Forestry Commission

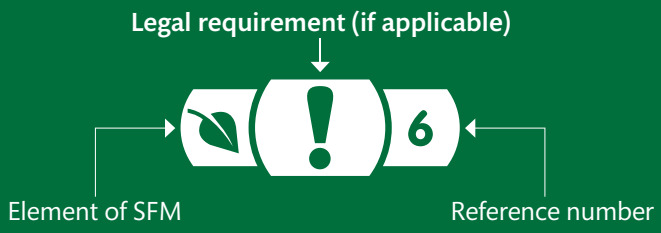
The UK Forestry Standard

The governments' approach to sustainable forestry

FOREST SERVICE

Key to symbols

UKFS Requirements for sustainable forest management



UKFS Guidelines

Forestry Commission

The UK Forestry Standard

The governments' approach to sustainable forest management

Forestry Commission: Edinburgh

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1. Introduction

The United Kingdom Forestry Standard (UKFS) is the reference standard for sustainable forest management in the UK. The UKFS, supported by its series of Guidelines, outlines the context for forestry in the UK, sets out the approach of the UK governments to sustainable forest management, defines standards and requirements, and provides a basis for regulation and monitoring – including national and international reporting.

The UKFS approach is based on applying criteria agreed at international and European levels to forest management in the UK. However, because the history of forestry and the nature of the woodlands in the UK differ in fundamental ways from those of other European countries, a main purpose of the UKFS is to demonstrate that these agreements are applied in an appropriate way to the management of UK forests and woodlands.

The UKFS was first published in 1998 and revised in 2004, principally to reflect the devolution of forestry powers to Scotland and Wales. This third edition, together with the 2011 editions of the supporting series of Guidelines, has been produced to:

- provide an explicit statement of UKFS Requirements for sustainable forest management in line with statements for other land uses supported by EU rural development measures;
- ensure that the UKFS and its supporting Guidelines form an integrated whole by linking the UKFS Requirements through to the different elements of sustainable forest management;
- clarify the status of the UKFS, and the assurances provided by meeting the Requirements through the regulatory process;
- strengthen the role of forest planning;
- incorporate recent developments in legislation, international agreements, and the way forestry activity is monitored and reported;
- incorporate recent advances in the scientific understanding of forestry;
- include national and international initiatives on climate change and the role forests can play in mitigation and adaptation.

The UKFS 'Standard Notes', which gave detailed guidance on forestry practice in the first and second editions, have been superseded by the new editions of the Guidelines.

The UKFS and Guidelines have been developed by the Forestry Commission in Great Britain and the Forest Service, an agency within the Department of Agriculture and Rural Development in Northern Ireland, through an open and consensual process in accordance with government guidance. This has involved many interested parties and the general public in a formal consultation.

The UKFS and Guidelines have been endorsed by the UK and country governments and apply to all UK forests and woodlands. Together with the national forestry policies and strategies of England, Scotland, Wales and Northern Ireland, the UKFS provides a framework for the delivery of international agreements on sustainable forest management, alongside policies on implementation.

The standards for the planning, design and sustainable management of forests and woodlands in the UK use an approach based on internationally recognised science and best practice. The UKFS is the basis of forestry practice for the independent UK Woodland Assurance Standard (UKWAS), which is used for voluntary independent certification. It can also be used for assessing compliance as part of an environmental management system such as ISO 14001.

By meeting the Requirements of the UKFS, forest and woodland owners, managers and practitioners can demonstrate that forestry operations and activities are both legal and sustainable. The main bodies responsible for the regulation and monitoring of the UKFS and Guidelines are the Forestry Commission in Great Britain and the Forest Service in Northern Ireland.

The UKFS is relevant to all those with an interest in UK forests and woodlands, particularly owners, managers and practitioners, and all organisations with responsibilities for forests and woodlands – including government agencies, local authorities, non-governmental organisations (NGOs), charities and trusts.

2. Overview of the UK Forestry Standard

This section sets out how the UKFS Requirements for sustainable forest management are structured, explains the role of the supporting series of Guidelines, defines the scope of the UKFS and Guidelines and provides explanations of terminology.

UKFS Requirements

The UKFS Requirements are set out in Section 5. There are two levels of compliance: **Legal** and **Good forestry practice**. Guidelines for managers on complying with the Requirements are summarised in Section 6 and set out in detail in the supporting UKFS Guidelines series.

UKFS Requirements are categorised into different elements of sustainable forest management, each supported by an individual Guidelines publication. These are:

- Biodiversity
- Climate Change
- Historic Environment
- Landscape
- People
- Soil
- Water

General Forestry Practice is a further element of sustainable forest management that is covered by the UKFS itself, as it is common to the other elements of sustainable forest management described above, and applies in most forestry situations, for example planning and operations. UKFS Requirements and Guidelines for General Forestry Practice are set out at the start of Sections 5 and 6, respectively.

Legal requirements

Statutory requirements of EU and UK legislation, including legislation applicable in Scotland, Wales and Northern Ireland, that has the most direct bearing on the management of forests and woodlands. Contravention of these requirements could lead directly to prosecution.

Good forestry practice requirements

Further requirements of sustainable forest management, linked to internationally agreed criteria and commitments, to meet UK and country policy. They complete the framework for the exercise of the regulatory powers of the forestry authorities in the UK and for the payment of grants.

Guidelines

Guidelines provide more detailed information for forest and woodland owners, managers and practitioners on how to comply with the UKFS Requirements. Some guidelines apply to more than one situation and to more than one element of sustainable forest management. These guidelines are cross-referenced.

UKFS Guidelines series

The supporting series of UKFS Guidelines explains the principles of the various elements of sustainable forest management in further detail, sets out how the UKFS Requirements can be met, and points to sources of practical guidance. Each of the UKFS Guidelines covers a different element of sustainable forest management and is based on current, relevant research and experience.

The purpose of the UKFS Guidelines is to provide:

- a statement of the UKFS Requirements relevant to that particular element of sustainable forest management;
- guidance and advice for those managing forests and woodlands on how to meet these Requirements;
- the basis for assessing proposals, management operations and activities to ensure the sustainability of UK forests and woodlands.

For completeness, and so that these publications stand alone, the UKFS Requirements and Guidelines for General Forestry Practice are summarised in Appendix 3 of each of the Guidelines publications.

Scope and application

The UKFS and supporting series of Guidelines have been developed specifically for forestry in the UK and apply to all UK forests. The UKFS and Guidelines are applicable to the wide range of activities, scales of operation and situations that characterise forestry in the UK. The relevance of the Requirements and Guidelines will therefore vary according to the circumstances of the site, particularly the size of the forest or woodland, the scale of operation, and the objectives of the forest or woodland owner.

The UKFS and Guidelines encompass the entire forest environment, which may include open areas, water bodies such as rivers, lakes and ponds, and shrub species in addition to the trees themselves. They apply to the planning and management of forests within the wider landscape and land-use context, and to all UK forest types and management systems, including the collective tree and woodland cover in urban areas. The scope of the UKFS and Guidelines does not extend to the management of individual trees (arboriculture), orchards, ornamental trees and garden trees, tree nurseries, and the management of Christmas trees.

Some aspects of forest management lend themselves to 'yes or no' compliance, but most do not, and so the UKFS and Guidelines have not attempted to condense all the complexities of forest management into an over-simplistic format. The UKFS and Guidelines have therefore been written to be interpreted with a degree of flexibility and applied with an appropriate level of professional expertise.

It is also recognised that forest and woodland management is a long-term business and, while management opportunities should be taken to effect improvements, it may take more than one rotation to achieve some of the Requirements. In assessing whether the Requirements have reasonably been met, the overall balance of benefits or ecosystem services will be taken into account.

Definitions and terms

The UKFS and Guidelines apply to all UK forests. The term **forest** is used to describe land predominately covered in trees (defined as land under stands of trees with a canopy cover of at least 20%), whether in large tracts (generally called forests) or smaller areas known by a variety of terms (including woods, copses, spinneys or shelterbelts). The alternative term **woodland** has local nuances of meaning so it is used in the text where it is more appropriate, but for the purposes of the UKFS and Guidelines the meaning is synonymous with forest. **Forestry** is the science and art of planting, managing and caring for forests.

Short rotation coppice (SRC) and **short rotation forestry** (SRF) are both included within the scope of the UKFS and Guidelines, whether managed as part of a forest or as an agricultural or stand-alone regime. Although requirements for site selection and environmental protection for SRC and SRF will be the same as for other types of forestry, there will be differences in how other requirements can be met, particularly in the case of SRC, but the principles given in the UKFS will be applied.

Some UKFS Requirements and Guidelines are expressed as maximum or minimum proportions of the forest. In these cases the area in question is the **forest management unit** (FMU). The FMU is the area subject to a forest management

plan or proposal. This area is selected by the owner and/or manager and will be determined by the nature of the forest, the proposed operations and management objectives. Extensive FMUs have the advantage of allowing a strategic approach to be taken in achieving UKFS Requirements, both in terms of the area covered and the timescale.

For the UKFS Requirements the term **must** is used to reflect a **legal requirement**, whereas the term **should** is employed for a **good forestry practice requirement**, which recognises that there may, in exceptional cases, be reasons for divergence.

UKFS **guidelines** are concerned with greater detail and therefore use a range of imperative terms appropriate to context. For unacceptable practice or management, the term **avoid** is used, meaning 'keep away', 'refrain from' or 'prevent from happening'. Where specific maximum and minimum values or proportions are defined, they refer to the forest management unit and serve as a starting point for assessing compliance with the Requirements. However, because UK forestry encompasses a variety of activity, the relevance of guidelines will vary and, as with good forest practice requirements, there will be exceptional situations where a reasonable case for divergence can be made.

Detailed definitions of terminology specific to the *UK Forestry Standard* can be found in the Glossary.

Box 2.1 Guidance on good practice and reports of research to support the UK Forestry Standard can be found in the Forestry Commission technical publications series.

Forests and woodlands cover 45% of Europe's land area. They play a key role in environmental policies related to the protection of ecosystems, biodiversity, the sustainable use of natural resources, carbon sequestration and climate change.

Note: this map does not show forest cover in the Russian Federation, which makes up four-fifths of the total for Europe. Source: EC Joint Research Centre (JRC-Forest Action).

3. International context for forestry

Concern over environmental degradation and deforestation focused global attention on the management, conservation and sustainable development of forests during the 1980s. A Statement of Forest Principles, designed to ensure that forests are sustainably managed to meet the social, economic and ecological needs of present and future generations, was agreed at the 1992 Earth Summit in Rio de Janeiro.

The Statement of Forest Principles was one of five major agreements on global environmental issues that were outcomes of the UN Conference on Environment and Development (the 'Earth Summit'). Agenda 21 set out a worldwide programme for sustainable development – a concept defined by the Brundtland Commission in its 1987 report *Our Common Future*:

> Sustainable development is 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs'.

The main outcomes relevant to forests, in addition to the non-legally binding Statement of Forest Principles, were Chapter 11 of Agenda 21, 'Combating deforestation', the UN Framework Convention on Climate Change and the UN Convention on Biological Diversity (see page 8).

Since the 1992 summit, the international community has continued to make progress in developing and co-ordinating international forest policy, notably in defining the principles and criteria of sustainable forest management. The UK Forestry Standard (UKFS) determines how these criteria are applied in the UK.

> Sustainable forest management is 'the stewardship and use of forests and forest lands in a way, and at a rate, that maintains their biodiversity, productivity, regeneration capacity, vitality and their potential to fulfil, now and in the future, relevant ecological, economic and social functions, at local, national, and global levels, and that does not cause damage to other ecosystems'. (MCPFE, 1993, see Appendix 1)

In 2002, for the World Summit on Sustainable Development in Johannesburg, the UK constituent country governments worked with the forest industry and environmental organisations to prepare the UK Forest Partnership for Action. This identified certification, restoration and protection, illegal logging and timber procurement as priorities for action.

International forestry processes

After the 1992 Earth Summit, the consideration of international forest policy continued through the UN Intergovernmental Panel on Forests and Intergovernmental Forum on Forests, which led in 2000 to the UN establishing an International Arrangement on Forests. This consists of the United Nations Forum on Forests (UNFF), an intergovernmental policy forum to promote sustainable forest management, and the Collaborative Partnership on Forests (CPF), a partnership of the major forest-related international organisations and institutions – including the Secretariats of the three Rio conventions. At the sixth session of the UNFF in 2006, the international community agreed the following four global objectives on forests, and agreed to work globally and nationally to make progress towards their achievement by 2015:

- Reverse the loss of forest cover worldwide through sustainable forest management, including protection, restoration, afforestation and reforestation, and increase efforts to prevent forest degradation.
- Enhance forest-based economic, social and environmental benefits, including by improving the livelihoods of forest-dependent people.
- Increase significantly the area of protected forests worldwide and other areas of sustainably managed forests, as well as the proportion of forest products from sustainably managed forests.
- Reverse the decline in official development assistance for sustainable forest management and mobilise significantly increased new and additional financial resources from all sources for the implementation of sustainable forest management.

The seventh session of the UNFF in New York in 2007 (UNFF7) saw the adoption of a non-legally binding instrument on all types of forests.

The purpose of this international instrument is to:

- strengthen political commitment and action to implement sustainable forest management and to achieve the global objectives;
- enhance the contribution of forests to the achievement of international development goals;
- provide a framework for national action and international co-operation.

The current international consensus on forestry that has been developed is expressed through international and regional treaties and regulations together with substantial non-legally binding instruments (or 'soft law'). The UK plays a full and active part in international forestry processes and expects to implement the agreements made and to continue to review and assess their adequacy.

Forestry and the Rio conventions

The three conventions agreed at Rio were the:

- Framework Convention on Climate Change
- Convention on Biological Diversity
- Convention to Combat Desertification

Of these, the UN Convention on Biological Diversity and the UN Framework Convention on Climate Change are relevant to sustainable forest management in the UK.

