Instead, the main role is defined as guiding (the assessment of) grant application on the nature and location of woodland.

Other stakeholders felt that the biodiversity and native woodland objectives are well understood and accepted with some good progress made, but a stronger focus on (integrating) economic and social objectives would be desirable, including a better connection between economic and social objectives and locational priorities. In making the Framework more cross-cutting, taking an integrated approach to the multiple benefits from forests and woodlands, land managers will be enabled to identify the environmental, social and economic opportunities from their current and planned woodlands. Regarding locational priorities, stakeholders felt that some good progress has been made towards natural regeneration in Deeside and to a lesser extent in Moray. Again, deer and grouse management have been pointed as central issues for establishing new woods and regenerating existing ones. It was recognised that there has also been considerable work done to improve Capercaillie habitat in Deeside. Site-specific progress in the Deeside has been emphasised in, for example, Balmoral and Glen Tanar.

In light of recent policy and technological changes, are the existing objectives and priorities still valid?

Generally, there is a consensus amongst the stakeholders that existing objectives have not been affected by recent policy and technological changes and thus still apply. However, in addition, some specific comments on particular aspects have been made. With regard to habitat or ecological networks, it was emphasised that woods exist within an ecologically functional landscape which allows species to adapt and move as the climate changes. Whilst the Cairngorms is rich in semi natural habitats, the development of forest habitat networks should include the targeted creation of further semi natural habitats, both woodland and open ground. In this context, it was pointed out that the Woodland Trust has developed an approach to the development of landscape-scale action for woodland biodiversity which highlights the need for habitat creation to buffer and extend semi natural habitats to increase their core area and thus their ecological resilience, rather than to simply link them. The integration of new technological developments such as the BEETLE model into the Framework was seen as potentially helpful to define and design such networks.

The protection of ancient woodland, which should not only cover protection from development but also from inappropriate management such as clear felling and from fragmentation, and climate change and its impact on natural regeneration have been emphasised. One stakeholder pointed out that climate change may have the most important impact on the reproduction process making natural regeneration more difficult. Established and adult trees are far more resilient to the range of likely changes. In addition, the aspects of wood fuel, land use integration and an increased focus on community participation at all levels in land and woodland ownership have been pointed out as issues which would require particular attention.

What can be done to ensure the updated CFWF helps to maximise opportunities to achieve its objectives?

The feedback from stakeholders indicates that a strategic framework document is certainly important but needs to be accompanied by clearly defined delivery

mechanisms. Such delivery mechanisms should not be part of a strategic document, but neither can the strategy function without the delivery mechanisms, nor be designed without various modes of delivery in mind. It was hence suggested that this needs to be the focus of a companion planning process which regularly assesses the CFWF and reviews delivery mechanisms – basically developing an Action Plan. It was felt that consideration should be given for a future role for the Forest of Spey and Deeside Forest initiatives building upon engagement with private woodland owners, discussions of the framework with the Regional Forestry Forums and clearer linkages to the local authority woodland strategies. In order to ensure the delivery of the CFWF objectives, appropriate incentives were seen as crucial. Providing suitable and locally targeted incentives would require a regional component of the LMCs for the CNP.

Reducing deer numbers in the Park was seen as an important task to ensure the CFWF helps to maximise opportunities to achieve its objectives. From some stakeholders' point of view deer numbers were too high in relation to the key woodland sites, and also to other habitats. It was pointed out that a revised CFWF will not succeed unless deer populations and their impacts in or near woodland areas are much reduced through a refocusing of stalking effort. However, it was also noted that this is a rather difficult issue requiring a cultural change as much as a management or regulatory change.

Finally, it was pointed out that an emphasis on farm diversification should benefit from the proposed integration of SFGS into the Land Management Contracts and the opportunities for land managers to heat their own holdings and contribute to other household and other small scale use of biomass.

2.2 Recent policy developments

Since the original CFWF has been written, a number of new policy developments and initiatives, relevant for forest and woodland development and management in the Park, have taken place. Box 3 summarises some of the main policy developments and drivers at EU, national and regional level for the CFWF to show the interactions and complexity of the policy framework for the CFWF.

International and UK policy developments and initiatives set the overall framework for the CFWF. These are then implemented through national and regional programmes and strategies which need to be considered by the CFWF to provide a useful tool for the guidance of grant applications. At European level, following the CAP reform in 2003, a new **Rural Development Regulation** (EC regulation 1698/2005, EU-Commission, 2005) has been developed in 2005 defining the framework for rural development measures including agri-environment measures and forestry measures. In the new EU Rural Development Regulation, forestry measures are included in axis 1 and axis 2. Axis 1 includes measures to improve the competitiveness of the forestry sector in articles 27 - 30, while axis 2 includes forest-environment measures in articles 42 – 49, including the establishment of agroforestry systems in article 44. However, there are a number of key issues which potentially affect forest and woodland management and development in the Cairngorms National Park. For example, support for restocking is not included in the new RDR and does thus not draw EU co-financing. Other key issues in relation to forestry are the restriction of 70% on the level of support for afforestation and the setting of payment structures such as percentage of establishment costs, 5 years of maintenance payments and 15 years of Farmland Premium payments. While the inclusion of agro-forestry in the new RDR is an opportunity for higher uptake of forestry on farmland and potentially stronger integration of land uses, the explicit capping of payments in the new RDR is widely seen as a severe limitation for forestry uptake incentives (Towers et al., 2006).

Box 3 Policy drivers for the CFWF
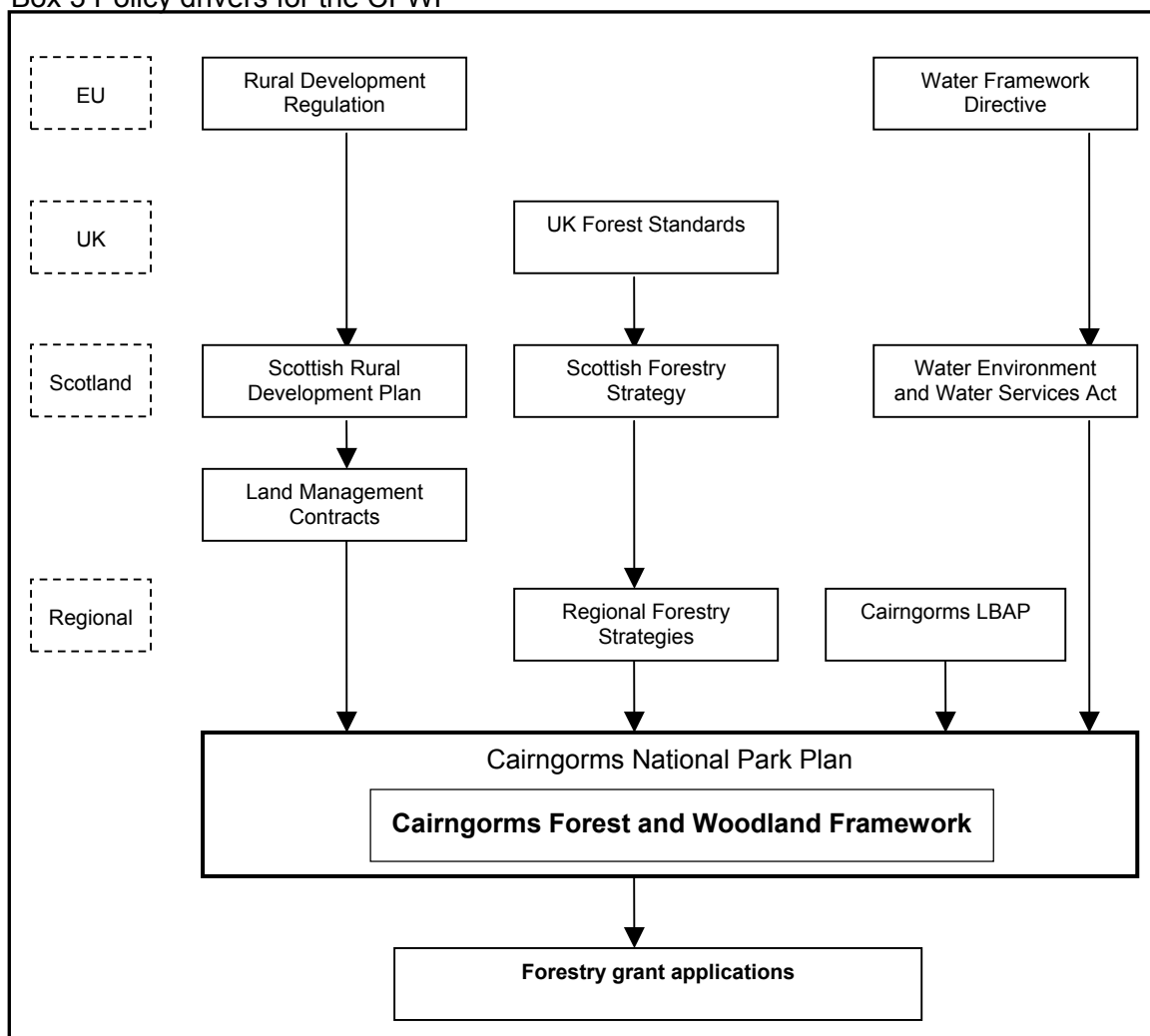
The new RDR will be implemented through the **Rural Development Programme for Scotland 2007 – 2013**. In April 2006 the Scottish Executive has invited stakeholders' to respond to the consultation on this Programme (SEERAD, 2006b). In the consultation paper the Executive has outlined a detailed suggestion of how the next Rural Development Programme could be designed. **Land Management Contracts** are the central element and delivery mechanism of the proposed Programme for land management. Tier 3 of the LMCs will potentially incorporate around 12 different schemes, e.g. the Rural Stewardship Scheme, the Farm Business Development Scheme, Scottish Forestry Grant Scheme Farmland Premium, Scottish Forestry Grant Scheme (partly) and Crofting Schemes. A review of Tier 2, the Menu Scheme, will be carried out during spring/summer 2006 exploring which further measures will be included from 2007 onwards. The proposed new measures include, for example, access for sustainable forest management, management of scrub and tall herb communities and small-scale woodland creation (< 1 ha).