UN Framework Convention on Climate Change

The global nature of the climate change problem and the important role of the world's forests in mitigating its effects was recognised at the Earth Summit. The resulting international treaty, the United Nations Framework Convention on Climate Change (UNFCCC), includes provisions for reporting net changes in greenhouse gases through forest activity. In 1997 a number of nations approved an addition to the treaty – the Kyoto Protocol – which has more powerful (and legally binding) measures. The Kyoto Protocol entered into force in 2005 and to date it has been ratified by 192 countries. It sets targets for industrialised countries to reduce their combined emissions to 5% below 1990 levels by 2008–12. It takes account of carbon stored in forests and net changes due to afforestation, reforestation and deforestation since 1990. These data are included when calculating the reductions in emissions. In addition, two of the 'flexible mechanisms' of the Kyoto Protocol, the Clean Development Mechanism (CDM) and Joint Implementation, make provisions for implementation through forestry projects in certain countries.

UN Convention on Biological Diversity

The United Nations Convention on Biological Diversity (UNCBD) is the primary international agreement covering the conservation and sustainable use of biodiversity. It has three main aims: the conservation of biological diversity; the sustainable use of its components; and the fair and equitable sharing of the benefits from the use of genetic resources. Signatory countries have committed themselves to a significant reduction of the rate of biodiversity loss at the global, regional and national level by 2020.

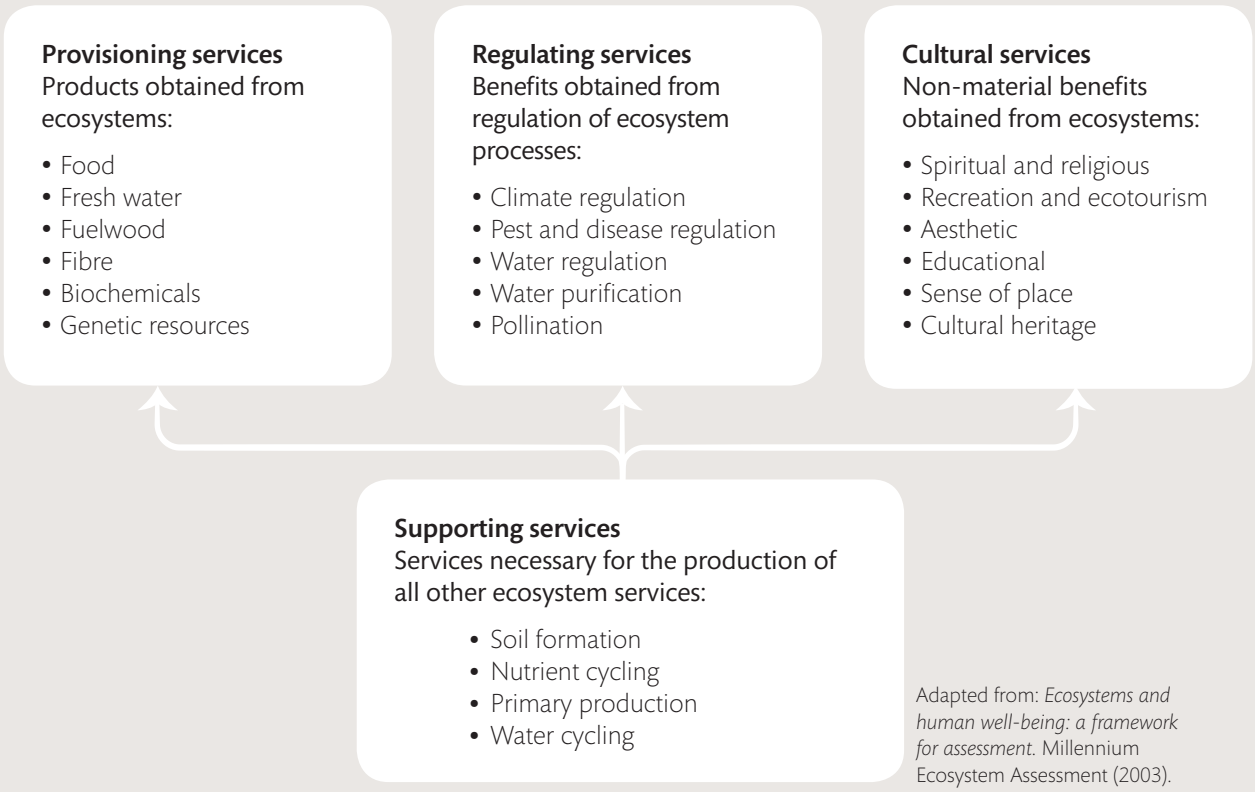
The UNCBD promotes an ecosystem approach founded on 12 management principles to supply environmental, economic and social benefits within sustainable limits. Forests are recognised as one of the ecosystems fundamental for biodiversity, and the 12 management principles are being applied through the UN principles of sustainable forest management already agreed. In 2002 the UNCBD agreed an expanded programme of work for forest biological diversity that sets out key actions. At a European level this has been taken forward through the Ministerial Conference on the Protection of Forests in Europe (MCPFE) process (now known as Forest Europe, see page 10).

The ecosystem approach

The UN Convention on Biological Diversity describes the ecosystem approach as 'a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way'. The ecosystem approach, adopted by the Convention in 2000, has a broad scope that goes beyond ecosystems themselves to encompass social, cultural and economic factors that are fully interdependent with biodiversity and ecosystem services (Box 3.1).

Box 3.1 Ecosystem services

Ecosystem services can be thought of as the link between ecosystems and human well-being. They describe the processes by which natural ecosystems provide resources (used actively or passively) that sustain and benefit people. The Millennium Ecosystem Assessment separated these services into four categories: provisioning services, for example food and water; regulating services, for example pest and disease control; cultural services, for example spiritual and recreational benefits; and supporting services, for example soil formation and primary production, that maintain the conditions for life on Earth.



Adapted from: *Ecosystems and human well-being: a framework for assessment.* Millennium Ecosystem Assessment (2003).

Ecosystem services can also provide a way to describe and evaluate the various benefits that forests and woodlands provide. The diagram in Box 3.1 shows the main characteristics of the four categories of ecosystem services and gives an indication of the wide range of benefits of forest and woodland ecosystems.

An evidence base is currently being developed to implement the ecosystem approach in the UK – a key part of which is the UK National Ecosystem Assessment (UKNEA). The Assessment, which started in mid-2009, is the first analysis of the UK's natural environment in terms of the benefits it provides to society and continuing economic prosperity. It is an inclusive process involving many government and non-governmental organisations, academic institutions and the private sector. The UKNEA report was published in June 2011; more information can be found at: http://uknea.unep-wcmc.org.

The UKNEA will help people to make better decisions about issues that impact on the UK's ecosystems to ensure the long-term sustainable delivery of ecosystem services. The UKNEA will also support global and regional obligations such as the UNCBD call on countries to conduct such assessments and the EU Water Framework Directive, which encourages the management of ecosystem services.

Forestry in Europe

Europe's 100 million hectares of forests comprise 25% of the world's total forested area and cover 45% of the European landscape. The ministers responsible for forests in Europe have developed common principles, criteria and guidelines for sustainable forest management. In 1990, a pan-European governmental process called the Ministerial Conference on the Protection of Forests in Europe (MCPFE) was established. This is now known as 'Forest Europe'. Through this, European governments continue to develop a common understanding on the sustainable management of European forests, agreeing resolutions and commitments on sustainable forest management.

At Helsinki in 1993, European governments built on the Statement of Forest Principles and other agreements that were outcomes of the 1992 Earth Summit. The Resolutions that were adopted provided 'Guidelines for the Sustainable Management of Forests in Europe' and 'Guidelines for the Conservation of the Biodiversity of European Forests'. These Guidelines were used to develop a set of pan-European criteria and indicators, agreed at the 4th Ministerial Conference in Vienna in 2003. Known as the MCPFE Principles and Criteria (Table 3.1), these define sustainable forestry in the European context. Further detail is given in the Pan-European Level Operational Guidelines (PELOG) (see Appendix 1). Internationally the MCPFE is one of the strongest regional political processes addressing forest issues. The UK is committed to the MCPFE Resolutions, Criteria and Indicators and the UKFS, together with the constituent country policies and strategies, implements these commitments in UK forests and woodlands.

In June 2011 at the 6th Ministerial Conference in Oslo, European Ministers reiterated their commitment to sustainable forest management and agreed a vision, goals and targets for forests in Europe. They also decided to further their international action on forests by agreeing to elaborate a legally binding agreement on forests in Europe.

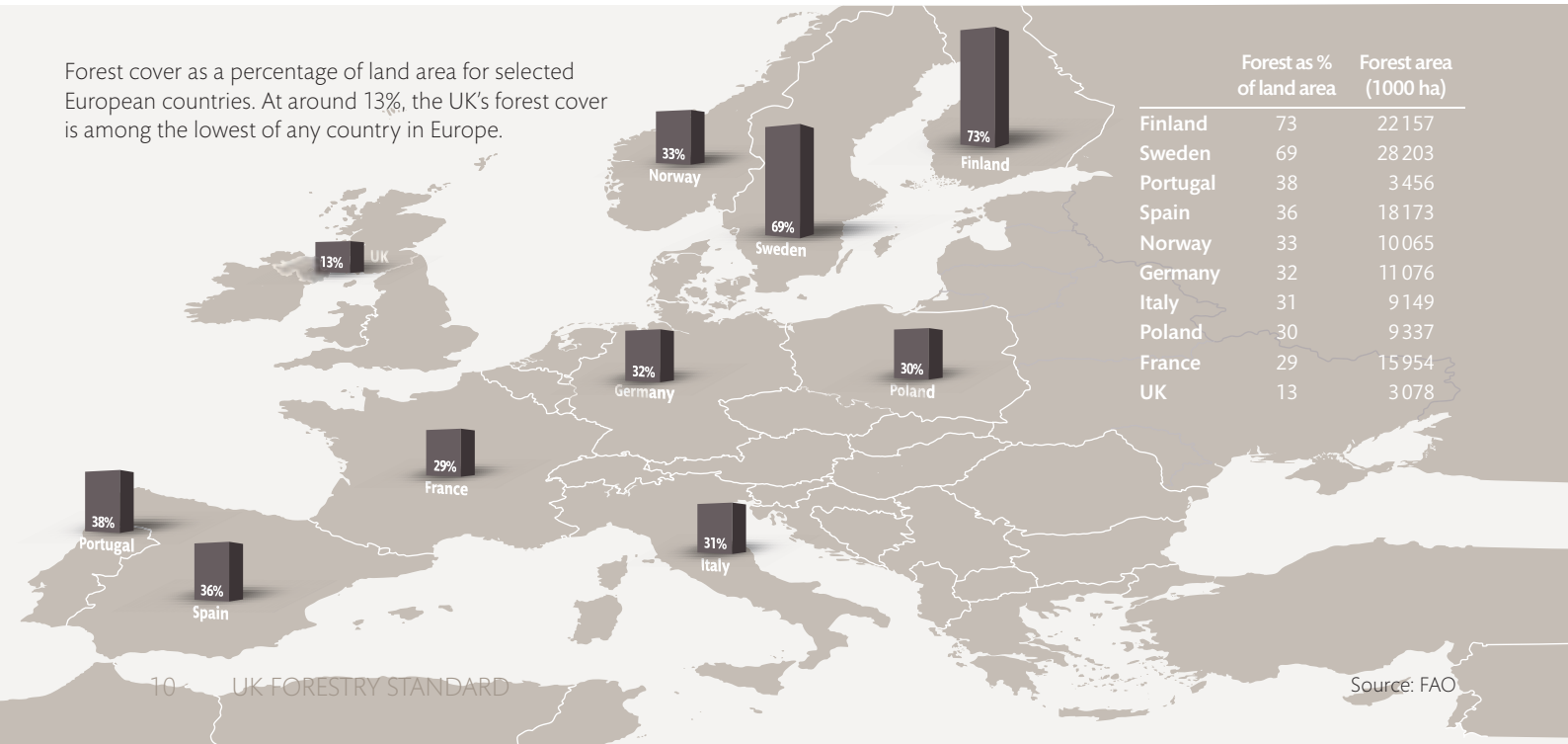
Forestry and the European Union

The Treaties of the European Union (EU) do not address forestry directly, but the EU shares a common vision and promotes key principles for the sustainable management of Europe's forests. In 1998 the European Council adopted an EU Forestry Strategy based on two key principles:

- Forest management should be sustainable, as prescribed by the Helsinki MCPFE Guidelines.
- Forests have a multi-functional (environmental, economic and social) role.

In 2006 the European Council adopted an EU Forest Action Plan to implement the Strategy. The Plan aims to provide a coherent framework for implementing forest-related measures and to serve as an instrument of co-ordination between the EU and the forest policies of Member States.

Forest cover as a percentage of land area for selected European countries. At around 13%, the UK's forest cover is among the lowest of any country in Europe.



	Forest as % of land area	Forest area (1000 ha)
Finland	73	22 157
Sweden	69	28 203
Portugal	38	3 456
Spain	36	18 173
Norway	33	10 065
Germany	32	11 076
Italy	31	9 149
Poland	30	9 337
France	29	15 954
UK	13	3 078

Source: FAO

Table 3.1 MCPFE pan-European criteria and indicators for sustainable forest management.

MCPFE Criterion		MCPFE Indicator
C1	Maintenance and appropriate enhancement of forest resources and their contribution to global carbon cycles	1.1 Forest area 1.2 Growing stock 1.3 Age structure and diameter 1.4 Carbon stock
C2	Maintenance of forest ecosystem health and vitality	2.1 Deposition of air pollutants 2.2 Soil condition 2.3 Defoliation 2.4 Forest damage
C3	Maintenance and encouragement of productive functions of forests (wood and non-wood)	3.1 Increment and fellings 3.2 Roundwood 3.3 Non-wood goods 3.4 Services 3.5 Forests under management plans
C4	Maintenance, conservation and appropriate enhancement of biological diversity in forest ecosystems	4.1 Tree species composition 4.2 Regeneration 4.3 Naturalness 4.4 Introduced tree species 4.5 Deadwood 4.6 Genetic resources 4.7 Landscape pattern 4.8 Threatened forest species 4.9 Protected forests
C5	Maintenance and appropriate enhancement of protective functions in forest management (notably soil and water)	5.1 Protective forests – soil, water and other ecosystem functions 5.2 Protective forests – infrastructure and managed natural resources
C6	Maintenance of other socio-economic functions and conditions	6.1 Forest holdings 6.2 Contribution of forest sector to GDP 6.3 Net revenue 6.4 Expenditures for services 6.5 Forest sector workforce 6.6 Occupational safety and health 6.7 Wood consumption 6.8 Trade in wood 6.9 Energy from wood resources 6.10 Accessibility for recreation 6.11 Cultural and spiritual values

Adapted from Annex 1 of the Resolution L2. Third Ministerial Conference on the Protection of Forests in Europe. 2–4 June 1998, Lisbon/Portugal.