Box 4 Proposed main forestry measures in **Tier 3 of the LMCs** (SEERAD, 2006)

Management of woodland and scrub	
Management of ancient pasture	To enhance and extend sites within existing ancient wood pasture to ensure continuity of habitats which support a range of invertebrates, birds, plants and other wildlife
Forest environment payments	For sustainable management of native woodlands and areas subject to high public pressure, and for the introduction of low-impact silvicultural systems
Woodland improvement	To support management operations to increase or enhance priority woodland habitats and species
Woodland restructuring	To promote the diversification of woodland structure and composition for delivery of environmental and other public benefits
Woodland creation	
Woodland creation > 1 ha	Woodland creation for public benefits. Includes farmland premium element and short rotation coppice establishment option

The proposed Tier 3 has a range of forestry and woodland measures (Box 4). Beside support for diversification within agriculture and forestry and maintaining landscape character forestry measures are grouped into management of woodland and scrub and woodland creation (> 1 ha). Management measures include, for example, forest environment payments, woodland improvement and woodland restructuring.

The **Water Framework Directive** came into force in 2000 (Directive 2000/60/EC, EU-Commission, 2000) which applies to all water in the natural environment – that is all rivers, lochs, estuaries and coastal waters as well as water under the ground. The Executive transposed the Directive into Scottish law through the **Water Environment and Water Services (WEWS) (Scotland) Act 2003** developed in 2003 (SEERAD, 2005a). The Scottish legislation commits to the protection of wetlands, introduces sustainable flood management, provides for the principles of public participation and extends the provisions of WFD to three nautical miles into the sea instead of one. The integration of WFD/WEWS objectives into forestry measures in, together with flood alleviation schemes, could increase environmental benefits through the transformation of agricultural land to riparian woodlands and floodplains and would also contribute to flood prevention.

Particularly important for future woodland management development in the Park are policy changes in the forestry sector. Currently, these include the revision of the **UK Forest Standards** (Forestry Commission, 2004), and the reviews of the **Scottish Forestry Strategy** and **Scottish Forestry Grant Scheme** (Forestry Commission Scotland, 2006a and 2005a). The review of the Scottish Forestry Grant Scheme aims to maintain as many of the positive features of the SFGS as possible, while at the same time to take advantage of any new opportunities arising from the new RDR. A stakeholder review in a forest scoping study for Scotland conducted by the Macaulay Institute and Forest Research (Towers et al., 2006) reports that Challenge funds and Locational Premiums are seen as the most suitable tools within the SFGS to promote sustainable forest management and development. However, it appears that the new RDR does not allow continued use of Locational Premiums. The above mentioned payment cap of 70% of the cost and the fact that restocking measures do not attract EU co-funding add to the current uncertainty about the future design and impact of the SFGS.

The existing SFGS has now been closed (at the time of writing this report, April 2006) and a new scheme is expected to be put in place in 2007. Additional funding will be provided for two years to fulfil the forestry sector climate change target which has been built into the revised Scottish Climate Change Programme. This target will underpin support for new planting, the development of wood as a fuel and the use of timber in construction. But the Forestry Commission indicated that all funding (including the extra funding) is already committed to existing applications until the end of 2007 (Forestry Commission Scotland, 2006b). However, a consultation on the new SFGS is expected for spring/summer 2006.

A second consultation phase for the revised Draft Scottish Forestry Strategy is taking place in spring 2006. The Draft Strategy outlines anticipated outcomes and objectives within the framework of sustainable forest management and identifies a range of key themes including climate change, business development, community development, learning and skills, access and inclusion, environmental protection, biodiversity and timber.

Box 5 Outcomes and objectives and the Draft Scottish Forestry Strategy 2006 (Forestry Commission Scotland, 2006a)

Outcomes	Objectives
Improved health and well-being of people and their communities	Support community development
	Enhance opportunities for health and enjoyment. Through access and recreation
	Contribute to growth in learning and skills
	Protect and promote cultural heritage
Competitive and innovative businesses contributing to the growth of the Scottish economy	Develop a more efficient and competitive timber supply chain
	Increase the contribution of forestry to tourism
	Support the development of markets for forest products
	Facilitate rural business diversification and development
High quality, robust and adaptable environment	Help to tackle climate change
	Help to protect and enhance biodiversity
	Contribute positively to soil, water and air quality
	Contribute to landscape quality

At the regional level, during the last few years councils included in the Park have developed their own regional forestry strategies, e.g. the **Highland Forest and Woodland Strategy** (Highland Council, 2004), the **Forest and Woodland Strategy for Aberdeenshire and Aberdeen** (Aberdeenshire Council, 2005) and the **Moray Forest Strategy** (Moray Council, 2003). These regional forest and woodland strategies are used for the assessment of grant applications (in conjunction with the CFWF) and are thus of particular importance for the review of the CFWF.

The Highland Forest and Woodland Strategy has three main functions. Firstly, it identifies specific types of opportunity at the strategic level in key areas. Secondly, it draws attention to types of forestry opportunity in the Highlands which merit consideration for supplementary funding via locational premium payment. Thirdly, it provides a framework for evaluating individual applications under the Scottish Forestry Grants Scheme and a context for the preparation of forest design plans at district level and below. The regional Strategy contributes to the aims and actions of the Scottish Forestry Strategy by identifying opportunities for: planting for timber production in marginal farming areas; new native woodlands to consolidate core

areas and enhance habitat network linkages; farm and crofter forestry to help farm diversification; planting of new community woodlands around towns and villages; riparian woodland schemes to improve water quality, river fishings, flood control, biodiversity; and amenity planting to improve landscape character and structure. The regional Strategy for the Highlands has identified six key principles for a strategic vision for forestry in the Highlands and six key themes which have been used as a basis for supplementing funding, such as the Locational Premium.

Box 6 Key principles and themes of the Highland Forestry and Woodland Strategy (Highland Council, 2004)

Key principles for a strategic vision for forestry in Highland
- Identify opportunities for forest and woodland expansion compatible with other interests
- Improve existing forests/woodlands to enhance forestry's contribution to the economy and environment of Highland
- Increase the community benefit from forestry and woodlands
- Work with the industry to help overcome transport infrastructure issue
- Retain and enhance the level of funding for forestry in Highland
- Ensure and enhance sustainability

Key themes
- Expansion of productive forest
- Expansion of native woodland, particularly in areas of higher natural heritage value or important areas for recreation
- Measures to increase community benefits from forests
- Enhancement of the region's attractiveness for tourism and recreation via woodland development
- Improvement of the infrastructure for forestry and local processing

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The Cairngorms National Park is particularly highlighted in the Highland Forestry and Woodland Strategy as an important case study for the creation of tree-line woodland, supported by better control of numbers of deer and sheep. The CNP is highlighted as one of the focus areas for 90% funding, rather than only 60%, but the 70% payment cap introduced by the new RDR will not allow a 90% funding rate in the future.

The overall aim of the Moray Forest Strategy has been defined as to assist with the implementation of the Scottish Forestry Strategy by guiding and promoting sustainable forestry within Moray. Three rather general main objectives are identified in the Moray Strategy: Firstly with an economic focus, to support the local economy; secondly from an environmental point of view, to conserve and enhance the environment; and thirdly, covering social aspects, to enhance the quality of life of rural communities. Supporting the local economy includes aspects with respect to the local economy, timber production and local infrastructure as well as issues in relation to diversification of agricultural land use. The second aim covers aspects relating to nature conservation, landscape character, water quality and river catchments and native woodlands. The third objective, on the other hand, includes countryside around towns, recreation and tourism and community involvement. Under these objectives a range of priorities for action are defined (Box 7).

In the Moray Forest Strategy the Cairngorms National Park has been identified, based on information from a subset of SSSIs, as one of the priority areas for the expansion of native woodland SSSIs.

Box 7 Priorities for action in the Moray Forest Strategy (Moray Council, 2003)

Objective	Key themes	Priorities for action
Support the local economy	Economy	Supporting and encouraging the existing forestry industry and promoting competitiveness and a higher quality product
		Encouraging new forestry planting to support the rural economy of Moray
		Support the Grampian Forest and Grampian Woodland Company
	Timber production and local infrastructure	Promote further use of rail and sea to transport timber and working partnership to identify and strengthen agreed forestry extraction routes
	Agricultural land	Promote sensitive forestry on marginal farmland
		Promote the ecological and farming benefits of greater integration of farm and forest land
Conserve and enhance the environment	Nature conservation	Conserving and enhancing important habitats and species and achieving an appropriate balance between woodland and other land uses
		Enhancing the socio-economic and environmental value of forests by adopting the principles of sustainable management as contained in the UK Forestry Standard
		Raising awareness of deer problems and promoting a new Moray Deer Management Group through the Deer Commission
	Landscape character	Restructuring existing forests to introduce diversity into the landscape
	Water quality and river catchments	Encourage the management of existing and planting of new riparian woodlands to improve water quality and encourage new habitats
	Native woodlands	Promote an increase in the proportion of native species in new forestry proposals and expand existing native woodlands
Enhance the quality of life of communities	Countryside around towns	Promote new native woodland planting within Countryside Around Towns for landscaping, biodiversity and public access
	Recreation and tourism	Develop the potential that Moray's forests offer for responsible access in partnership with Forest Enterprise and private landowners and promote further development of recreational infrastructure
		Promote opportunities within Moray to develop the tourism potential of the woodland and forest industry
	Community involvement	Review the Moray Community Woodland Plan

For Aberdeenshire and Aberdeen City the main aim of the regional strategy is to ensure the sustainable management of the woodlands and forests of Aberdeenshire and Aberdeen City. Sustainable management of woodlands and forests is described as creating a balanced landscape where woodlands and forests fulfil social, economic, and environmental objectives, such as adding to people's quality of life and well being, providing opportunities for recreation and tourism, contributing to the local economy, and enhancing biodiversity and the environment (Aberdeenshire Council, 2005).