EU directives and conventions

There are a number of important EU directives and conventions that have been implemented through UK laws and that need to be taken into account when planning or practising forestry. The most relevant are highlighted in Box 3.2 and covered more fully in the individual UKFS Guidelines publications.

Rural development

The EU Rural Development Regulation 1698/2005 recognises the integral part that forests and their sustainable management have in rural development. The EU's rural development policy, the second pillar of the Common Agriculture Policy, seeks to establish a coherent and sustainable framework for the future of rural areas.

Illegal logging

The UK has a long-standing commitment to address illegal logging globally and is working actively within the EU through the Forest Law Enforcement, Governance and Trade (FLEGT) Action Plan. The Action Plan covers both supply and demand side measures to address illegal logging, and was endorsed by the EU Council of Ministers in 2003. A central element of the Action Plan is the development and implementation of trade accords, known as Voluntary Partnership Agreements (VPAs), with timber-exporting countries where illegal logging is a recognised problem. VPAs ensure that only legally harvested timber is imported into the EU and support good forest governance in the partner countries.

In addition, the EU has created legislation to ban illegally produced wood products from the EU. The EU Timber Regulation entered into force on 2 December 2010 and will, as of 3 March 2013, make it illegal to place illegally harvested timber and timber products on the EU market. The legislation will also require that 'due diligence', using a risk-based approach, is applied to all timber first placed on the EU market. Traders further down the supply chain will need to keep records of what timber and wood products have been bought, and from whom, and where applicable, to whom they were sold. The UKFS, along with the national felling licence legislation, will play a primary role in the application of the EU Timber Regulation within the UK.

Box 3.2 EU directives and conventions

Birds Directive 2009/147/EC Provides a framework for the conservation and management of wild birds in Europe. The Directive recognises that habitat loss and degradation are the most serious threats to the conservation of wild birds. It therefore places great emphasis on the protection of habitats for endangered as well as migratory species.

Environmental Impact Assessment Directive 85/337/EEC Protects the environment through the use of Environmental Impact Assessments on defined public and private projects, the effects of which may be considered to pose a significant threat to the environment.

Environmental Liability Directive 2004/35/EC Seeks to achieve the prevention and remedying of environmental damage to habitats and species protected by EC law. It reinforces the 'polluter pays' principle, making operators financially liable for damage, either threatened or actual.

European Landscape Convention Provides a basis for closer co-operation in the planning, protection and management of landscapes and recognises that landscape has important cultural, ecological, environmental and social dimensions as part of sustainable development.

Forest Reproductive Material Directive 1999/105/EC Establishes marketing procedures and requirements that ensure the plentiful supply of high quality forestry reproductive material within the European Community. This in turn helps to increase the stability, disease resistance, adaptation, productivity and diversity of EC forests.

Habitats Directive 92/43/EEC Promotes the maintenance of biodiversity and the restoration of natural habitats and wild species. It protects and monitors threatened habitats, identifies wild flora and fauna as European Protected Species, and controls developments that may affect them.

Water Framework Directive 2000/60/EC Designed to improve and integrate the way the water environment is managed throughout Europe. It establishes a framework for Community action in the field of water policy.

Independent forest certification

Independent forest certification arose out of concerns over deforestation and degradation of the world's forests, particularly tropical rainforests, which have a vital role in the Earth's equilibrium and contain 80% of the world's biodiversity. From the mid-1990s a range of schemes were developed to give independent assurances that timber bearing the certification label, and the forests from which it is derived, have been responsibly managed. These voluntary schemes define their own standards of management and are independent of governments.

There are presently more than 50 certification programmes in different countries around the world. The Forest Stewardship Council (FSC) is a single scheme; many of the others fall under the umbrella organisation of the Programme for the Endorsement of Forest Certification (PEFC). The area of certified forests covered by the two main organisations (Box 3.3) has steadily increased since the 1990s to reach about 350 million hectares in 2010, equivalent to 8.7% of the world's forests. PEFC certification accounts for approximately two-thirds of the total, with more than 200 million hectares of forests under its scheme. For the most part, certification has been concentrated in the boreal forests of the more developed northern countries: some 56% of the world's certified forest is located in North America, while approximately 34% is in Europe (including the Commonwealth of Independent States).

Box 3.3 International forest certification schemes

The FSC (Forest Stewardship Council) and PEFC (Programme for the Endorsement of Forest Certification) are the two main global certification schemes. Both are owned by international non-governmental organisations and exist to promote sustainable forest management and a system for product assurance. Certification schemes have two key components: a forest management certificate and 'chain of custody' certification, which extends assurances down the forest supply chain. Many different stakeholders, representing the environmental, economic and social aspects of forestry, guide the approaches of both schemes. The schemes allow consumers to identify, purchase and use timber and wood products produced from well-managed forests, through the use of a product labelling system.

FSC was founded in 1993 in response to concerns over global deforestation and the demand for a trustworthy system for labelling wood products. It was the first forest certification scheme and is dedicated to promoting responsible management of the world's forests. FSC defines its own principles and criteria for forest management and has its own system for granting authority to bodies carrying out forest certification and chain of custody audits. Local standards for forest management have to be specially written to conform to the FSC principles and criteria. FSC is based in Bonn, Germany, and there are country-based national offices in more than 50 countries – including the UK. FSC UK is a registered charity. It is supported by non-governmental organisations including WWF, Greenpeace and the Woodland Trust.

PEFC was founded in 1999 by woodland owners in Northern Europe, but is now a global organisation with over 35 member countries. It is the largest forest certification scheme, dedicated to ensuring that timber and non-timber forest products are produced with respect for the highest ecological, social and ethical standards. Unlike FSC, PEFC is an umbrella programme that endorses individual national forest certification systems, based on PEFC's requirements and tailored to local priorities and conditions. It also endorses auditing organisations conforming to international accreditation requirements. PEFC's requirements are derived from forestry principles and criteria negotiated by intergovernmental processes. PEFC is based in Geneva, Switzerland, and is represented in the UK by PEFC UK Ltd.

The provisional results of the National Forest Inventory show that woodland cover in the UK is now around three million hectares, which is 13% of the total land area. The public forest estate covers around 30% of total forest area in the UK.

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4. Forestry in the UK

Forests and woodlands in the UK are an integral part of a landscape that has evolved over several thousand years of changing land use. The nature of woodland cover is very different from much of the rest of Europe, in terms of extent, history and ownership. However, the UK has been at the forefront of developing the concept of sustainable forestry and in recognising the benefits that forests and woodlands can deliver for society and the environment.

Woodland history

At the time of the First World War, the forests and woodlands that had once covered almost all of the British Isles had been reduced to around 5% (only 1% in Northern Ireland). This is in contrast to most other European countries where much higher proportions of forest were retained. The War focused attention on how vulnerable the country could be when vital supplies of imported timber were interrupted. The formation of the Forestry Commission in 1919 marked a turning point and the adoption of a new policy to redress woodland loss. This was achieved through both state planting of land and through providing fiscal incentives for private woodland owners to do the same. By 2011, UK woodland cover had increased to around 3 million hectares, which is 13% of the total land area (Table 4.1).

Table 4.1 Total woodland area for the UK (000s hectares).

	Broadleaves	Conifers	Total
Forestry Commission / Forest Service			
England	59	155	214
Scotland	33	447	481
Wales	16	98	114
N. Ireland	6	55	61
UK	114	755	870
Non-Forestry Commission / Forest Service			
England	827	256	1 083
Scotland	276	633	909
Wales	121	69	190
N. Ireland	17	10	27
UK	1 241	969	2 209
All woodland			
England	886	411	1 297
Scotland	309	1 081	1 390
Wales	138	167	304
N. Ireland	22	66	88
UK	1 355	1 724	3 079

The British Isles has a narrower range of indigenous tree species than other European countries, as a result of its separation from mainland Europe since the last Ice Age. Scots pine is the only native conifer of economic significance, and with the initial policy emphasis on timber production, the forest industry had to consider the use of non-native species. New silvicultural techniques were developed to establish a range of imported conifers, particularly those from North America. Sitka spruce proved especially suited to the oceanic climate and grew well on the poorest of soils. It now provides timber much in demand by the wood processing industry.

Semi-natural woodland

The UK has no truly natural forest, but there are around 650 000 hectares of semi-natural woodland – of which about 326 000 hectares (~1.2% of land area) are identified by the nature conservation agencies as ancient semi-natural. This is mainly composed of broadleaved species, but includes the native pine forests of Highland Scotland. Ancient semi-natural woodlands (ASNW) are derived from the original forest cover of the British Isles, and have had more or less continuously tree-covered use. They are

Old small-leaved lime coppice in a semi-natural woodland.

especially significant for biodiversity, landscape and cultural heritage, and reflect centuries of interactions between human activities and the environment. ASNWs have a unique character and they support a high proportion of rare and threatened species. To be described on the ASNW inventory, there must be indications that the woodland has continuously existed. The indicative dates of 1600 in England and 1750 in Scotland are used, but evidence depends on mapped records and these are sometimes uncertain.

Ownership and management

Approximately two-thirds of the woodland area in the UK is owned by a diverse range of individuals and groups, including farmers, family trusts, charitable trusts, local groups and companies. Typically, woodlands owned by family interests are a part of mixed estates or farms where there are many thousands of small and scattered woodlands. Based on agricultural censuses, it is estimated that there are around 60 000 farm woodland holdings of which about 50 000 are less than 10 hectares. Unlike parts of mainland Europe, the UK has relatively few holdings where both forestry and agriculture are run as an integrated business.

The remaining one-third of woodland area is publicly owned, the majority of it managed by the Forestry Commission and, in Northern Ireland, the Forest Service – an agency within the Department of Agriculture and Rural Development. These forests are managed in the public interest to meet a wide range of objectives that encompass environmental, economic and social benefits.

Farm woodland, such as this in North Wales, provides shelter and shade for livestock.

The Forestry Commission initially acquired some wooded estates, but in the main it created 'new' forests on areas of low agricultural value using mostly conifer species. Unlike many parts of Europe, the UK does not have a tradition of forests owned or managed on a community basis – although greater community involvement has emerged as a theme in recent years and has been developed through a wide range of local woodland initiatives.

Timber production is usually the primary aim in the management of larger forests, but an increasingly wide range of objectives – including biodiversity, amenity and investment – now feature. Providing public benefit can be shown, forest management may be supported with government grants. The provision of sport has been a particularly important influence in the forest history of the UK, from the time of the Norman Conquest. Cover for game remains an important objective on many wooded estates and farms and has contributed to retention of many small woods that might otherwise have been neglected and eventually lost from the landscape.

Small, scattered woodlands deliver a range of landscape, biodiversity and other benefits but remain vulnerable to neglect, as the potential revenues from managing them have dwindled and rarely exceed the costs. More recently, a resurgence of interest in wood for fuel may offer new markets. Some woodlands are owned and managed by local authorities and an increasing number are managed specifically for amenity, recreational and conservation purposes by charitable trusts, partnerships and some individual owners.

Forestry policy

Sustainable forest management, as set out by the UKFS, is the fundamental tenet of forestry policy in the UK. The articulation of forestry policy is devolved to country administrations, although some overarching functions – including plant health and international issues – are dealt with on a GB or UK basis. England, Scotland, Wales and Northern Ireland each have their own forestry programmes or strategies setting out policies and priorities for forest creation and management in the national context. These are further refined at regional and local levels, often in partnership with other organisations, to deliver objectives for forestry and woodland management on the ground.

Sustainable forest management

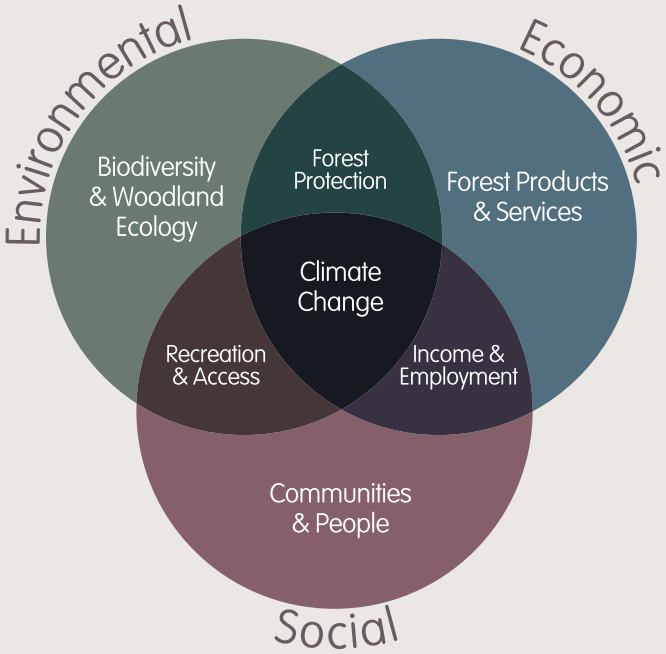
The concept of sustainable development, articulated at the 1992 Earth Summit in Rio de Janeiro (see Section 3) has been adopted as a fundamental tenet for forest management worldwide. In the UK, forestry policy had already been broadened from as early as the 1970s to include amenity – particularly recreation and landscape – and the concept of multiple-purpose forestry continued to develop throughout the 1980s. A significant step in Great Britain was the amendment of the Forestry Act 1967 by the Wildlife and Countryside (Amendment) Act 1985, which formalised the concept of balance between the environment and forestry as a duty for the Forestry Commissioners.

The Forestry Commission published a policy on broadleaved trees in the mid-1980s, which was designed to protect and expand broadleaved woodland and prevent its conversion to other land uses. The private sector has supported these developments and in 1985 *The forestry and woodland code* was published by the Timber Growers' Association. From the late 1980s the first Forestry Commission Guidelines were produced to address environmental elements of forest management, including water, landscape and nature conservation. They provided advice and a basis for the assessment of forestry proposals.

After 1992, international agreements provided a framework for developing concepts of sustainable forest management.

The framework has been refined at a regional level and in Europe – this has been through the Forest Europe (MCPFE) process, which has developed criteria, indicators and guidelines. At the international level, criteria necessarily give weight to some issues (such as protection from landslip, avalanche and fire) that are globally or regionally important, but not usually critical in the UK. In contrast, other aspects of forestry, such as the use of non-native species and the importance of forests in the landscape, are of particular relevance to the UK. This third edition of the UKFS therefore defines a series of forestry requirements that ensure international commitments are addressed while focusing on the UK context. The Guideline publications have been retained, and the new editions link directly to these UKFS Requirements. The concept of balanced objectives (Box 4.1) is central to the approach.

Non-native conifers such as spruce provide a valuable supply of timber products.



Box 4.1 Balanced objectives

Sustainable forest management involves ensuring that the production of all forest and woodland benefits is maintained over the long term. This is achieved when the environmental, economic and social functions of forests and woodlands are interacting in support of each other, as can be illustrated in the diagram on the left. The precise point of balance between environmental, economic and social functions will vary in individual forests and woodlands in response to management objectives and local circumstances. The concept of balanced objectives is central to the approach of the UK Forestry Standard.

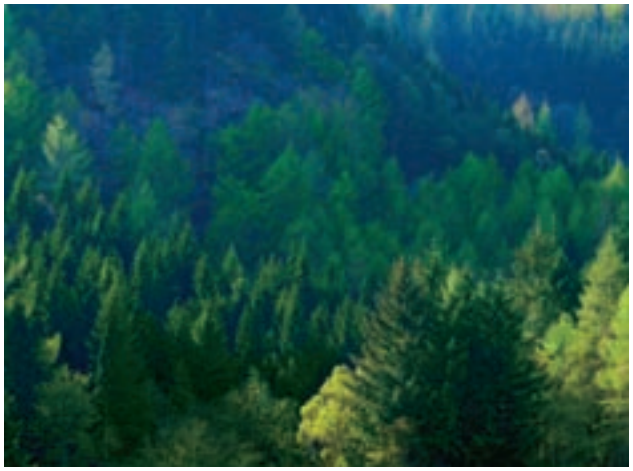
Biodiversity and woodland ecology

The conservation of biodiversity is an essential part of sustainable forest management in the UK. Forests and woodlands provide habitats for a large array of plants and animals, some of which are rare or threatened. The UN Convention on Biological Diversity links directly to initiatives at UK and country level on Biodiversity Action Plans. The UK Biodiversity Action Plan (UKBAP) lists 65 priority habitats of which 9 are classified as woodland. The UKBAP also lists 1149 priority species and around 450 of these are either dependent upon or associated with woodland – more than those listed for any other terrestrial habitat. A significant proportion of woodland and associated habitats is designated or has other legal protection. The UKFS sets out these statutory requirements together with requirements of good forest practice to ensure the status of priority habitats and species is protected or enhanced. These considerations will apply both within woodland and to the potential effects of new woodland on existing habitats. However, duties to further the conservation of biodiversity apply more generally and all forests have an important function in this respect.

Forest protection

The UK is committed to maintaining or increasing its forest area, and to enhancing the environmental, economic and social values of forest resources. Maintaining woodland area is central to the Forest Europe (MCPFE) criteria; it helps assure the many benefits provided by forests, and is critical in the context of world deforestation and climate change.

There has been an increase in forest cover over the decades since the Forestry Commission was established.



The overarching policy for the sustainable management of forests, woodlands and trees at a UK level is a presumption against the conversion of forest land to other land uses – unless there are compelling reasons in the public interest for doing so (see Restocking, page 85).

Rates of woodland creation have declined in recent years, and there have been increasing pressures for woodland removal, both for development and for the restoration of priority open habitats. Where deforestation is proposed, an Environmental Impact Assessment (EIA) is likely to be required, and each case will have to be determined individually. All the various implications, including the practicality of habitat restoration, will need to be considered in the context of policies at country level on woodland removal. This assessment will include the effects on climate, and the potential emissions of greenhouse gases, including methane from peat bogs (see the UKFS Guidelines on *Forests and Climate Change* and the UKFS Guidelines on *Forests and Biodiversity*).

Plant health

Forest protection includes effective protection against pests and diseases. The sea has acted as a natural barrier to invasion by many damaging organisms, but increasing global trade brings with it the threat of incursion by exotic pests and diseases. The ever-growing global trade in plants and timber and the use of wood-based packaging material provide many pathways for pests to leave their native habitats and enter new areas. Over the past decade, several new pests and diseases have been found in the UK, and some of these that have established have had serious economic and environmental consequences. Moreover, climate change may have a major effect on the severity of the impact of some existing pests and diseases and may facilitate the establishment of new problem organisms.

Forest products and services

The softwood supply from planted conifer forests in the uplands of the UK has encouraged a series of investments by companies involved in the processing of timber and manufacture of wood products. The annual volume of softwood harvested from existing UK forests is expected to increase from the level of 10.3 million m^3 (standing volume) achieved in 2008 to about 14 million m^3 by 2017–21. The increase in volume reflects the current age

structure of forests, but the sustainable annual volume based on the current forest area is expected to be in the region of 13 million m^3. In addition to softwood production, 0.5 million m^3 of hardwood timber is harvested per year, mainly in England. These figures include the total volume (softwood and hardwood) used for woodfuel, which has increased in recent years and is estimated at 0.6 million m^3 (2008).

In addition to the timber benefits, the forest estate delivers a wide range of social and environmental or 'non-market' benefits. The non-market benefits of forests and woodlands in Great Britain have been estimated to be worth approximately £1.1 billion per year. The most significant values were found to be for forest recreation, (over 250 million visits are made each year to woodlands in Great Britain), woodland biodiversity, landscape, and the role of trees in sequestering carbon.

Income and employment

Within the UK forestry and timber industries, it was estimated in 1999 that there were 30 000 full-time equivalent people employed in 10 000 businesses and that more than half were employed in harvesting, haulage and processing. There have been no comparable updates since but these figures are now thought to be optimistic. Figures based on VAT registrations in 2008 suggest about 3400 forestry business but this excludes small and part-time concerns that are not VAT registered. There are a range of jobs in forest establishment and maintenance and these can be combined with an increasing number in forest recreation, game management and conservation. Additional jobs are created indirectly in timber utilisation, tourism and support services, all of which contribute valuable jobs to the rural economy.

Communities and people

Unlike some countries in mainland Europe, the UK does not have a tradition of forests owned or managed on a community basis. However, in recent years the concept of greater local involvement in woodlands is becoming more evident, in both urban and rural areas. Community engagement can give local people a sense of ownership and responsibility, and can range from consultation on forestry proposals to full community ownership and management. In and around urban areas, the contribution of woodland to urban regeneration and community well-being is increasingly recognised and adopted as an important way of improving post-industrial areas and developing sustainable communities.

Equality and diversity

Equality is about creating a fairer society, where everyone can participate and has the opportunity to fulfil his or her potential. Equality is supported by legislation designed to eliminate unfair discrimination against different groups in society. Equal opportunity practices include measures taken by organisations to ensure equality in employment, dealings with customers and others. Diversity, in relation to people, means creating a culture and practices that recognise, respect, value and harness the differences in people. Equality of opportunity can only be achieved if diversity is recognised and valued.

For public organisations in Great Britain, such as the Forestry Commission, there are legal obligations to eliminate discrimination, harassment and victimisation, to advance equality of opportunity and to foster good relations between people who share a relevant Protected Characteristic (see Glossary) and those who do not share it. In implementing forestry policies and setting standards, the forestry authorities will address equality and diversity to ensure that all requirements are fulfilled.

Mothers and their children enjoying a discovery walk in a local woodland.

Recreation and access

One of the advantages of forests and woodlands is that they can accommodate large numbers of people without having the appearance of being overcrowded. The UK is densely populated, with 90% of people living in towns and cities. Trees and woodlands provide a vital resource for recreation and learning, and contribute to social cohesion, health and rehabilitation. There is increasing interest in the role forests can play in improving the nation's health, both through physical activity and providing respite from the pressures of modern life.

In Scotland, statutory access rights to forests and woodlands are conferred by the Land Reform (Scotland) Act 2003. In England and Wales, virtually all state-owned woodlands are dedicated for public access under the Countryside and Rights of Way Act 2000. This is in addition to public rights of way. Nearly all woodlands in public ownership, and about 30% of others, make special provision for public access and enjoyment in addition to statutory and permissive access.

In Northern Ireland, the Access to the Countryside (Northern Ireland) Order 1983 makes provision for access to the countryside through public path creation agreements (for linear routes) and access agreements (for wider access) between local authorities and private landowners. However, in practice, access to the wider countryside is mostly limited to country parks, forest parks and National Trust lands. Access on foot is normally unrestricted in forests managed by the Forest Service.

The health benefits of outdoor recreation, including cycling and mountain biking, are well known and documented.

Courtesy of Simon Ledingham.

Climate change

The Climate Change Act 2008 sets a legally binding target for reducing total greenhouse gas emissions in the UK. Taking 1990 as the benchmark, it commits the UK to a reduction of at least 80% by 2050. A framework of five-year carbon targets has been set, which includes a 34% reduction by 2020. In Scotland, the Climate Change (Scotland) Act 2009 sets legally binding emissions reduction targets of 80% by 2050, together with an interim target of a 42% reduction in emissions by 2020.

Measures to mitigate climate change and adapt to its impacts (see Box 4.2) are high priorities for the UK Government and the devolved administrations. Sustainable wood products can contribute to climate change mitigation through their use as substitutes for less sustainable materials. For example, in construction, timber can be used in many situations instead of energy-intensive materials such as concrete and steel.

As fuel, wood can provide a valuable substitute for fossil fuels; although wood releases carbon dioxide when it is burned, an equivalent amount has been sequestered from the atmosphere as the trees grew. In this way, woodfuel derived from sustainable forests, or from short rotation crops such as coppice, can be seen as close to carbon neutral. Harvesting forest residues such as leaves and branches also represents a potential source of woodfuel, providing the practice does not deplete carbon stocks or site productivity over the long term (see the UKFS Guidelines on *Forests and Climate Change* for more information).

Land management activities such as forestry and agriculture are likely to be among the first to feel the effects of a changing climate. The challenge for forestry is to adapt to new threats and new opportunities while still maintaining sustainable forests and woodlands. The first response to the threat of climate change was to concentrate on mitigation – to try to stop it happening. However, with the concentration of greenhouse gases in the atmosphere continuing to increase rapidly and climate models predicting more rapid rates of change, the need for adaptation strategies has become evident. This shift of emphasis means that forest managers have to consider the ways in which forestry will have to cope with change as well as how it can help the drive to reduce emissions.

Box 4.2 The role of UK woodlands in combating climate change

Forests, woodlands and trees can help to combat climate change through mitigation and adaptation.

Mitigation means intervention or policies to reduce emissions of greenhouse gases, or otherwise stabilise their concentration in the atmosphere. One of the ways this can be achieved is by enhancing 'sinks' of greenhouse gases such as carbon dioxide, so that they are 'locked up' and no longer available. This is often referred to as sequestration. Forests have high levels of stored carbon and as trees grow they continually remove carbon dioxide from the atmosphere. Carbon is locked up in the living trees, soils and in timber and wood products. The need to maintain and enhance long-term carbon stocks will introduce additional management objectives into forestry. There is also a need to review forest practices that may detract from the carbon storage functions of forests. As with any industry, mitigation will involve an examination of energy use, particularly in timber transport.

Adaptation can mean any action, either intentional or accidental, taken to minimise the adverse effects of climate change. Adaptation actions will be increasingly necessary to prepare forests and woodlands for the anticipated additional stresses from a changing climate and the resulting extremes in weather. Well-structured and diverse forests will be more resilient to a changing climate. Species and provenance choice will need to take account of predicted changes in climate, while not compromising other sustainable management objectives.

Woodlands and trees can help the wider environment adapt to the impacts of climate change, for example by regulating water flows and alleviating floods, reducing soil erosion, and by providing habitat linkages. They also have an important role in helping society adapt, particularly in urban environments; trees can provide shelter and shade, cool the air, and control the run-off of water.

Standards for carbon sequestration

The practice of planting trees and forests to sequester carbon from the atmosphere to compensate for greenhouse gas emissions has become increasing popular. Many individuals and businesses have invested in tree planting schemes, which have sometimes been of variable quality. The Forestry Commission, in collaboration with other partners, has developed a new code designed to bring robust standards to the forest carbon market. The Woodland Carbon Code sets voluntary standards for woodland projects in the UK that make claims about the carbon they sequester. It clarifies good carbon management in addition to sustainable forest management practice set out in the UKFS. For more information see: www.forestry.gov.uk/carboncode.

Forestry research

The UKFS and its practical delivery are informed by research based on internationally recognised science and best practice. This forms the evidence base for sustainable forest management and the forestry policies of the UK Government and the devolved administrations. The Forestry Commission's Science and Innovation Strategy for British Forestry sets out the agreed priorities and programmes for research to address the environmental, economic and social evidence needs of sustainable forestry.

Forest certification in the UK

In the UK, the UK Woodland Assurance Standard (UKWAS) provides a practical basis for independent forest certification. It is essentially an audit protocol recognised by both major international certification schemes active in the UK (see Section 3): the Forest Stewardship Council (FSC) and the Programme for the Endorsement of Forest Certification Schemes (PEFC). Drawing on the UK Forestry Standard as the basis of practice in the UK, and combining it with the requirements of the certification schemes, the UKWAS standard was developed and is now managed by a broad consensual partnership of environmental, economic and social organisations (Box 4.3).