In line with the main aim, 11 key themes have been identified in the strategy, including monitoring the strategy, and, particular relevant for this report, local priorities have been defined for management and restructuring of woodlands and for new planting.

Box 8 Key themes of the Forest and Woodland Strategy for Aberdeenshire and Aberdeen City (Aberdeenshire Council, 2005)

Key themes
- Managing and restructuring existing woodlands
- Creating new woods and forests
- Deer management and development of the forest resource
- Nature conservation, protecting and enhancing biodiversity
- Maintaining water quality and enhancing river catchments
- Renewing landscapes
- Archaeology
- Supporting the local economy
- Supporting community woodlands
- Supporting education, recreation and tourism
- Monitoring this strategy

Box 9 Local priorities for restructuring and management of woodlands (Aberdeenshire Council, 2005)

Local priorities for restructuring and management
- Restructuring extensive Scots pine stands to develop stands of mature trees with potential for regeneration
- Restructuring large, even-aged coniferous forests (Sitka and Norway spruce)
- Exploring the potential to restore Ancient Woodland Sites planted with exotic conifers
- Management to improve timber quality
- Exploring alternatives to clearfell
- Implementing long-term planning through Forest Plans
- Improving management of broadleaved woodlands for habitat and amenity
- Improving management of urban/amenity woodlands for access and recreation
- Improving management of shelterbelts

Box 10 Local priorities for new planting of woodland and forests (Aberdeenshire Council, 2005)

Local priorities for new plantings
- Agricultural diversification to create well designed productive forest
- Expansion of native pine woodland
- Creation/ expansion of semi-natural woodland following UK and Local Biodiversity Action Plan (BAP) priorities
- Expansion of native riparian/ floodplain woodland
- Creation and expansion of woodland close to settlements and community woodlands
- Reinforcing, extending or establishing new woodlands around new developments
- Linking existing woodlands and increasing size of existing woodlands
- Creation and expansion of shelterbelts (see section 6.2)

In relation to the area covered by the CNP, the Aberdeenshire Strategy specifically points to issues for native woodland expansion in upper Deeside. Referring to the study 'A Forest Habitat Network for the Cairngorms (1998)' the strategy points out that a (minimum) target of 30% woodland cover, which would allow the forest habitat to function as an extensive, well-connected forest, requires natural regeneration and may also involve the restoration of ancient woodland sites which have been planted with non-native conifers. Connectivity of woodland habitat is essential to provide extensive habitat for species such as woodland grouse. In addition good quality pine would allow a continuity of supply to provide a commercial market. On the other hand, the strategy raises a number of problems in establishing woodland cover in this area. Expanding native pine woodlands will result in regeneration on some moorland

sites, this must be balanced with maintaining large blocks of moorland habitat. Generally, conditions are difficult for woodland expansion and development of any woodland is a long-term commitment. Grazing pressure is high and a serious reduction in deer numbers is required. Finance is also a factor as these woodlands are unlikely to repay their costs in economic terms (Aberdeenshire Council, 2005).

Specifically with respect to forests, woods, open land and other property managed by Forestry Commission Scotland (National Forest Land), the National Forest Land Scheme (NFLS) was introduced in 2005 (Forestry Commission, 2005b). The National Forest Land Scheme is divided into three main parts:

- Community acquisition
- Land for affordable housing
- Sponsored sale of surplus land

Community acquisition provides the opportunity for communities to buy or lease National Forest Land. The Land Reform (Scotland) Act 2003 provides the benchmark for community acquisition of National Forest Land. Although generally based on the principles of Community Right to Buy, the NFLS aims to provide a more flexible approach for the purchase or lease of land managed by the Forestry Commission Scotland. The NFLS also aims to make land available for affordable housing by allowing Registered Social Landlords (housing associations) and other housing bodies to buy National Forest Land, focusing on areas with recognised housing shortages. In addition, the NFLS allows communities and others to buy surplus land that makes little net contribution to Forestry Commission Scotland's public policy objectives.

An example of policy developments specifically for the Cairngorms is the **Cairngorms Local Biodiversity Action Plan**, published in December 2002 (Cosgrove, 2002). The Cairngorms LBAP sets out the targets and objectives for biodiversity in the Cairngorms (CNPA, 2005b).

Box 11 Aims of the Cairngorms Local Biodiversity Action Plan (CNPA, 2005b)

Aims
- To take forward national biodiversity priorities (UK Habitat and Species Action Plans) by helping to deliver them at a local level
- To conserve locally important species and habitats
- Engage local people and visitors in the management of biodiversity and ensure that they benefit from biodiversity
- To bring together in partnership those working in the Cairngorms to better achieve biodiversity conservation
- To deliver several key objectives in the Cairngorms Partnership's Management Strategy
- To set clear, achievable targets and be transparent about progress towards them

Box 12 The main woodland biodiversity issues (CNPA, 2005b)

Issues
- Lack of data and important information
- Awareness raising
- Access to appropriate policy and funding sources
- Habitat loss, fragmentation and inappropriate management
- Climate change and pollution
- Non-native/alien species

The LBAP covers a large area and extends beyond the boundaries of the Park. It includes the Angus Glens, Badenoch and Strathspey, Atholl and Glen Shee, Upper

Deeside, Strathdon and Glenlivet. Habitat Action plans have been prepared for, amongst others, broadleaved, mixed and new woodland (broad habitat), aspen woodland, birch woodland (both local habitat), native pine woodland, upland mixed ashwood, upland oakwood and wet woodland (all priority habitat) (CNPA, 2005b). In defining the strategic opportunities for the biodiversity development of forests and woodlands in the Cairngorms, the LBAP closely refers to the original CFWF, taking on its aims and objectives for the conservation and enhancement of the natural heritage, biodiversity and cultural interests. The LBAP identifies six main woodland biodiversity issues describing which influence the important woodland habitats and species in the Cairngorms (Box 12).

Since the establishment of the Park in 2003, policy strategies for the Park and its land uses have been drafted. Most important for the review and update of the CFWF are the **Draft Park Plan** (CNPA, 2006) and the strategy for integrated land management in the Park (CNPA, 2004). The objectives of the Park Plan are explained in section 1.2.1. The Park Plan emphasises that the woodlands of Strathspey, Deeside, Donside and the Angus Glens form an extensive forest resource that is predominantly native and renewable. The extent of this forest, together with the close proximity and connectivity of individual woodlands combines to form one of the most valuable ecological networks in Britain, and is one of the widely recognised special qualities of the Park. The conservation and enhancement of this network and its predominantly native character is important. It should be integrated with work to support the production, processing and local use of timber in pursuit of broader objectives, including sustainable design, construction and renewable energy. Public support and policy needs to encourage the wide range of benefits provided by forests, including timber production, landscape enhancement, nature conservation, sport, recreation, water management and carbon sequestration (CNPA, 2006).

Finally, the **Integrated Land Management Framework Strategy** is a key implementation strategy of the CNP, developed in 2004, which recommends for CNPA to develop a long-term vision for an active and varied land management sector balancing business and private objectives with the delivery of public goods. In order to achieve this, the Integrated Land Management Framework Strategy emphasizes the need for an inclusive and transparent consultation process, involving all legitimate interests and parties, to define management objectives for individual units (CNPA, 2004).

Box 13 Recommendations of the Integrated Land Management Framework Strategy (CNPA, 2004)

Recommendations
- The CNPA should work towards a long-term vision for the area in which land is managed in an integrated manner in order to deliver a wide range of private and public interest management objectives in line with the CNP aims. - To achieve this the CNPA should work with land managers and other interests to achieve an effective dialogue between all interests so as to agree management objectives for individual management units through an inclusive and transparent consultative process. - To enable delivery of these management objectives, the CNPA should work with partner agencies and other interests to achieve effective publicly- (and perhaps privately-) funded support mechanisms across all land use types in the CNP

The implementation strategy defines strategic aims for CNPA to promote integrated land management and subsidiary objectives supporting these strategic aims.

Box 14 Strategic aims objectives for CNPA to pursue integrated land management (CNPA, 2004)

Strategic aims
- To develop processes of identifying public goods necessary to deliver the CNP aims
- To develop effective collaborative mechanisms across the CNP for setting land management objectives in an inclusive and transparent manner
- To develop effective publicly and privately funded support mechanisms to enable the delivery of management objectives that are in the public and private interest

Subsidiary strategic objectives
- To develop support for the long-term vision among those who currently control and undertake land management
- To develop a good understanding of the practicalities of land management among those who should be involved in setting its objectives for delivering public benefits.
- To develop an overall climate of goodwill and co-operation among all those with a legitimate interest in land management in the CNP
- To define more clearly those objectives which may be in the public interest, and what incentive arrangements (finance, training, advice) may be required to secure their delivery.

Against the background of these policy developments a short stakeholder consultation has been conducted to obtain some feedback on the efficiency of the CFWF and the validity of the objectives and locational priorities 7 years after these have been defined.

2.3 Synthesis of review and key issues

In this section a synthesis of the recent policy developments and stakeholder consultation is provided discussing some of the key issues emerging from the policy review. The establishment of the National Park and the development of the Draft Park Plan are obvious major changes since the original CFWF has been written. Since grant applications are assessed mainly using the local forest strategies and the Framework document, the new (since 1999) local authority forest and woodland strategies are key developments for the review of the CFWF. Besides new forestry and woodland strategies being developed, the overall policy framework for forestry and other land uses is going through a phase of major reviews and changes. For example, as outlined in section 2.2, following a major CAP reform a new RDR will be implemented in 2007, Land Management Contracts are being developed and grant schemes are consequently reviewed with changes being implemented in 2007. Future revisions of land use policies are expected for 2008 and 2009 and are already discussed. These on-going and expected future policy changes create a certain uncertainty amongst stakeholders and, most importantly, land managers about the policy environment for forestry and other land uses in Scotland and the CNP.

Policy uncertainties
The introduction of the **Single Farm Payment** has changed the subsidy system for agricultural land uses, moving away from food production-oriented policy support. With the SFP declining over time, a changing balance between agricultural subsidies and forestry payments, reduces opportunity costs of forestry uptake and increases the need for rural diversification, potentially leading to higher forestry uptake (in particular) on lower quality land. In this context, future forestry uptake strongly depends on how land managers perceive and respond to decoupling, and a decline, of agricultural subsidies in the longer term. While the integration of forestry schemes in LMCs and the inclusion of agro-forestry in the new RDR were noted as opportunities for higher forestry uptake in the future, explicit capping of payments in the new RDR can be a severe limitation for forestry uptake incentives.

As reflected in the stakeholder feedback in the previous section, adequate financial incentives are crucial not only for an increase in tree planting, but also, and more importantly, for the overall sustainable management of forests and woodlands. A recently conducted forestry scoping study for Scotland (Towers et al., 2006), reported on the importance of **Locational Premiums** and **Challenge Funds** for Scottish forestry. Feedback from a wide range of stakeholders through Regional Forestry Forum meetings indicated that there is need for a stronger regional focus in forestry policy with regional priorities and grants attached; different places need different mechanisms. Locational Premiums and Challenge Funds were pointed out as the best available mechanisms to deliver local and spatially explicit targets and objectives. The importance of localised incentives, such as the Locational Premium, is also reflected in the forest and woodland strategies of the local authorities. For example, the Highland Strategy (Highland Council, 2004) has defined a set of key themes for the application of the Locational Premium. The success of the Locational Premium is also confirmed by the stakeholder feedback obtained for this study. This emphasises the importance of, and dependence on, a continuation of localised grants, but since the new RDR excludes the Locational Premium, at this stage it is uncertain how future localised grants will be designed, although most likely through some kind of a future version of Challenge Funds.

Other uncertainties include the potential impact of the capping of forestry measures in the RDR, hence of payments under a new SFGS, and the potential environmental impact of small-scale woodland creation included in Tier 2 of the LMCs. Small-scale woodland creation under the LMC Menu Scheme does not require approval or consultation through the Forestry Commission. Hence, it will be important to find a solution to include potential small-scale tree plantings in the overall planning of woodland creation and management in the Park.

Sustainable management of forests and woodland in the CNP and Scotland requires the availability of sufficient funds for whatever delivery mechanisms will be designed. Due to the minimum allocation requirements for the RDR axes, spending for axis 2 is constrained to 80% of the rural development budget. Historically, Scotland has spent over 90% of its limited rural development funding on axis 2-type measures, including LFA payment, agri-environment and forestry measures, so the ceiling that will be imposed on Axis 2 from 2007 could potentially reduce available funds for forestry[1]. As outlined in section 2.2, the SFGS is now closed for applications and all funding is already committed to existing applications until 2009 (Forestry Commission, 2006b). With a new SFGS being implemented and all available funding spent until 2009, no new forestry grant applications can be implemented until that time, creating a situation where a new Scottish Forestry Strategy will be put in place some time in 2006, but without resources available to implement it before 2009.

Integrated land management
From the discussion of recent policy developments in section 2.2 a number of key issues emerge emphasising the need for integrated land management, also reflected by the stakeholder feedback in section 2.1[2]. All reviewed documents and strategies refer to a varying extent to the need for a more integrated approach of land management. The Draft Scottish Forestry Strategy, for example, explicitly points out

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[1] In December 2005, a budget agreement was reached by the Ministers providing the financial framework for Pillars 1 and 2 of the CAP. This allocates €69.75 billion to rural development (Pillar 2) over the period 2007-2013, which, although a slight increase compared to a previous proposal, is still significantly lower (6.67% less) than the Commission's original proposal of €88.7 billion (Rural Europe, 2006).
[2] Since the original Framework document discusses relationships between woodland and other land uses in detail, the discussion in this section concentrates on aspects around the policy developments described in section 2.2.

the need for better integration of the different land uses in its summary of Scotland's needs (Forestry Commission Scotland, 2006a). The awareness of the need for integrated land management in the Cairngorms National Park is not only documented in the Draft Park Plan (CNPA, 2006), but even more so through the development of the Integrated Land Management Strategy for the National Park (CNPA, 2004). In the various documents, however, there are a number of different aspects associated with integrated land management pointed out which require specific attention. This includes, for example, the integration (and transition) of agriculture and forestry, habitat networks, deer management, linking environmental and socio-economic issues, landscape aspects, community involvement and implications for, as well as impact of climate change.

A central issue is an improved integration of agricultural land uses with forestry and woodlands. Forestry is identified as an important diversification option for farmers and crofters whose livelihoods are likely to be made uncertain by changes in agricultural policy (see also above). One of the future challenges in this context is to recognise the ecological and farming benefits of better integration of forestry and farming activities to diversify the rural economy and promote multi-benefit forestry (Moray Council, 2003). The Draft Park Plan explicitly supports multi-objective woodland management that includes timber production, fuel wood, recreation and nature conservation (CNPA, 2006).

Land Management Contracts could provide a platform for better integration of forestry and agricultural land uses through taking into account multiple ecological and economic benefits of an integrated land management approach combining, for example, objectives of agri-environment and forestry schemes. But in the design of such contracts further attention needs to be paid to the evident cultural resistance of farmers to take up forestry schemes (Burton, 2004). Since ecological benefits are more likely to be realised through a land management approach at catchment-scale, group applications need to be particularly promoted and encouraged (Schwarz et al., 2006). In addition to enhanced financial incentives, adequate technical advice and land tenure reforms enabling tenant farmers to participate are pointed out by the Highland Council as important requirements to provide such diversification options through forestry and woodlands (Highland Council, 2004).

While increased native woodland cover (and farm diversification) are generally reasonable policy objectives, new woodland needs to maintain and improve the landscape character linked with other open semi-natural habitats, such as moorland habitats or traditionally used pastures, recognising ecological benefits from other habitats (Aberdeenshire Council, 2005 and Moray Council, 2003). The Draft Forestry Strategy (Forestry Commission Scotland, 2006a) specifically points out that the creation of new woodlands needs to take into account site-specific circumstances to conserve locally important species and habitats as defined and listed in the Cairngorms Local Biodiversity Action Plan (CNPA, 2005b). This means the focus should not only be on individual species and habitats, but also on landscape-scale restoration and expansion of habitat networks (Forestry Commission Scotland, 2006). The Park Plan (CNPA, 2006) emphasises that woodland expansion should establish large-scale habitat networks which enhance the landscape character and non-woodland habitats. This is also reflected in the stakeholder feedback in section 2.1. Woodland expansion and creation need to take into account the existing, and desired, character of the landscape, and care must be taken that a valuable landscape character won't be deteriorated or lost; in particular, views and view points, important for the public, need to be protected. Accepting that the Cairngorm National Park has a special role in this context, regional LMCs specifically designed

for areas within the CNP could facilitate integrated land(scape) management in the CNP and provide a successful case study for other areas.

Another key aspect is the integration of deer management, targeting both income through sporting revenue and protection of woodland restoration and regeneration. The crucial role of deer management is recognised in the Park Plan and local forest strategies. For example, it is emphasised that deer numbers need to be reduced to a level which is ecologically sustainable and compatible with the restoration of native woodlands, natural regeneration and management using alternatives to clearfell (Aberdeenshire Council, 2005). Since deer are free ranging, deer management requires to be co-ordinated at a level above the individual estate. Different estates may not have the same management objectives, leading to problems in the co-ordination of deer management. Deer fences can protect young trees but can cause problems for other species such capercaillie. Hence, deer management plans and actions need to be designed at landscape or regional scale. However, the feedback from stakeholders reflects widespread concern that current deer management actions are not sufficient and the required management not yet in place.

As outlined in the recommendations of the Integrated Land Management Strategy of the CNP, community involvement in the planning process of land management is another key aspect. Different land use, such as forestry, agricultural but also the development of affordable housing compete for land and require an integrated planning process considering the interests of the wider rural community including stakeholders, land managers and other rural interest groups in order to deliver a wide range of private and public benefits and management objectives in line with the aims of the CNP (CNPA, 2004). For example, a stronger integration of other community issues such as housing development with woodland creation and forestry could potentially enhance social benefits (such as recreation and health) from forestry. Community involvement is important to create a woodland culture and increasing awareness of the multiple benefits of forestry. Involving the community in the planning process can create a closer relationship and a sense of stewardship across community groups and ultimately ensure the delivery of those benefits the public wants from forests and woodlands (Aberdeenshire Council, 2005).

While it is important to have a Forest and Woodland Framework for the Cairngorm National Park, the above discussion also emphasises the need for a concrete action plan which regularly reviews the CFWF and existing delivery mechanisms. Adequate delivery mechanisms and policy incentives are crucial to achieve the objectives of the Park and its Forest and Woodland Framework.