Independent forest certification has been encouraged and supported by both the Forestry Commission and the

Box 4.3 The UK Forestry Standard and the UK Woodland Assurance Standard

Both the UK Forestry Standard and the UK Woodland Assurance Standard define a standard of practice to help ensure that forests and woodlands in the UK are well managed. Although there are links between the two standards, they serve different purposes.

The UK Forestry Standard (UKFS) defines the approach of the governments in the UK to sustainable forest management. It is based upon the commitments made by the UK to a range of international agreements and conventions, and provides a framework for the delivery of forestry policies in England, Scotland, Wales and Northern Ireland. All forest managers and practitioners in the UK are expected to meet the UKFS Requirements and the authorities will assess applications for forestry proposals against them before giving permission, and before offering grant aid.

The UK Woodland Assurance Standard (UKWAS) is owned and managed by a broad partnership and is independent of government. It is based on the requirements of international forest certification schemes (FSC and PEFC) together with those of the UKFS. The principal purpose of UKWAS is to act as an audit protocol for the independent certification schemes, which are paid for by the forest or woodland owner. These feature the use of labels to provide assurances about the integrity of wood products.

Forest Service. In 2010, certification schemes in the UK covered all of the public forest estate (0.81 million hectares) and about 24% (0.48 million hectares) of other forests. This amounts to around 45% of UK woodland in all. Forest and woodland owners choose to have their forests certified to provide assurances of a high standard of responsible management and because retailers and consumers are increasingly specifying certified timber and wood products (see Timber and wood products below). Although forest certification accounts for only 24% of the non-state woodland area, it amounts to 68% of total timber production from these forests.

The costs of certification have meant that it has generally been confined to the larger forest holdings, and those focusing on marketing timber, rather than the majority of smaller woodlands.

Timber and wood products

Timber procurement policies formed part of the UK Forest Partnership for Action programme for the 2002 World Summit on Sustainable Development. As of 3 March 2013, the new EU Timber Regulation (see Section 3) will make it illegal to place illegally harvested timber and wood products on the EU market. The UKFS, along with the national felling licence legislation, will play a primary role in the application of the EU Timber Regulation in the UK.

In common with other EU countries, the UK has defined public procurement criteria for timber. Since 2009, UK government policy requires that all timber and wood products supplied to UK and England government departments have evidence of sustainability. Similar policies are in place for departments in Scotland, Wales and Northern Ireland, and the policy is being extended to other public bodies. In addition, an increasing number of private organisations and individuals want to be sure that the timber they buy and use is from sustainable sources.

Timber growers and suppliers of wood products will need to provide suitable evidence that the relevant criteria on the legality and sustainability of timber have been met. There are a number of ways that this can be achieved. The most straightforward way, and probably the most appropriate for large forests, is through independent forest certification using a recognised scheme (see above).

Certification offers assurance in relation to individual woods that the requirements of both the UKFS and of the certification schemes are being met. The schemes are reviewed regularly and those meeting government requirements are published on the website for the Central Point of Expertise on Timber (CPET). For woodlands that are not certified, the UKFS may be used to provide a risk-based approach to demonstrating legal and sustainable forest management (see Section 7).

5. UKFS Requirements

This section sets out the UKFS Requirements for each element of sustainable forest management (see Section 2 for further information).

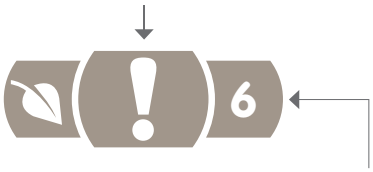
The UKFS Requirements are structured as follows:

General Forestry Practice	24
Forests and Biodiversity	29
Forests and Climate Change	31
Forests and Historic Environment	32
Forests and Landscape	34
Forests and People	35
Forests and Soil	40
Forests and Water	42

Key to symbols

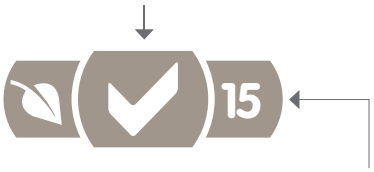
Requirements

Legal requirement



Element of SFM — Reference number

Good forestry practice requirement



Element of SFM — Reference number

Cross-references

Cross-references may be made to the other elements of sustainable forest management (SFM), where the Requirement is common to more than one subject.

Element of SFM — Level of requirement — Reference number

The UKFS Requirements outline the main legislation and are intended as a source of advice. You are advised to consult the relevant statutes for more information and the definitive legal text.

General Forestry Practice

General compliance

All occupiers of land and parties engaged in commercial activities are subject to a range of laws and regulations. Some are of special relevance to land-based activities in general and others are more specific to forestry. Compliance with the law is fundamental to the UKFS, and the main legislation of most general relevance to forestry is outlined in this section. More specific legislation is outlined under the relevant elements of sustainable forest management and in the supporting series of Guidelines.

Forestry activities and businesses must comply with all relevant laws and regulations.

Operations must be authorised by the legal owner.

Reasonable measures should be taken to ensure no illegal or unauthorised activity takes place within the forest or woodland.

Forestry activities and businesses should comply with relevant codes of practice and industry guidelines.

Forest protection

The Forestry Act 1967 conveys wide powers to control felling and provide assistance to promote the interests of forestry, the development of afforestation, and the production and supply of timber in Great Britain. The Forestry Act was amended by the Wildlife and Countryside (Amendment) Act 1985 and, in Scotland, by the Nature Conservation (Scotland) Act 2004 to take account of wider environmental considerations and to incorporate the concept of 'a reasonable balance' between the interests of forestry and the environment. In Northern Ireland, the Forestry Act (Northern Ireland) 2010 conveys wide powers to promote afforestation and sustainable forestry, to protect the environment and to promote recreational use. There are also powers to regulate felling.

The Town and Country Planning Acts do not apply to forestry activities themselves, as they are not defined as 'development'. The exception is where development, for example housing, is proposed on a woodland site, in which case the planning procedures apply. Local authorities (in Northern Ireland, the Planning Service of the Department of the Environment) can apply Tree Preservation Orders (TPOs) and designate Conservation Areas to protect trees that are important in the landscape. Owners are notified of these designations. Local authorities may apply planning conditions to protect existing trees or plant new ones as part of the development consent. They may also enter into 'planning gain' agreements for additional woodland creation or protection. In areas with landscape designations, forest roads and quarries that do not form part of an approved afforestation scheme may be subject to planning controls. Areas of woodland are material considerations in the planning process and may be protected in local authority Area Plans. These plans pay particular attention to woods listed on the Ancient Woodland Inventory and areas identified as Sites of Local Nature Conservation Importance (SLNCIs).

Where required, proposals for felling or thinning must be submitted to the appropriate forestry authority for approval. Following felling, restocking will normally be required.

Note that:

- Submission for approval can be done as an integral part of a grant application.
- There are a number of exceptions: trees under a specified size, trees proved to be dangerous, fruit trees and small-scale felling may not require a felling licence. Priority habitat restoration proposals may not require restocking.
- Forestry authority approval is not required if trees are included in development approval under the Town and Country Planning Acts or other planning legislation.
- EC Directive 97/11 provides *inter alia* that deforestation for the purposes of conversion to another type of land use may be subject to the Environmental Impact Assessment (Forestry) Regulations.
- In Northern Ireland, the Forestry Act (Northern Ireland) 2010 regulates the felling of trees growing on land of 0.2 hectares or more, through granting of felling licences which include felling management plans to control necessary replanting.

Before felling and pruning trees, a check must be made to ensure there are no Tree Preservation Orders or Conservation Area designations. Permission must be obtained from the relevant authority to fell or prune trees subject to Tree Preservation Orders or notification made where Conservation Areas have been applied.

The impacts of forestry on the environment must be taken into account in the submission of forestry proposals.

There is a presumption that forest land should not be converted into other land uses; guidance on the exceptional situations where woodland removal may be possible is available from country forestry authorities.

The capability of forests to produce a range of wood and non-wood forest products and services on a sustainable basis should be maintained.

Forests should be protected from the time of planting or restocking to ensure successful establishment and long-term viability.

Environmental impact

EC Directive 85/337/EEC is transposed into UK legislation by the various Environmental Impact Assessment (EIA) Regulations, which apply to afforestation – including short rotation coppice and Christmas trees, deforestation, and the construction of forest roads and quarries. The regulations require the forestry authority to determine whether a proposal may have a significant effect on the environment, and where this is the case the proposer is required to prepare an Environmental Statement.

Environmental Impact Assessment (EIA) Regulations must be complied with; where an EIA is required, all the relevant environmental impacts must be considered by the proposers and the requirements for public consultation must be met.

Plant health and biosecurity

The Plant Health Act 1967 identifies the Forestry Commission as the competent authority in Great Britain, as regards the protection of forest trees and timber, and empowers the Forestry Commissioners to make orders to prevent the introduction and spread of forestry pests and diseases. The Plant Health (Forestry) Order 2005 lays down a number of conditions and prohibitions to support these objectives. In Northern Ireland, under the Plant Health Act (Northern Ireland) 1967, the Department of Agriculture and Rural Development is the competent authority for these purposes, and the Plant Health (Northern Ireland) 2006 and the Plant Health (Wood and Bark) Order (Northern Ireland) 2006 supports these objectives.

Statutory orders made under the Plant Health Acts to prevent the introduction and spread of forest pests and diseases must be complied with; suspected pests and diseases must be reported to the forestry authority if they are notifiable, and access must be given to Plant Health Inspectors and their instructions followed.

Managers should be aware of the risks posed by pests and diseases, be vigilant in checking the condition of their forests and take responsible measures to combat threats to tree health.

Information should be reported to the forestry authority that might assist in preventing the introduction or spread of forest pests and diseases.

Suspected pests and diseases should be investigated, reported to the forestry authority and biosecurity control measures recommended by the forestry authority carried out.

Forest reproductive material

The Forest Reproductive Material (Great Britain) Regulations 2002 implement EU Directive 1999/105/EC in Great Britain and provide a framework for controlling plant materials used in forest establishment. A voluntary scheme is also in place to cover native species and other species commonly planted for forestry purposes. In Northern Ireland, the Forest Reproductive Material Regulations (Northern Ireland) 2002 are applied through the Forest Service, an executive agency within the Department of Agriculture and Rural Development. The Forest Service maintains a National Register of Basic Material for Northern Ireland.

For species covered by Forest Reproductive Material Regulations, only certified material can be used for forestry purposes.

Forest planning

Forest planning takes place at a number of levels. The highest level is the strategic plan, which defines the broad objectives of the owner and how these can be met across the forest estate, which sometimes comprises several forest areas. Beneath this are the three levels at which the UKFS Requirements should be addressed:

- Forest planning applies to a convenient management unit, called the forest management unit (FMU). These plans will vary with the scale of the forest and the size and nature of the holding – usually called the **forest management plan**.
- Operational planning is concerned with the operational detail of how proposals will be implemented at site level – usually called the **operational plan** or site plan.
- Contingency planning ensures that procedures are in place and can be enacted should unforeseen events occur, for example, forests fires, catastrophic wind damage and accidental spillages – usually called the **contingency plan**.

Forest management plan

The forest management plan is the reference document for the monitoring and assessment of forest holdings and forest practice. It is also used for communicating proposals and engaging with interested parties. The plan itself should be proportionate to the scale, sensitivity and complexity of the forest management unit (FMU).

9 Forest management plans should state the objectives of management, and set out how the appropriate balance between economic, environmental and social objectives will be achieved.

10 Forest management plans should address the forest context and the forest potential, and demonstrate how the relevant interests and issues have been considered and addressed.

11 In designated areas, for example national parks, particular account should be taken of landscape and other sensitivities in the design of forests and forest infrastructure.

12 At the time of felling and restocking, the design of existing forests should be re-assessed and any necessary changes made so that they meet UKFS Requirements.

13 Consultation on forest management plans and proposals should be carried out according to forestry authority procedures and, where required, the Environmental Impact Assessment Regulations.

14 Forests should be designed to achieve a diverse structure of habitat, and species and ages of trees, appropriate to the scale and context.

15 Forests characterised by a lack of diversity due to extensive areas of even-aged trees should be progressively restructured to achieve a range of age classes.

16 Management of the forest should conform to the plan, and the plan should be updated to ensure it is current and relevant.

17 New forests and woodlands should be located and designed to maintain or enhance the visual, cultural and ecological value and character of the landscape.

Operational and contingency plans

Operational plans can make forest practice more efficient and ensure that important site features are known about and protected in advance. Contingency plans address potential threats to the forest environment and accidental events, such as spillages, and help prevent or remedy environmental damage.

Operational plans should be in place before major operations such as harvesting and engineering works take place.

Where appropriate, contingency plans should be in place for dealing with actual and potential threats to the forest and environment.

Forests and Biodiversity

Protected habitats and species

European Union Directives on habitats and species provide a range of protection and conservation measures including the Natura 2000 network of protected sites and European Protected Species. In addition, a range of UK and country wildlife, countryside and conservation legislation provides protection for special sites and listed species, and places duties of care on public authorities to have regard to the conservation of biodiversity in exercising their functions.

A number of protected and priority species are of particular relevance to the woodland environment. Forestry has the potential to affect both the immediate woodland site and the ecology of the wider environment.

Appropriate protection and conservation must be afforded where sites, habitats and species are subject to the legal provisions of EU Directives and UK and country legislation. Advice can be obtained from the relevant authorities on minimising potentially adverse effects for management activity likely to affect them. For Natura 2000 sites likely to be affected, an appropriate assessment is required.

Woodland management and biodiversity

Policies and strategies for forests and biodiversity in the UK emphasise the potential importance of all forests and woodlands for biodiversity. While ancient semi-natural woodlands have highest value for biodiversity, all woods and forests, including those originally established as plantations, can be valuable for biodiversity with appropriate management.

Forests and woodlands should be managed in a way that conserves or enhances biodiversity; opportunities for enhancing biodiversity should be considered in forest management plans.