3. Update of the CFWF

Following the policy review in section 2, the rationale, objectives, locational priorities and methodology of the original Framework document are reviewed and updated, where necessary. The text of the original document (section1 of volume 1, compare with appendix 1) is used as a basis for the update of the rationale and objectives in sections 3.1 and 3.2, since the inclusion of recent policy developments requires only minor changes to the text and contents of the Framework. Taking into account the policy review and a general consensus from the stakeholder feedback it appears that the locational priorities are still valid, reflecting the comprehensive process during which these have been defined as well as their long-term vision. In section 3.4 the BEETLE model and its application is described providing an update of technological developments.

3.1 Rationale

The woodland objectives and priorities as set out in this Framework should be environmentally, economically and socially sustainable. How to define and achieve sustainable development are amongst the biggest challenges facing mankind at the beginning of the 21st century. The agenda has been set in an international context notably in the Brundtland Report (*Our Common* Future*, 1987)* and at the Rio Summit of 1992, through Agenda 21. The debate has been progressed in a British context through Sustainable Development Strategy and a new sustainable development strategy in Scotland "Choosing our Future" (Scottish Executive, 2006). In addition to the new sustainable development strategy, the Nature Conservation (Scotland) Act 2004 (Scottish Parliament, 2004) and the Scottish Biodiversity Strategy (SEERAD, 2004) introduced a duty to all public bodies to further the conservation of biodiversity, particularly with respect to the biodiversity commitments defined at the Gothenburg Summit, such as to halt biodiversity decline by 2010.

The UK Government's Approach to Sustainable Forestry is set out in the UK Forestry Standard (Forestry Commission, 2004) and includes the criteria and indicators by which woodland management may be monitored. The UK Forestry Standards can now be verified through the internationally recognised UK Woodland Assurance Standard (UKWAS). Following the publication of the first Scottish Forestry Strategy in 2000, a new Draft Forest Strategy for Scotland has now been published (Forestry Commission Scotland, 2006a) providing the framework for forestry in Scotland. Applying the national strategy at regional level, local authorities such as Aberdeenshire Council, Highland Council and Moray Council, have developed forest and woodland strategies which are used, in combination with this CFWF document, to assess grant applications. Scottish Natural Heritage have also developed, and continue to develop, their thinking and approach to sustainable development (SNH 1993, 2002) in the context of natural heritage interests. The Draft Cairngorms National Park Plan (2006) has also been based on the concept of sustainable development. It is not the place of the Framework to develop further the underpinning philosophy of sustainable development. However, it is recommended that as these publications provide the basis of the relevant national and local agencies' existing policies on sustainability, relevant for forestry, they provide an appropriate starting point upon which further discussion can progress.

A full economic appraisal of the contribution forestry makes to the rural economy, or a detailed financial analysis of each of the woodland priorities, are also outside the scope of the Framework. The former has proved very difficult to carry out although progress is being made to develop appropriate methodologies, and the latter is

largely dependent on individual owners' objectives for their woodlands and the financial incentives on offer.

The operational standards for any forestry management activity within woodlands in the UK are laid out in the UK Forestry Standard (Forestry Commission 2004) which is mandatory for all SFGS and Felling Licence approval. In addition there is a suite of Guidelines and other publications, offering advice and guidance on all aspects of forestry practice, including many that are very relevant in the Cairngorms.

Other statutory (SNH) and non-governmental organizations (e.g. RSPB and Scottish Biodiversity Group) also produce guidance notes on aspects of woodland management. These offer valuable advice particularly on issues of particular interest in the Cairngorms, for example on the capercaillie, and it is recommended that they be consulted in conjunction with the Forestry Commission material.

The maps in the original Framework document, which form a vital part of the Framework, have come from a number of sources and represent a synthesis of the best available information at the former Cairngorm Partnership and sub-area level. Although the maps have not been updated with respect to the new Cairngorms National Park area and new plantings since 1999, the potential woodland maps are still relevant. As outlined in the original document, there are a number of limitations associated with these maps, some of which are very difficult to quantify. These include:

- the soil and land cover data which underpins the MLURI native woodland model output. By the nature of these features, which can merge gradually from one to another over a distance, there are uncertainties of definition and of boundary location. Similar problems arise even when describing these features on site;
- limitations of scale, for example the inclusion of woodland point and line features on the Framework maps would make them unreadable and unusable at the published scale. Nevertheless, it must be remembered that they are important features to recognise when working at the individual site level;
- data can age quickly, for example, woodland distribution through planting and felling operations and nature conservation designations;
- the requirement for relatively straightforward legends on maps can lead to some loss of information.

The over-riding principle is that local data and information, for example estate stock maps, vegetation and soil surveys or local knowledge about natural heritage interests must be used for detailed planning at the site level. The Framework is a strategic planning tool and is not designed to be used as a site-specific tool. It is intended to place individual woodland schemes and proposals within a wider context. The maps are now supported by the application of the BEETLE model (Biological and Ecological Evaluation Tools for Landscape Ecology – Watts *et al.* 2005), a new technological development for the assessment of grant applications. The BEETLE model is a GIS-based focal species modelling tool, which has been developed by Forest Research and is explained in section 3.4.

3.2 Objectives

It has been widely agreed (CNPA, 2006) that woodland cover should increase in the Cairngorms over the coming decades. Statements of policy within the Draft

Cairngorms National Park Plan (Box 1) indicate that this expansion should take place in the context of the over-riding principle:

- that woodland expansion and management should be environmentally, economically and socially sustainable and integrated with other land uses.

The Draft Park Plan outlines that the extent of the forest in the CNP, together with the close proximity and connectivity of individual woodlands combines to form one of the most valuable ecological networks in Britain, and is one of the widely recognised qualities of the Park. The conservation and enhancement of this network and its predominantly native character is important. It should be integrated with work to support the production, processing and local use of timber in pursuit of broader objectives, including sustainable design, construction and renewable energy. Public support and policy needs to encourage the wide range of benefits provided by forests, including timber production, landscape enhancement, nature conservation, sport, recreation, water management and carbon sequestration (CNPA, 2006).

The Draft Park Plan defines the strategic objectives for forestry in the CNP.

Box 15 Strategic objectives for forestry in the CNP

- Maintain existing native woodland cover and expand to develop habitat networks that complement the landscape character of the Park
- Support multi-objective woodland management that includes timber production, fuel wood, recreation and nature conservation
- Encourage a mix of tree species, ages and woodland structure to complement the landscape character of the Park
- Encourage a gradation of tree and scrub cover from valley floor to tree-line in targeted areas and the re-development of woodland types that have declined
- Support the development of local markets, processing and supply chains for forest products
- Promote community participation in woodland planning and management and an understanding of local woodland characteristics and distinctiveness

The Framework represents a further development of this existing vision for forestry and woodlands. In the original Framework document, these objectives are further developed by assessing the hopes and aspirations of local land managers and communities (Section 2 Volume II), the existing situation, particularly of woodland (Section 3 Volume II) and the relationships between woodland and other land uses, activities and interests (Section 4 Volume II) (see appendix 2). These include:

- biodiversity/nature conservation (Section 4.1 Volume II)
- moorland land use (Section 4.2 Volume II)
- agriculture (Section 4.3 Volume II)
- water (Section 4.4 Volume II)
- landscape (Section 4.5 Volume II)
- community development (Section 4.6 Volume II)
- recreation (Section 4.7 Volume II)
- cultural heritage (Section 4.8 Volume II)

All of these offer different perspectives and there is often a degree of overlap, and occasional incompatibility, between objectives stemming from different interests. The

Framework must take into account, and seek to embrace, the competition for land resources from other legitimate interests; the interactions between different land uses; the impacts of woodland on other interests e.g. water quality and quantity; the commitments made by the UK and Scottish governments; and the aspirations of local communities, land managers and wider interests.

This range of perspectives has been rationalised into a number of overall aims and broad objectives for woodlands in the Cairngorms, taking into account the objectives of the Draft Park Plan, and these underpin the Framework (Box 16). The objectives in Box 16 follow the original Framework objectives, which are still valid. In addition, a couple of objectives have been defined addressing the increased importance climate change.

Box 16 Aims and objectives of the Cairngorms Forest and Woodland Framework

- ***To support the local economy and employment opportunities by:***
- Encouraging and guiding the management and expansion of the woodland in the Cairngorms integrated with other land use interests
- Supporting the continued production and harvesting of timber and other forest products on a sustained yield basis
- Supporting sustained employment in forestry and woodland management
- Maintaining the supply of raw material to local timber processing industries
- ***To conserve and enhance the natural heritage and biodiversity and cultural interest of the area by:***
- Encouraging the management, conservation and expansion of native woodland in appropriate places, including high altitude scrub
- Enhancing the conservation value of the existing woodlands by developing effective habitat networks
- Guiding the achievement of Habitat Action Plan objectives
- Maintaining and enhancing the visual amenity, landscape character and existing diversity of the natural heritage of the area
- Protecting and enhancing the cultural heritage in its widest sense
- **To assist climate change mitigation by:**
- Enhancing carbon sequestration by locking up carbon during the growth of biomass and through the conservation of other major carbon sinks such as peat bogs
- Promoting the use of wood fuel and the substitution of timber and wood products for energy-intensive materials such as concrete and steel
- ***To enhance opportunities for ancillary and related activities by:***
- Protecting water quality and quantity, aquatic habitats and fishing interests
- Encouraging appropriate opportunities for recreational use of the woodlands
- Promoting opportunities for farm diversification
- Encouraging local community participation in woodland management

These aims and objectives are not in any order of importance. Some are reliant on the other objectives being achieved in a manner sensitive to that requirement, for example to protect and enhance the cultural heritage.