Where existing forests fall short of the UKFS Requirements for *Forests and Biodiversity*, improvements should be made when suitable management opportunities arise.

Biodiversity in the wider landscape

Woodland owners and managers need to consider the impacts of forestry beyond the forest boundary and engage with others if the conservation and enhancement of biodiversity is to be achieved. This has implications for the location, composition and size of new woodlands.

The implications of woodland creation and management for biodiversity in the wider environment should be considered, including the roles of forest habitats and open habitats in ecological connectivity.

Biodiversity Action Plans

Forests and woodlands provide habitats for a large array of plants and animals, some of which are rare or threatened. The UK Biodiversity Action Plan (UKBAP) lists priority habitats and species; those associated with woodland include wood pasture and parkland. Delivery against the UKBAP is through strategies and plans at country and local levels.

Particular consideration should be given to conserving, enhancing or restoring priority habitats and species identified in the UK Biodiversity Action Plan, through the delivery of country strategies and local level plans.

Forests and Climate Change

Climate change mitigation

The climate change programmes of the UK and of England, Scotland, Wales and Northern Ireland seek to encourage activities that will reduce greenhouse gas emissions while allowing sustainable economic development to proceed. This approach is reflected in these UKFS Requirements, which aim to protect and extend the carbon resource in the forest environment over the long term, as well as the carbon stored in wood products.

A long-term view – for example beyond the first rotation where trees are being grown for timber – of the forest carbon stock is important, and recognises that short-term losses of carbon stocks associated with forestry operations such as thinning, felling, site preparation and civil engineering may be countered by gains over the rotation.

Forest management should contribute to climate change mitigation over the long term through the net capture and storage of carbon in the forest ecosystem and in wood products.

Climate change adaptation and protection

Climate change will have an impact on forest ecosystems in the UK and this will present both risks and opportunities for forestry and the achievement of management objectives. These must therefore be taken into account in forest management plans. Risks include tree mortality, fire, extreme weather events, and pest and disease outbreaks. Opportunities include potential increases in productivity and the range of species that can be grown. The understanding of climate change impacts and the risks to forests is likely to change over time. It is therefore recognised that forest owners and managers will need to base decisions on the current available evidence and advice on good practice.

Forest management should maintain or enhance the resilience of forests and forest ecosystems in order to reduce the risks posed by climate change to their sustainability.

Forest management should enhance the potential of forests to protect society and the environment from the various effects of climate change.

Forests and Historic Environment

Scheduled Monuments

The Ancient Monuments and Archaeological Areas Act 1979 in Great Britain and the Historic Monuments and Archaeological Objects (Northern Ireland) Order 1995 provide the legal basis for protecting historic environment heritage in the UK. Developing and improving on legislation of 1882, these provide for nationally important archaeological sites to be statutorily protected as Scheduled Monuments. The statutory authorities responsible for archaeology and the historic environment are English Heritage, Cadw in Wales, Historic Scotland and the Northern Ireland Environment Agency. Consent is required from the relevant historic environment authority for any work on a Scheduled Monument site that has the potential to damage the monument. Causing unauthorised damage can lead to criminal prosecution.

1 Scheduled Monuments must not be damaged and consent must be obtained from the relevant historic environment authority for any works that have the potential to damage the monument.

Archaeological finds

In England, Wales and Northern Ireland there is a legal requirement to report treasure finds, which are carefully defined under the Treasure Act 1996. In Scotland there is a legal requirement to report all archaeological finds under the Treasure Trove system and only disclaimed finds can be legally acquired. In each country there are regulations affecting the use of metal detectors. Throughout the UK, it is illegal to use a metal detector on, or to remove any archaeological finds from, a Scheduled Monument site without the permission of the historic environment authorities.

2 The historic environment authority must be informed if objects are found that come within the scope of the law covering archaeological finds. Metal detectors must not be used where legally restricted or on a Scheduled Monument site.

Listed buildings and structures

The word 'listing' is used to describe one of a number of legal procedures that help the cultural heritage or historic environment authorities protect significant buildings and structures. When a building or structure is listed, it is placed on a statutory list of buildings and structures of 'special architectural or historic interest'. These lists are compiled by the relevant authority in each country. From an owner's or manager's perspective, the listed building or structure cannot be altered, damaged or demolished without obtaining the necessary consent from the relevant national or local authority. Repairs that match exactly the existing may not need consent, but the local authority or relevant historic environment authority will advise, as the impact and effect of any repairs is not always straightforward.

3 Listed building consent must be obtained from the local authority or relevant historic environment authority to demolish a listed building or structure or any part of it, or to alter it in any way which would affect its character, inside or out.

Historic landscape character

The long history of human settlement and land use in the British Isles has meant that there are very few landscapes in the UK that are entirely natural. The historic environment shapes landscape character and, through its physical remains, tells us about the organisation of society and about how humans interacted with their environment over time. It also reveals how people adapted to ongoing climate, economic and technological change. There are also many historical and literary associations with particular land uses, historical features and areas of landscape that bring a cultural dimension to the historical value. Policies have been developed to reflect the importance of historic character and protect important landscapes. Many areas have special designations and some may have locally-specific policies that apply in addition to those accompanying the designation.

In some situations, creating new forests and woodlands can enhance or develop the historic character of the landscape, but in others it may be inappropriate and detract from it. Where existing forests were planted with little attention to the historic landscape, felling and restocking presents an opportunity to reassess their design; this is especially the case where previously unrecorded features have since been identified. In many parts of the country there are projects identifying the historic character of landscapes that can help inform decisions about a proposed change.

Forests should be designed and managed to take account of the historical character and cultural values of the landscape.

Forests should be designed and managed to take account of policies associated with historic landscapes, battlefield sites, historic parks and gardens, and designed landscapes of historic interest.

Historic features

The primary responsibility for land managers in relation to historic features is to ensure they are conserved and not accidentally or unknowingly damaged. This will involve an appropriate evaluation of the site, and an assessment of features of importance – whether scheduled or not – as part of the forest management plan. A range of measures can then be set out in the operational plan to ensure the features are protected, and these will extend to a reasonable area of their settings. Historic features are not confined to archaeological remains and include a range of features of local significance, for example earth banks and veteran trees. Each feature will need to be evaluated on an individual site basis. Advice is available from the local historic environment services (see the UKFS Guidelines on *Forests and Historic Environment*).

Steps should be taken to ensure that historic features, which may be adversely affected by forestry, are known and evaluated on an individual site basis, taking advice from the local historic environment services.

Forest management plans and operational plans should set out how important historic environment features, including veteran trees, are to be protected and managed.

Where existing forests do not meet the UKFS Requirements for *Forests and Historic Environment*, improvements should be made when management opportunities arise.

Forests and Landscape

Landscape context

The landscapes of the British Isles are renowned for their beauty and diversity. The variety of landscapes found across the UK is a result of the interactions between geology, landform and climate since the last Ice Age, together with the long history of human settlement and land use. Cultural values play a large part in the perception and appreciation of landscapes, and this is particularly the case in the UK, where many landscapes have strong, traditional and locally distinctive 'character', often with historical and literary associations. Policies have been developed to reflect the importance of landscape character and protect landscape qualities. Many areas have special designations and some may have locally specific policies that apply in addition to those accompanying the designation.

All these influences contribute to the setting or 'context' in which forestry is practised today. Through the appreciation and analysis of landscape context, forests and woodlands of an appropriate character can be designed so that they make a positive contribution to the environment, and in some areas create attractive new landscapes. However, it is also the case that, in a limited number of situations, the landscape context will be such that forests, woodlands and associated infrastructure will be inappropriate or restricted, in terms of type, scale or both.

1 Forests should be designed and managed to take account of the landscape context.

2 Forests should be designed and managed to take account of landscape designations, designed landscapes, historic landscapes and the various policies that apply.

Forest landscape design

The factors that determine landscape context provide the framework for assessing the site, determining the sensitivities and refining the forest design objectives. Informed by this assessment, forest design principles, based on the principles of visual design, can be applied. These have stood the test of time and provide a proven rationale for improving the visual quality of forests and woodlands.

3 The principles of forest design, informed by the landscape context, should be applied to ensure visual aspects are appropriately addressed.

4 Where existing forests do not meet the UKFS Requirements for *Forests and Landscape*, improvements should be made when management opportunities arise.

Forests and People

Public rights of way

All four countries of the UK have legislation covering public rights of way. A right of way is a route along which the public have a right of passage. To be newly designated as a right of way, a route must meet certain conditions. These include that the route must have been used peaceably by the public for at least twenty years, it must connect two public places, and it must follow a more or less defined route. Some rights of way can be long distances, for example historical drove or kirk roads; others may be shortcuts across fields or urban areas.

In England and Wales, highway authorities have a duty to maintain legally recognised maps of rights of way, usually shown on Ordnance Survey maps. The situation is similar in Northern Ireland, where district councils hold maps showing 'asserted' and 'alleged' rights of way. The landowner or land manager and the highway authority have responsibilities for rights of way that cross private land.

In Scotland, rights of way are recorded at a national level in the National Catalogue of Rights of Way. This was compiled by the Scottish Rights of Way & Access Society (Scotways), in partnership with Scottish Natural Heritage and with the co-operation of local authorities. The National Catalogue is maintained by Scotways and local authorities hold a copy of records for their area.

Rights of way must be respected and not obstructed.

In England, Wales and Northern Ireland, permission must be obtained from the local authority before gates or stiles are installed across public footpaths or bridleways; the landowner must maintain these in a safe condition.

Access to forests and woodlands

In England and Wales, there is no general statutory right of public access to woodland. However, the Countryside and Rights of Way Act 2000 provides for public access on foot to land mapped as 'access land' by Natural England or the Countryside Council for Wales. The Act also allows for owners, or long leaseholders, to dedicate their woodlands voluntarily as access land in perpetuity. Access land includes 'open country' (generally mountain, moor, heath and down), registered common land or land that has been voluntarily dedicated by its owners for public access. In addition, the Act updates and amends the law relating to public rights of way. The Act also enables an owner to restrict access in some circumstances by a Direction granted by a relevant authority.

In Scotland, the Land Reform (Scotland) Act 2003 establishes a statutory public right of responsible access to woods and forest land, most other land, and to paths which provide access to land. These 'access rights' allow people to responsibly pursue recreational, relevant educational, and certain commercial uses of the countryside; they cover a wide range of non-motorised activities such as walking, cycling, horse riding and ski touring. Access rights are not exercisable over some land, including land used wholly for cultivation of tree seedlings in beds or on which building, civil engineering or demolition works are

being carried out. Detailed guidance for the public and landowners can be found in the Scottish Outdoor Access Code.

In Northern Ireland, the Access to the Countryside (Northern Ireland) Order 1983 gives district councils the power to enter into public path creation agreements with landowners to create public rights along linear routes, and access agreements permitting persons to have access to 'open country' (land consisting wholly or predominantly of mountain, moor, heath, hill, woodland, cliff, foreshore, marsh, bog or waterway) for responsible recreation. The Forestry Act (Northern Ireland) 2010 provides a right of pedestrian access to land managed by the Forest Service, subject to byelaws. There is also considerable informal access to the countryside that takes place outside the above.

In England and Wales, responsible access must be allowed on mapped access land, including woodland dedicated under the Countryside and Rights of Way Act 2000, unless a Direction is in place to restrict or exclude access.

In Scotland, the provisions of the Land Reform (Scotland) Act 2003 must be respected, including access rights to woodland; people must not be obstructed from using their access rights responsibly.

In Northern Ireland, the provisions of the Access to the Countryside (Northern Ireland) Order 1983 must be respected; this provides for access agreements between landowners and district councils, where there is a duty to permit the public to have access to open country for responsible recreation.

In addition to statutory rights of access, many owners permit or encourage additional public use of their forests and woodlands. This may be for recreation or other uses, sometimes traditionally exercised over many years. The provision of visitor facilities and site interpretation can help manage access and increase the public benefit.

Forests and woodlands are sometimes subject to irresponsible use, including trespass, damage, arson, tipping and vandalism. Such anti-social behaviour can damage the woodland environment and is a nuisance to other members of the public.

Landowners and managers should consider providing access to their woodland, in addition to that required by statute.

Where uses of woodland are established by long tradition they should be respected and allowed to continue, providing the use is sustainable and not detrimental to management objectives.

Where public access for recreation and other responsible uses is well established and recognised as a public benefit, or a potential benefit, consideration should be given to the design and provision of appropriate facilities.

Reasonable steps should be taken to discourage anti-social behaviour; where anti-social behaviour continues, the local authority or police should be informed and advice sought.

Equality in service provision

In Great Britain, the Equality Act 2010 protects people with disabilities and other defined 'protected characteristics' (see Glossary) from being discriminated against in the provision of all facilities, goods and services. The Act describes a wide range of illegal discrimination and makes a requirement for reasonable adjustments for disabled people to allow them access to facilities, goods and services. For public sector organisations such as the Forestry Commission, the Act has an impact on forestry policies and on the management of the public forest estate, for example in the provision of forest access and recreation. Activities that affect people which are carried out by public bodies, or supported by public funds, may be subject to an Equality Analysis. This is required to demonstrate that the interests of groups with protected characteristics have been accommodated.

In Great Britain, the Equality Act 2010 must be complied with in the provision of facilities, goods and services.

Employment and health and safety

Landowners and managers need to be fully aware of their obligations under employment health and safety legislation. This is extensive and includes equality of treatment for recruitment processes and contracts, and a duty of care for staff while at work. There is also a duty of care towards people visiting business premises or land whether they are there with permission or not. In some circumstances volunteers may legally be considered as employees, whether engaged directly by the landowner or undertaking activities for a third party.

In Great Britain the Equality Act 2010 is the major piece of legislation that brings together a wide range of previous legislation in the area of employment. The Act provides a legal framework to protect the rights of individuals with protected characteristics, advance equality of opportunity and tackle inequality and discrimination. The Act simplifies, strengthens and harmonises previous legislation and provides Britain with a discrimination law that protects individuals from unfair treatment and promotes a fair and more equal society. In Northern Ireland, changes along the lines of the above are expected to follow.

In addition to the Equality Act, the main employment-related legislation includes:

- Employer's Liability (Compulsory Insurance) Act 1969
- Gangmasters (Licensing) Act 2004
- Health and Safety at Work etc Act 1974
- Management of Health and Safety at Work Regulations 1999
- National Minimum Wage Regulations 1999 (Amendment) Regulations 2009
- Occupiers' Liability Acts 1957 and 1984
- Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995

The rate of accidents within the forestry sector has always been a cause for concern. Addressing this concern requires attention to safety protocols and training, and a commitment to the health and well-being of the workforce. Guidance on managing health and safety in forestry is produced by HSE (the Health and Safety Executive) and its Arboriculture and Forestry Advisory Group (AFAG).

Those responsible for forestry businesses and activities must be aware of the range of legislation relating to employment and ensure compliance.

Responsibilities under health and safety legislation must be complied with in relation to employees, contractors, volunteers and other people who may be affected by their work.

Safe working practices must be implemented, and the safety of plant and machinery must be ensured, as set out in legislation and the guidance produced by HSE (the Health and Safety Executive) and its Arboriculture and Forestry Advisory Group (AFAG).

Insurance must be in place where it is a legal or contractual condition in relation to employment, third parties and public liabilities.

Visitor health and safety

The Occupiers' Liability Acts 1957 and 1984, which apply across the UK, direct landowners and managers to ensure that visitors to forests and woodlands are not put at risk. This includes visitors exercising rights of access or using permissive ways and dedicated land, and also covers responsibilities to people who are not invited or permitted to be on the land in question. In this case, a duty of care still exists if:

- the landowner or manager is aware of a danger or risk, and it is known that people may be in, or come into, the vicinity of the danger;
- the risk is one against which the landowner or manager may reasonably be expected to offer some protection.

The landowner or manager must discharge their statutory duty of care in relation to people visiting land, whether or not they are there with permission.

In England and Wales, reasonable care must be taken to ensure the safety of visitors using permissive ways and land dedicated under the Countryside and Rights of Way Act 2000.

Forest environments can present a range of natural and man-made hazards that could put visitors at risk. Natural hazards include old trees and unstable rock faces. Man-made hazards include quarries, mineshafts and abandoned structures, as well as potentially hazardous activities such as forest operations, pest control measures and some sports.

The HSE (Health and Safety Executive) and its Arboriculture and Forestry Advisory Group (AFAG) produce detailed guidance on managing public safety in relation to forest operations, such as that required for harvesting sites. This includes the definition of roles and responsibilities and the selection and management of control measures – for example, diverting routes and providing information and signs.

Hazards that pose significant and foreseeable risks to visitors should be managed to ensure the risks are minimised, whether or not the area is open to the public.

All those involved in forestry should be familiar with and follow industry standard health and safety guidance on managing public safety.

Public involvement and local livelihoods

Before approval by the forestry authority, proposals for felling or planting are subject to a consultation procedure and available for public comment. Where an Environmental Impact Assessment is required these processes are extensive. Although these arrangements are appropriate for the majority of proposals, and are required under the Forestry Acts and Environmental Impact Assessment Regulations, taking further steps to involve people who have a recognisable interest in a proposal can help improve the social benefits of an activity.

The Equality Act 2010 encourages public engagement and consultation in all planning and decision making that can have an affect on people. The engagement is intended to be inclusive and involve people from the Protected Characteristic groups in all relevant communities of interest, both existing and potential. Doing so will help ensure that the facilities, goods and services provided are suitable for the widest range of people.

Forest and woodland-based enterprises of all types make an important economic contribution to the local economy. This can be particularly important in supporting rural livelihoods and providing new economic activity in regenerating urban areas.

Consideration should be given to involving people in the development of forestry proposals who have a recognisable interest in the proposal or its outcomes.

Consideration should be given to promoting and facilitating local forest and woodland-based enterprises and economic activities.

Forests and Soil

Waste management

Waste management regulations apply to sewage sludge and other waste materials (such as waste soil, bark, wood or other plant material) that may be applied to forest or other soils (as set out by the Waste Management Licensing Regulations 1994 (as amended for England, Wales or Scotland), and the Waste Management Licensing Regulations (Northern Ireland) 2003 (as amended)). Any operations involving the above must be registered with the regulatory authority. Sewage sludge may be applied to forest land, providing this results in ecological improvement and does not cause levels of potentially toxic elements in soils to exceed those permitted under the Sludge (Use in Agriculture) Regulations 1989 (as amended). There are exceptions from the Waste Management Regulations for the application of materials not considered to be 'waste', such as brash, and exemptions for wood ash up to defined amounts, providing these ameliorate the soil.

1 The regulatory authority must be consulted prior to the application of wastes to forest soils, including sewage sludge, waste soil or compost, waste wood, bark or other 'listed substances'. Conditions applied to permissions or licences, including 'relevant objectives', must be complied with. W11

Control of pesticides

The Control of Pesticides Regulations 1986 (as amended) provide details of pesticides subject to control and prescribe approvals required for supply, storage and use, including aerial application. Users of pesticides are required to take all reasonable precautions to protect the health of humans, animals and plants, safeguard the environment and, in particular, avoid the pollution of water.

2 Where a designated site or priority habitat or species might be affected, appropriate regulators and conservation agencies must be consulted prior to the aerial application of pesticides and the use of pesticides in or near water, and, where appropriate, authorisation obtained. W5

3 All those employed to use pesticides must be trained to the required standard or their work supervised by a certified person. Operators must fully comply with instructions on pesticide product labels. W6

Soil properties

The physical structure of a soil affects the movement of gases, water and nutrients. A good structure is vital for soil fauna and the growth and reproduction of trees and other flora. Ancient woodlands in particular are a valuable resource of relatively undisturbed soils, which are likely to be of high biodiversity value. The nature and structure of soil is strongly influenced by the amount and quality of organic matter present and by the inorganic constituents of the soil matrix. These also determine the chemical properties of soils, including soil fertility. Forest management, as well as changes in environmental conditions,

can have impacts on fertility through influencing the availability of nutrients and the capacity of soils to buffer adverse effects.

Soil micro-organisms play a vital role in the retention, breakdown and incorporation of organic matter and influence soil structure and porosity. Soil microbial activity is also directly linked to carbon and nutrient cycles and breakdown of pollutants. A decline in levels of soil organic matter can lead to an increase in the susceptibility of soil to compaction, lower infiltration rates, and possibly increased run-off or erosion. Climate change projections of rising temperatures could accelerate mineralisation rates and soil carbon loss.

The quality of forest soil should be protected or enhanced in terms of its physical, chemical and biological properties.

Forest soil fertility levels should be maintained to safeguard the soil's character and productive potential.

Forest operations should be planned and managed to avoid damage to soil structure and function; should damage occur, reinstatement measures should be undertaken and adverse effects mitigated.

Environmental protection

Forest management activities such as cultivation and drainage can affect neighbouring land and water users through run-off and erosion. Soil disturbance can cause the loss of soil carbon – increasing greenhouse gas emissions and reducing soil carbon stocks.

The environment adjacent to forests should not be subject to adverse effects due to water run-off, contamination or erosion arising from forest management practices.

Forests and Water

Water Framework Directive

The EU Water Framework Directive 2000/60/EC and supporting legislation across the UK established a comprehensive system for the protection, improvement and sustainable use of the water environment, including the introduction of River Basin Management Plans (see the UKFS Guidelines on *Forests and Water*). The Directive places controls over water abstractions, impoundments and engineering activities in or adjacent to watercourses that may have impacts on river and lake hydromorphology. Note: the definition of 'in or adjacent to watercourses' is dependent on regional byelaws but often refers to within 7 m of a watercourse.

Prior authorisation must be obtained from the water regulatory authority for building, engineering and other activities in or adjacent to watercourses that affect river hydromorphology; this includes water abstraction, impoundments, constructing culverts and extracting river gravel. Authorisation for gravel extraction may also be required from the conservation agency if the river is designated as, or flows through, a Special Area of Conservation, Special Protection Area or Site of Special Scientific Interest (Area of Special Scientific Interest in Northern Ireland).

Pollution control

In England, Wales and Northern Ireland it is an offence to cause or knowingly permit the entry of poisonous, noxious or polluting material into any controlled waters. Forest managers must meet their legal obligations under the Water Environment (Water Framework Directive) (England and Wales) Regulations 2003, the Water Environment (Water Framework Directive) (Northumbria River Basin District) Regulations 2003, the Water Environment (Water Framework Directive) (Solway Tweed River Basin District) Regulations 2004, the Water Environment (Water Framework Directive) Regulations (Northern Ireland) 2003, the Water (Northern Ireland) Order 1999 (including amendments up to 2004), and other relevant legislation, when carrying out all forestry operations. In England and Wales, it is an offence to fail to meet the requirements of a Water Protection Zone, as specified under the Water Resources Act 1991 (Amendment) (England and Wales) Regulations 2009. There is also a requirement to abide by any Work Notices issued to polluters to restore water quality and prevent damage to, or restore, the physical condition of water if the riverbed or banks are damaged.

In Scotland, it is an offence to carry out, or to cause or permit others to carry out, any controlled activity unless that controlled activity is authorised and carried out in accordance with that authorisation. When carrying out forestry operations, legal obligations are defined under the Water Environment and Water Services (Scotland) Act 2003, the Water Environment (Controlled Activities) (Scotland) Regulations 2005, the Water Environment (Diffuse Pollution) (Scotland) Regulations 2008, and other relevant legislation. Authorisation is given under the Water Environment (Controlled Activities) (Scotland) Regulations 2005 (as amended) subject to General Binding Rules for specific activities, such as operating any vehicle, plant or equipment for certain purposes, the storage and application of fertiliser, the construction and maintenance of water-bound roads and tracks, and the discharge of water run-off via a surface water drainage system to the water environment.

2 The entry of poisonous, noxious or polluting material into the water environment must not be caused or knowingly permitted (unless authorised by the water regulatory authority).

3 Any water containing fish, or any tributary of that water, must not be rendered poisonous or injurious to fish, their spawning grounds, fish spawn or the food of fish (unless authorised by the water regulatory authority).

4 In Scotland, all forestry operations must meet relevant General Binding Rules and any divergence must be licensed or registered with SEPA (Scottish Environment Protection Agency).

Control of pesticides

The Control of Pesticides Regulations 1986 (as amended) provide details of pesticides subject to control and prescribe approvals required for supply, storage and use, including aerial application. Users are required to take all reasonable precautions to protect the health of humans, animals and plants, safeguard the environment and, in particular, avoid the pollution of water.

5 Where a designated site or priority habitat or species might be affected, appropriate regulators and conservation agencies must be consulted prior to the aerial application of pesticides and the use of pesticides in or near water, and, where appropriate, authorisation obtained. 2

6 All those employed to use pesticides must be trained to the required standard or their work supervised by a certified person. Operators must fully comply with instructions on pesticide product labels. 3

Groundwater regulations and Nitrate Vulnerable Zones

These regulations protect groundwater from pollution caused by careless disposal of potentially harmful and polluting substances. Under the Groundwater (England and Wales) Regulations 2009, and the Groundwater Regulations (Northern Ireland) 2009, as amended, permission is needed from the water regulatory authorities (England, Wales and Northern Ireland) to dispose of 'listed substances' to ground, including sprayer washings.

In Scotland, under the Water Environment (Controlled Activities) (Scotland) Regulations 2005 as amended by the Water Environment (Groundwater and Priority Substances) (Scotland) Regulations 2009, prior authorisation is needed from SEPA to dispose of any hazardous substance or any other pollutant.

Authorisation is not required for normal use of pesticides covered by relevant codes of practice, except in Scotland, where authorisation is given subject to General Binding Rules.

Some areas of the UK are designated as having groundwater vulnerable to the addition of nitrogen from fertilisers or organic amendments under the EU Nitrates Directive (91/676/EEC). Protection of Water Against Agricultural Nitrate Pollution Regulations came into force in 1996 in England, Scotland, Wales and Northern Ireland. These Regulations were replaced

by the Action Programme for Nitrate Vulnerable Zones (Scotland) Regulations 2008, Nitrate Pollution Prevention (Wales) Regulations 2008 and Nitrate Pollution Prevention Regulations 2008, which identify Nitrate Vulnerable Zones (NVZs) as areas where nitrate pollution from agriculture is a problem. In Northern Ireland, a total territory approach to implementation of the Nitrates Directive was adopted in 2004, resulting in Nitrates Action Programme measures applying across the whole of the country. The legislation applies directly to agriculture, but it is recommended that any nitrogen fertilisation or application of organic amendments to forests within NVZs adhere to the restrictions contained within these Regulations.

Groundwater must be protected from harmful and polluting substances, including sprayer washings; the water regulatory authority must be consulted regarding the disposal of such substances to land.

Oil and fuel storage

Forestry operations frequently involve the permanent or temporary storage of oils and fuel, including containers, mobile bowsers and drums. The Control of Pollution (Oil Storage) (England) Regulations 2001, the Water Environment (Controlled Activities) (Scotland) Regulations 2005, the Water Environment (Oil Storage) (Scotland) Regulations 2006 and the Control of Pollution (Oil Storage) Regulations (Northern Ireland) 2010 impose requirements aimed at preventing leakage and pollution. Although these regulations do not yet apply in Wales, meeting these requirements will help prevent water pollution.

Oil and fuel must be stored in a way that minimises the risks of leakage and pollution.

Water supply

The EC Directive 98/83/EC on the quality of water intended for human consumption (the Drinking Water Directive) sets bacteriological, chemical and aesthetic standards for the quality of all public and private water supplies. The requirements of the Directive are transposed into national legislation, in respect of public water supplies, through Water Supply (Water Quality) Regulations. In respect of private water supplies, the requirements are transposed into national legislation through private water supply regulations. The objective of the Directive and Regulations is to protect human health by ensuring that water intended for human consumption is wholesome and clean. Article 7 of the Water Framework Directive covers the protection of Drinking Water Protected Areas with respect to the need to reduce levels of water purification treatment required for public supply.