The original mechanisms by which these objectives are promoted - the Forest Habitat Network Approach in conjunction with the MLURI Native Woodland Model - are described in the original document in appendix 2 (section 5, Volume II). These mechanisms may now be applied in combination with the BEETLE model, which is described in section 3.4. The locational priorities describing the options and priorities for different woodland types in different parts of the Cairngorms are outlined in the following section and can be compared with the original desription in appendix 1 (section 2, Volume I of the original Framework).

3.3 Locational priorities

In this section the locational priorities for the CFWF are summarised taking into account the outcome of the policy review. However, after a careful examination of the locational priorities in the original document (compare with appendix 1, section 2, Volume I), it appears that the recent policy developments do not affect these priorities in detail. These locational priorities have been based on a comprehensive consultation process supported by modelling and mapping and represent a long-term vision. The locational priorities are in line with the new Draft Park Plan as well as the forests and woodland strategies of the relevant local authorities. Hence, although the progress made in relation to these locational priorities varies considerably, they remain relevant and applicable. This is also reflected by the feedback received during the stakeholder consultation (compare with section 2.2).

The overall locational priorities for woodland in the Cairngorm National Park are summarised in Box 17.

Box 17 Woodland locational priorities in the Cairngorms for the next 15-20 years

- Safeguarding and targeted expansion of the existing native broadleaved woodland resource should be an immediate priority
- As a farm diversification option, small-scale, well designed planting and natural regeneration of mainly native broadleaved species should be a priority on existing agricultural land and in the riparian zone.
- **Production of (small-scale) wood fuel and biomass on agricultural land should be encouraged, both as a means of farm diversification and providing alternative energy sources for their holdings and other households**
- Priority areas for natural regeneration of pine should be on the basis of the 'nativeness' of the adjacent woodland
- Expansion of the native woodland resource by natural regeneration will only be achieved if the population of red deer is reduced. The Deer Commission for Scotland and Deer Management Groups have important roles to achieve this. Populations of Roe and Sika deer will also have to be managed.
- Some new native pinewood planting should be targeted at developing a forest habitat network between the Spey and the Dee catchments; the most appropriate route appears to be through Strath Avon and Glen Gairn
- Achieving the appropriate balance between woodland and open land habitat, particularly heather moorland, is a priority land management objective throughout the Cairngorms; to help achieve this it is recommended that non-native species should not be planted on pine-birch sites
- Non-native species should be targeted towards areas where they are already extensive, but within the context of other land use interests and objectives
- There are specific locations where non-native species would seriously compromise habitat network objectives, for example the watershed between the Avon and the Gairn, but this does not preclude their continued appropriate use in areas where native species predominate.
- There are a number of areas, notably in the Forest of Spey, between Loch Morlich and Glen Feshie, and on Mar Lodge Estate where, if the correct conditions were created, natural tree and scrub lines should start to be created.

These locational priorities for woodlands within the Park as a whole provide the context for the rather more focussed priorities for specific areas within the Park. These priorities differ between the different areas, reflecting the different biophysical conditions, land use patterns and their past and more recent woodland management histories.

Box 18 Woodland locational priorities in the Forest of Spey

- Expand the area of contiguous pine wood habitat by natural regeneration, prioritised by the 'nativeness' of the existing woodland resource and focused on the Priority Forest Area in the Cairngorms management strategy.
- Encouraging linkages, by regeneration or planting where appropriate, to isolated fragments of native woodlands which are deteriorating due to current or past management or grazing pressure
- Restructuring of the existing pine woodland resource in the Priority Forest Area to create woodlands with an enhanced nature conservation value, whilst retaining timber production.
- Maintaining ancient woodlands and protection from fragmentation and inappropriate management such as large-scale clear felling
- Small scale broadleaved regeneration or planting, as a farm diversification option on agricultural land.
- Management of existing, and the further establishment of appropriate, riparian (riverine) woodlands.
- A presumption in favour of establishing new native pinewoods, with varying amounts of birch, in the pine-birch zone, in particular over the watershed to the Avon catchment.
- Retention of opportunities for approximately the same proportion of non-native species in the catchment within the sensitivities of other woodland and non-woodland habitats.
- Extending the existing area of sub-alpine scrub at Creag Fhiaclach, and other appropriate sites to form a continuum of habitat from the woodland zone through to the montane plateau.

Box 19 Locational priorities for woodland expansion and management in Strathdon and Glenlivet

- Priority should be given to the management of existing native broadleaved woodlands, in particular in Strath Avon, and their expansion by natural regeneration and/or planting.
- Management and small scale expansion of riparian woodlands, using appropriate species should a local priority.
- Non-native species should focus on their existing areas, but consideration should be given to diversifying the range of species where appropriate.
- Strategic and phased planting of new native pinewoods is a priority on appropriate sites, particularly in Strath Avon

Box 20 Woodland locational priorities in the Deeside Forest

- Expand the area of contiguous pine wood habitat by natural regeneration, prioritised by the 'nativeness' of the existing woodland resource.
- Encouraging linkages, by regeneration or planting where appropriate, to isolated fragments of native woodlands which are deteriorating due to current or past management or grazing pressure
- Restructuring of the existing pine woodland resource to create woodlands with an enhanced nature conservation value, whilst retaining timber production.
- Small scale broadleaved regeneration or planting on the lower ground, including agricultural land.
- Management of existing, and the further establishment of appropriate, riparian (riverine) woodlands.
- A presumption in favour of establishing new native pinewoods, with varying amounts of birch, in the pine-birch zone.
- The development of linkages with woodlands in other catchments should be started, in particular with the Avon catchment with a second, although of lesser priority, to Glen Tilt.
- Allowance for the retention of approximately the same proportion of non-native species in the catchment, with a preference for the lower ground, within the sensitivities of other woodland and non-woodland habitats.
- Establishing the conditions to allow the development of subalpine scrub and a natural tree-line in the upper catchment; the Mar Lodge Estate offers most opportunities.

Box 21 Locational priorities for woodland management and expansion in the Angus
        Glens

- Revitalise the existing birch woodland resource, by grazing control, re-spacing and removal of undesirable invaders where appropriate
- Create the conditions for the expansion of existing birch woodland by natural regeneration
- New broadleaved planting on valley sides to encourage integration between existing woodlands in the wider landscape
- Encourage small-scale woodland expansion on agricultural land which would contribute to the long-term vision of a broadleaved woodland habitat network along the Highland Boundary Fault, but maintaining important open ground habitat for birds.
- Restructure existing coniferous plantations, where site conditions permit, with an appropriate level of native woodlands
- Encourage appropriately scaled and designed plantations of non-native species on birch-oak sites, integrated appropriately with native birchwoods, agricultural land and other land use interests

3.4 Mapping Methodology

Since the original CFWF has been written, new GIS-based ecological methods and models have been developed, such as the BEETLE (Biological and Ecological Evaluation Tools for Landscape Ecology) model developed by forest Research and SNH. The main purpose of the BEETLE model is to assist the development of forest design plans and grant applications so that existing habitat networks may be most effectively enhanced.

3.4.1 The BEETLE[3] model (written by Forest Research)

Since the drafting of the CFWF, there have been technological advances in the development of tools for landscape evaluation which can be used to complement and/or build upon the output of the Native Woodland Model used in the original CFWF. For example, the GIS-based focal species modelling tool BEETLE (Biological and Ecological Evaluation Tools for Landscape Ecology – Watts *et al.* 2005) developed by Forest Research and SNH has been used in a number of studies to develop plans for habitat networks (e.g. Humphrey *et al.,* 2004; etc). In addition, SNH have developed an improved model for predicting the altitudinal limits of woodland in Scotland (A Macdonald, pers comm.). The Ecological Site Classification (Pyatt *et al.*, 2001; Ray et al, 2001; 2003) has also undergone considerable development since 1999 and can be used to predict suitable semi-natural woodland and non-woodland communities on different site types across landscapes, as well as indicating suitability and yield for a range of tree species.

Considerable work has also been undertaken to improve knowledge of the existing woodland resource in the Highlands through the completion of the Scottish Semi-natural Woodland Inventory (SNWI), the updating of the National Inventory of Woodland and Trees (NIWT) and the availability through GIS of Woodland Grant Scheme and Scottish Forestry Grant Scheme boundaries. Recent work for FC Highland Conservancy (Mosely, 2006) has involved assessing the ecological quality of native pinewoods and pine plantations in Strathspey and using BEETLE to evaluate connectivity for woodland generalist and specialist species. This work will soon be expanded in a joint SNH/FC project to assess the potential for integrating agricultural habitat networks with woodland habitat networks.

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[3] Biological and Ecological Evaluation Tools for Landscape Ecology

There is now a need to bring together the improved tools and data sets to update the CFWF and help to provide a comprehensive evaluation of the benefits to biodiversity of different woodland development scenarios.

The overall aim of the work presented in this section was to use Forest Research's *focal species* approach (BEETLE) to evaluate the benefits to biodiversity of different woodland development scenarios within the CNP. The specific objectives were:

- Indicate the distribution and extent of woodland and moorland habitat networks based on current land cover
- Identify interactions with semi-natural open habitats

In-keeping with the objectives of the Cairngorms LBAP (Cosgrove, 2002), there is a need to include plantations within the habitat network modelling, and to consider options for deforestation, restoration to native woodland, or restructuring. There is also a need to consider the development of specific types of habitat networks with high ecological value such as aspen woodlands, or juniper scrub and there is scope for future developments in this area.

Focal species (either Specific or Generic – see below) will be identified which represent critical values for habitat area and distances between habitat patches.

BEETLE principles

The GIS-based Decision Support System, BEETLE, incorporates a species-based perspective to landscape evaluation. Landscape modification and fragmentation will cause a change, either positive or negative, to *habitat area* and *patch isolation*. These two components of habitat modification and fragmentation relate to the local *extinction risk* of species on small patches and the *colonisation ability* of species on isolated patches. Landscape modification can have contrasting effects for different species as species vary in terms of their *area requirements* and *dispersal ability*.

BEETLE evaluates landscapes in terms of the requirements of a range of focal species. The focal species approach builds on the concept of umbrella/flagship species, whose requirements are believed to encapsulate the needs of other species and ecological processes (Lambeck,1997). For example, corn bunting (S. Finney RSPB pers. comm.) is an excellent umbrella species for threatened granivorous birds of farmland as it represents a range of bird species with restricted dispersal and particular habitat requirements.

A difficulty can arise in identifying species which represent critical values of dispersal ability and habitat isolation in a landscape. The ecological information may simply not be available to select specific named species. A way around this problem is to define **generic focal species** (GFS), where the GFS represents and tests threshold conditions of dispersal ability and habitat isolation in a general sense across a landscape. GFS classes may represent general species groups such as: dispersal limited woodland generalists, dispersal limited broadleaved woodland specialists, mobile woodland generalists etc., where each group tests a fuzzy sub-set of dispersal ability, habitat utilization and the patch isolation parameter range of the landscape.

Thus GFSs can be selected to represent various habitat types (e.g. core woodland, woodland edge or moorland etc) and particular ecological processes, and reflect varying degrees of sensitivity to habitat modification and fragmentation. It must be emphasized that GFSs should be regarded as part of an evaluation toolkit and not

necessarily direct targets themselves. It is prudent to select a range of GFSs which represent different habitats to ensure that there is complementarity in the development of different networks (Humphrey *et al.*, 2003).

Assessing connectivity

In order to assess ecological isolation it is necessary to model functional connectivity. Connectivity is a functional attribute of the landscape related to ecological processes such as the predicted movement of particular species between habitat patches. This is distinct from "physical connectedness" between habitats as it might appear on a map. Connectivity is modelled on the dispersal ability of a focal species and the ease of movement, or permeability, through the landscape surrounding habitat patches (Adriaensen *et al.*, 2003). For more details see Watts *et al.* (2005).

Datasets

The following datasets were used to identify the woodland components of the landscape.

- National Inventory of Woods and Trees (NIWT)
- Scottish Semi Natural Woodland Inventory (SSNWI)
- Scottish Ancient Woodland (derived from two Scottish inventories: the Inventory of Ancient and Long-established woodland sites, and the Inventory of Semi-natural woodlands.
- Forest Enterprise (FE) sub-compartment database
- Native Woodland Model
- New planting datasets – Woodland Grant Scheme 3 (WGS3), Scottish Forestry Grant Scheme (SFGS), Forest Plan (Fplan)

The non-wooded components of the landscape were derived from remote-sensed data; LCS88 and LCM 2000.

Data preparation

The base landcover matrix constructed from these datasets was used in the analyses, as was the application of an elevation factor of 2 to the cost matrix to reflect the higher cost of species dispersal at elevations over 500 m.

Focal species profiles

The connectivity will be assessed using generic focal species, as detailed above, using different dispersal ranges to represent their movement across the landscape. Three dispersal ranges for the GFS are suggested:

- dispersal limited species able to disperse 250 metres
- moderately mobile species able to disperse 500 metres
- mobile species able to disperse 1000 metres

In addition to the treatment of dispersal ability in the model we will consider several woodland GFS types which may be applicable:

- Woodland generalists
- Pinewood specialists
- Broad-leaved specialists

Also included will be non-woodland GFS to look at interactions between woodland and open habitats, for example by looking at heathland generalists. Woodland generalists are species that are found in all woodland types (conifer, broad-leaved and mixed) and in both plantation and semi natural examples of these. These are represented in the Cairngorm National Park by species such as the pine martin, which also has the ability to disperse readily between these woodland types. Pinewood specialists are restricted to this habitat and the longhorn beetle *Acanthocinus aedilis* is an example which has a low dispersal ability, while the red squirrel *Sciurus vulgaris* an example with relatively high dispersal ability. In broad-leaved woodland the lungwort *Lobaria pulmonaria* is an example of a low dispersal species while the redstart *Phoenicurus phoenicurus* can cover much larger distances. The mountain bumblebee *Bombus monticola* feeds on bilberry *Vaccinium myrtillus* in heathland and is a moderately mobile species.

Outputs

The outputs from the BEETLE modelling are presented as GIS ArcView shapefiles, which can be viewed at the appropriate scale.

ArcView Shapefile name	GFC type	Dispersal range
250 woodgen.shp	Woodland generalist	250m
500 woodgen.shp	Woodland generalist	500m
1000woodgen.shp	Woodland generalist	1000m
250heathgen.shp	Heathland generalist	250m
500heathgen.shp	Heathland generalist	500m
1000woodgen.shp	Heathland generalist	1000m
250pine.shp	Pinewood specialist	250m
500pine.shp	Pinewood specialist	500m
1000pine.shp	Pinewood specialist	1000m
250broadleaf.shp	Broad-leaved Specialist	250m
500broaleaf.shp	Broad-leaved Specialist	500m
1000broadleaf.shp	Broad-leaved Specialist	1000m

3.4.2 BEETLE application

In this updated Cairngorms Forest and Woodland Framework, new maps are provided based on a series of Arcview shapefiles. As well as the outputs that made up the maps in the original framework – i.e. the existing woodland cover and the potential cover (output from the Native Woodland Model) – a number of other files have been added to these new maps on CD. These include the new data used to delineate the non-wooded components of the landscape (derived from LCS88 and LCM 2000) as well as the outputs from the BEETLE model, which include maps that display the predicted dispersal of different species across landscapes dependent on the nature of that landscape.

- A key component of the model is the evaluation of the landscape in terms of the requirements of a range of generic focal species (GFS).

Twelve outputs from the BEETLE model were developed by Forest Research, representing the dispersal of the 4 GFS types at the three dispersal ranges outlined above.

The presentation of the data in this way is considered to give a more flexible approach to assessing the merits of individual forestry applications than the use of

paper maps and of the Native Woodland Model on its own; the BEETLE model complements the NWM output, giving additional information on potential impacts of different forest expansion options on 'generic groups' of plant and animal species. The combination of all these datasets should help identify priority areas for native woodland restoration and expansion, for restructuring existing plantations after harvest and in the longer term, for use in planning new native woodlands to achieve connectivity between existing woodlands without compromising the requirements of important open ground species.

Woodland locational priorities

The addition of the BEETLE model output to the original CFWF approach aims to help identify and target the woodland locational priorities which were agreed through an extensive consultation exercise for the original Framework, both across the CNP and in the different sub-areas. These original priorities are still seen as such (compare with section 3.3), based on a 2006 consultation of a subset of stakeholders, and this new approach including BEETLE as an additional tool will add a useful spatial focus on woodland patch sizes and distribution to aid the prioritisation of different targets.

The range of outputs from the BEETLE model is intended to be used interactively, both in specific woodland grant applications and to allow those applications to be viewed in the wider context. Three examples are presented here to demonstrate general principles and information that can be drawn from the data – note that they are illustrative and are not to be seen as recommendations for future land use in areas with similar patterns.

The first example (map 2) is a primarily wooded area with considerable areas of native pinewood. Each area of pinewood has been buffered by the three dispersal ranges listed above. These data are held in the datafiles 250pine.shp, 500pine.shp and 1000pine.shp. This map demonstrates that:

- the pattern and distribution of pinewoods would allow movement between them of the most mobile pinewood specialist species; i.e. there is overlap between the 1000 metre buffers;
- the pattern and distribution of pinewoods would seriously restrict movement of the most dispersal-limited species; i.e. there is very little overlap between the 250 metre buffers;
- the dispersal potential for all pinewood specialists is dramatically reduced at the boundary of the woodland with non-woodland habitat;
- Although it is not displayed, the NWM output (provided on the CD and in the original CFWF) can be used to find out whether the existing non-wooded land is suitable for a new native pinewood plantation and whether the current 'general woodland' habitat is suitable for expansion or restructuring into pine habitat.
- It should be possible with careful planning and management to create a core pine area based on the existing pattern and distribution of pine habitat.

Map 2 Example 1
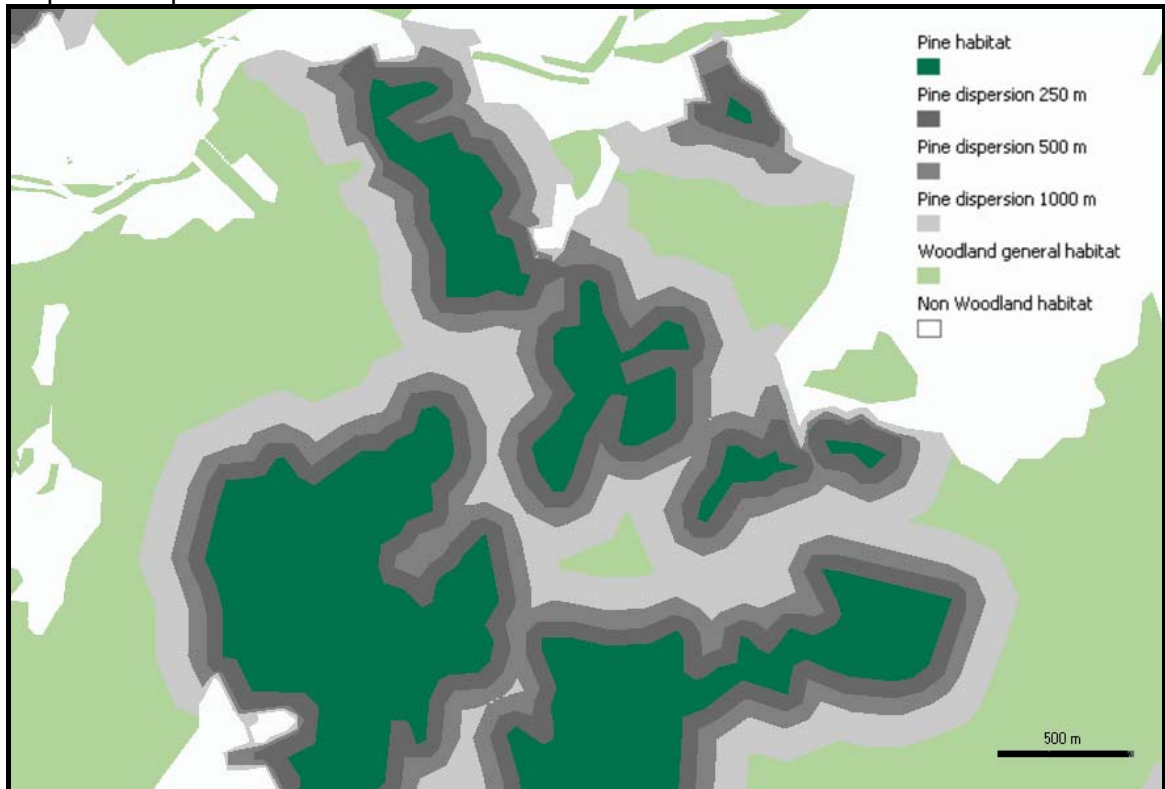
The second example (map 3) comprises an area dominated by pine habitat and could be described as a 'core area'. A key objective in the original framework, and subsequently supported by the 2006 consultation, is that these areas should be connected if possible. The map demonstrates that a number of the separate patches of pine habitat are close enough to function as a single pinewood core area, as even the most dispersal-limited species can move between the separate patches. However it also shows some areas where this is not the case and identifies areas where priority should be given to pine habitat expansion to form larger core areas. Lastly, the output also identifies areas of isolated pine habitat that can be given much lower priority for expansion because of their isolation and their juxtaposition with other non-woodland habitats. In all these judgements, the output from the Native Woodland Model demonstrates the suitability of the existing non-pine habitats (including existing plantation woodland) to support a pine habitat with appropriate management intervention.

Map 3 Example 2
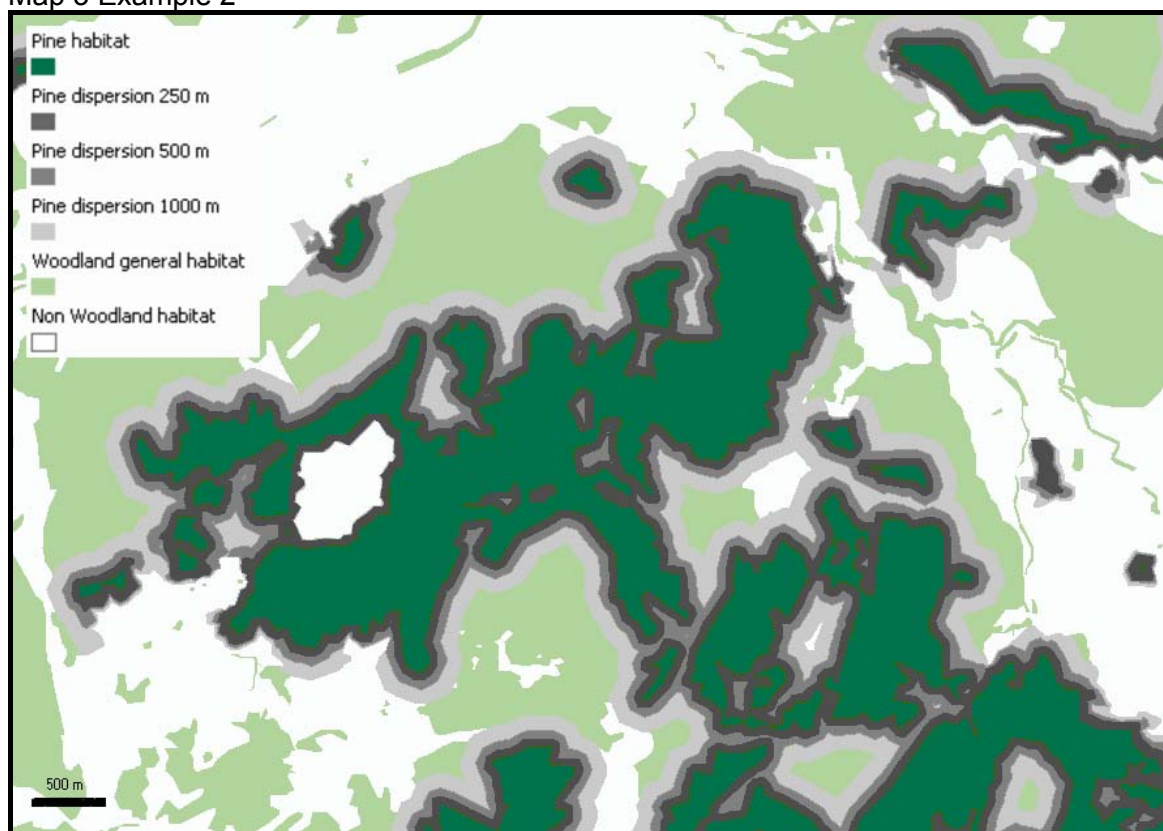
The third example (map 4) is a rather more complex situation with a mixture of both pine and broadleaved habitat. The BEETLE analysis shows the potential dispersion of the GFS types from both habitats. Such a situation demands closer examination of all the options, but the output does demonstrate that:

- There is considerable overlap between the potential dispersion of pine and broadleaved GFS types;
- The dispersion potential is generally much greater within existing woods than outside. There are some exceptions in this area, however, where existing broadleaved habitat is adjacent to an open ground habitat with scattered trees, for example in the top right hand corner next to the map legend;
- The areas of non-woodland are rather isolated within a predominantly wooded landscape and the Native Woodland Model would demonstrate the potential of these areas to support pine and/or broadleaved habitat.

Map 4 Example 3
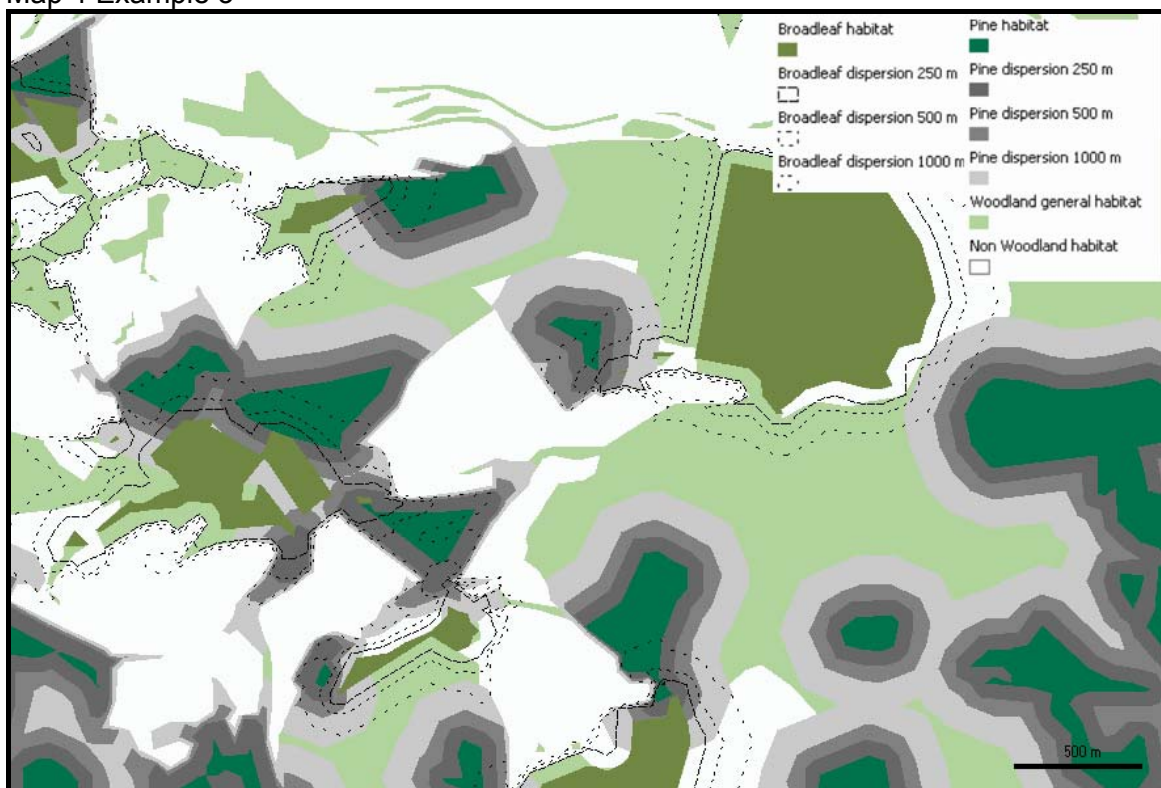
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Forests and woodland within the Cairngorms National Park ('focal species' dispersal ranges indicated through the use of BEETLE)

Legend
- Settlement
- Cairngorms National Park
- Loch
- Broadleaf woodland
- Pine Forest
- Other forest or woodland
- 250m Dispersal Range
- 500m Dispersal Range
- 1000m Dispersal Range

Cairngorms Forest and Woodland Framework Update 2006