The Drinking Water Inspectorate in England, Wales and Northern Ireland and the Drinking Water Quality Regulator for Scotland are responsible for regulating both public and private water supplies. Local authorities have a duty to complete a risk assessment for all private water supplies, monitor their compliance with drinking water standards, investigate any failures and advise on improvements to water treatment.

Forestry operations must not lead to harmful or polluting substances contaminating public or private water supplies.

Flood risk management

On some watercourses in England and Wales, particularly those designated as 'Main River' for flood protection purposes, periodic access for maintenance is required. In such access areas, consent may be required from the Environment Agency for the planting of trees within 7 m of the watercourse. Restrictions may also apply on designated watercourses in Scotland and Northern Ireland.

Appropriate regulators must be consulted for new woods next to flood defences, and the necessary consents obtained.

Waste management

Waste management regulations apply to sewage sludge and other waste materials (such as waste soil, bark, wood or other plant material) that may be applied to forest or other soils (as set out by the Waste Management Licensing Regulations 1994 (as amended for England, Wales or Scotland), and the Waste Management Licensing Regulations (Northern Ireland) 2003 (as amended)). Any operations involving the above must be registered with the regulatory authority. Sewage sludge may be applied to forest land, providing this results in ecological improvement and does not cause levels of potentially toxic elements in soils to exceed those permitted under the Sludge (Use in Agriculture) Regulations 1989 (as amended). There are exceptions from the Waste Management Regulations for the application of materials not considered to be 'waste', such as brash, and exemptions for wood ash up to defined amounts, providing these ameliorate the soil.

The regulatory authority must be consulted prior to the application of wastes to forest soils, including sewage sludge, waste soil or compost, waste wood, bark or other 'listed substances'. Conditions applied to permissions or licences, including 'relevant objectives', must be complied with.

Aquatic habitats and species

European Union Directives on habitats and species provide a range of protection and conservation measures including the Natura 2000 network of protected sites and European Protected Species. In addition, a range of UK and country wildlife, countryside and conservation legislation provides protection for special sites and listed species, and places duties of care on public authorities to have regard to the conservation of biodiversity in exercising their functions.

A number of protected and priority species are of particular relevance to the aquatic environment. Forestry operations have the potential to affect the immediate aquatic environment and for the effects to be exported well beyond the confines of a site.

Appropriate protection and conservation must be afforded where sites, habitats and species are subject to the legal provisions of EU Directives and UK and country legislation. Advice can be obtained from the relevant authorities on minimising potentially adverse effects for management activity likely to affect them. For Natura 2000 sites likely to be affected, an appropriate assessment is required.

Water quality and buffer areas

Water flowing from and within forests supports habitats for a large range of plants and animals, and is used for both public and private drinking water supplies, agriculture, industry and recreation. Well-oxygenated water that is low in sediment content and free from contaminants is required. Water quality can be maintained or enhanced through good forest planning and management, and in particular through the identification and management of buffer areas. These areas, which will include the riparian zones next to watercourses, are set aside to help buffer any potentially adverse effects of adjacent land management. A range of special measures applies to buffer areas in terms of forest and operational planning and any applications of pesticide or fertiliser. These measures ensure that soil disturbance, siltation and the risk of pollution are minimised.

A buffer area is fundamental to both existing and new forests. Key aspects of the design of the buffer area are width, structure, choice of species and management regime. Extending the buffer margin to include wet and boggy source areas can be particularly important in relation to pesticide applications. In general, the aim in buffer areas is to establish and maintain a partial cover of riparian woodland comprising species native to the location and soils. It is important for landscape and water environment reasons to avoid parallel-sided corridors and design the margin in response to the landform. In addition, where there are particular sensitivities in the aquatic zone, such as salmonid spawning beds or the presence of the freshwater pearl mussel, wider buffer areas may be required. Factors such as climate, altitude, slope and soil type all have a bearing on the effectiveness of the buffer area and therefore on the desired width. The recommended minimum widths of buffer areas from forest edge to water's edge to protect the aquatic zone are set out in Table 5.1.

Table 5.1 Minimum buffer widths from forest edge to the watercourse/body or abstraction point.

Buffer width	Situation
10 m	Along permanent watercourses with a channel less than 2 m wide. (Narrower widths of buffer area may be allowable along minor watercourses with a channel less than 1 m wide, especially on steep ground.)
20 m	Along watercourses with a channel more than 2 m wide and along the edge of lakes, reservoirs, large ponds and wetlands.
50 m	Around abstraction points for public or private water supply, such as springs, wells, boreholes and surface water intakes.

Where existing forests do not meet the UKFS Requirements for *Forests and Water,* priorities for improvement should be identified and implemented at the earliest practical opportunity.

Forest management should contribute towards achieving the objectives of River Basin Management Plans and ensure that forestry pressures on the aquatic environment are addressed.

Woodland creation and management should aim to help protect or restore the quality of the freshwater environment by reducing the impact of more intensive land management activities and environmental change.

Early consultation with appropriate organisations should be carried out to determine site sensitivity and inform forest management plans and operations:

- Water regulatory authority – for water status, location of Nitrate Vulnerable Zones, River Basin Management Plan objectives, risk factors, use of fords and, in England and Wales, for fisheries.
- Local fishery bodies – for fisheries, including identifying key spawning streams and spawning times, and for advice on replacing culverts.
- Water companies – for location of Drinking Water Protected Areas and public water supplies, and for information on the vulnerability of water treatment works.
- Local authorities – for the location of private water supplies.
- Conservation agencies – for the location of designated sites and presence of protected and priority species and habitats.

Watercourses and waterbodies should be identified and appropriate buffer areas established and maintained to protect aquatic and riparian zones from adjacent activities.

Forest drainage should be planned and, where necessary, existing drains should be realigned to ensure that water is discharged slowly into buffer areas and not directly into watercourses.

Forest operations should be conducted to prevent watercourses being polluted with sediment or discoloured; inspections should be carried out during forestry works and any incidents involving contamination of the water environment reported to the water regulatory authority without delay – remedial action should be taken immediately if pollution starts to occur.

Fertiliser and pesticide applications should match the needs of the stand and should be planned with careful attention given to buffer and storage areas, weather and ground conditions, and the risk to water supplies; contingency plans should be in place in case of a spillage.

Where extensive fertiliser applications are being planned within the same catchment, phasing should be considered to ensure nutrient losses do not exceed environmental quality standards.

A minimum of oil and fuel should be stored on site and appropriate precautions should be taken.

Acidification

Acidification is one of the most serious threats to water quality in some parts of upland Britain. The role of forestry in relation to diffuse pollution through acid deposition has been the subject of research and is now better understood. Where forestry could pose a threat, a range of measures and assessment procedures have been agreed to protect waters from adverse effects.

Where new planting or restocking is proposed within the catchments of water bodies at risk of acidification, an assessment of the contribution of forestry to acidification and the recovery process should be carried out; details of the assessment procedure should be agreed with the water regulatory authority.

Water quantity

In some parts of the UK there is a growing imbalance between water demand and supply, leading to potential water shortages. Climate change could put additional pressure on water supplies and river flows, which will be exacerbated by demographic change (see the UKFS Guidelines on *Forests and Climate Change*). In general, trees and forests use more water than shorter vegetation types and therefore new planting in these areas could further reduce water yield and low flows, exacerbating water shortages, reducing aquatic habitat and enhancing concentrations of waterborne pollutants. However, the amount of water used varies between forest type and species, and in some situations woodland water use, particularly for broadleaved species, may be less than other land covers. The ability of trees to protect the soil and increase water infiltration may also offset their higher water use. Forest planning and management thus has an important role to play in managing forest water use and the impact on water quantity.

Where new woodlands are proposed, the sensitivity of downstream water bodies and wetlands to a reduction in water quantity should be considered; where this is an issue, advice should be sought from the water regulatory authority and conservation agency.

6. UKFS Guidelines

This section sets out the UKFS Guidelines for each element of sustainable forest management (see Section 2 for further information). Guidelines on meeting the UKFS Requirements for General Forestry Practice are set out in full. Guidelines for other elements of sustainable forest management are summarised here and given in further detail in the supporting series of Guidelines publications.

The UKFS Guidelines are structured as follows:

- General Forestry Practice* 50
- Forests and Biodiversity 60
- Forests and Climate Change 64
- Forests and Historic Environment 67
- Forests and Landscape 70
- Forests and People 73
- Forests and Soil 76
- Forests and Water 78

Key to symbols

Guidelines

Cross-references

Cross-references may be made to more than one element of sustainable forest management (SFM), where the Guideline is common to more than one subject.

*General Forestry Practice is covered by the UKFS itself and not by an individual Guidelines publication because the Requirements (see Section 5) and supporting Guidelines describe aspects of management that apply to most forest and woodland situations and that are common to the other elements of sustainable forest management.

The table below introduces factors important for general forestry practice. The Guidelines that follow provide more information on how to comply with the UKFS Requirements, grouped by the factor headings.

Factor	Importance for general forestry practice
Forest planning process	
Forest management plans	Forest management plans allow a manager to demonstrate that all relevant aspects of sustainable forest management have been considered. They provide a basis for monitoring and assessment.
Operational plans	Operational plans help to ensure safe and efficient working practices on a site and the protection of the forest environment.
Contingency plans	Contingency plans set out what happens in the event of accidents, unexpected or unplanned events so damage to the forest environment can be minimised.
Forest planning considerations	
Forest productivity	The UK is committed to maintaining or increasing its forest area, and to enhancing the environmental, economic and social values of forest resources.
Forest structure	Diverse forests provide a range of benefits and are more resilient to changing environmental conditions.
Silviculture	A range of silvicultural systems are available to meet management objectives and add to structural diversity.
Felling and restocking	Opportunities are presented at felling and restocking to restructure age classes and to redesign forests to meet UKFS Requirements.
Mammal damage	Wild mammals and domestic livestock can cause damage to forests and woodlands, particularly at the establishment stage. Some such as deer require co-operative action for effective control.
Pests and diseases	Forests and woodlands in the UK are experiencing unprecedented levels of threats from a range of pests and diseases; climate change is expected to exacerbate levels of damage.
Use of chemicals	Chemical pesticides and fertilisers can be an important management tool in some situations but they can cause damage to the environment if used inappropriately.
Fencing	Fencing can have major impacts on wildlife, landscape, archaeology and access.
Forest roads and quarries	Forest roads, quarries and associated works can be highly visible in the landscape and are subject to Environmental Impact Assessment.
Harvesting operations	Harvesting operations are resource intensive and can also have a significant environmental impact both on the forest and surroundings.

General Forestry Practice

Forest planning process

Forest management plans

At its most simple, the details required for a forest or woodland grant or felling application can provide the basis for the forest management plan. This basic plan will be appropriate for the majority of low-key and small-scale proposals, and provides an approach that is proportionate to the risks of the operations involved.

For extensive or sensitive areas, a more comprehensive approach is required. Additional information will need to be collected to ensure that all the relevant issues have been addressed. The most significant proposals may come under the Environmental Impact Assessment (EIA) Regulations, and will require comprehensive analysis.

A thorough forest planning overview is helpful to both the regulatory authorities and landowners and managers; it has the advantage of allowing UKFS Requirements and Guidelines to be considered over a larger area and a longer, more appropriate, timescale. The forest management plan provides assurances of intent and therefore individual operations within it can be approved with a lighter touch.

Some UKFS Requirements and Guidelines are expressed as maximum or minimum proportions of the forest. In these cases the area in question is the forest management unit (FMU). The FMU is the area subject to a forest management plan or proposal. This area is selected by the owner and/or manager and will be determined by the nature of the forest, the proposed operations and management objectives. Extensive FMUs have the advantage of allowing a strategic approach to be taken in achieving UKFS Requirements, both in terms of the area covered and over time.

The process of producing a forest management plan can be organised into seven distinct stages (Table 6.1).

Table 6.1 The process of producing a forest management plan.

Stage	Objective	Activities and/or sources of information
Scoping	Development of management objectives	Owner's objectives, the potential of the site, UKFS Requirements and Guidelines, forestry strategies, policies and plans at country, regional and local level, forestry frameworks.
	Analysis of interests or 'stakeholder analysis'	Consideration of all potential interests, including those of specialist interest groups and the local community.
Survey	Collection of information	A comprehensive exercise to collect and map all the information about the site and its location, including any statutory constraints. Meetings held at this early stage with stakeholders and those with specialist knowledge will help identify all the factors involved and alert interested parties to the proposal.
Analysis	Assessment of survey information	The survey information is evaluated in the light of project objectives, allowing the potential of the site to be assessed.
Synthesis	Development of a design concept	The broad concept for the forest design is formulated from the information that has been collected and analysed, including the visual aspects.
	Development of a draft management plan	The design concept is refined and developed into a draft management plan. The draft forms the basis of consultation with interested parties. Several drafts may be required in an iterative process.
	Finalisation of the plan and submission for approval	The draft is amended, refined and firmed up into a final forest management plan.
Implementation	Development and implementation of work programmes	Operational plans are developed from the forest management plan and work programmes are implemented.
Monitoring	Evaluation of progress	Indicators of progress are checked at regular intervals. Data are collected and recorded to evaluate management.
Review	Periodic updates of the forest management plan	Work done on the plan is recorded, and at regular intervals the plan is updated to keep it current. Periodically (usually at five-year intervals) the plan is thoroughly reviewed and updated.

1 Produce a clear forest management plan to demonstrate that all relevant aspects of sustainable forest management have been considered and to provide a basis for implementation and monitoring. The plan should:

- state the objectives of management, and how sustainable forest management is to be achieved;
- provide a means to communicate forest proposals and engage interested parties;
- serve as an agreed statement of intent against which implementation can be checked and monitored.

Operational plans

Operational or site planning helps ensure safe and efficient working practice on site and the protection of the forest environment. The starting point is a thorough assessment that identifies important features to be protected and options as to how the work could be undertaken. From this a detailed operational plan can be developed which sets out the working arrangements for the site, protected areas and other site constraints. It is particularly important that the operational plan is communicated and understood by all those involved.

2 Produce a clear operational plan that is understood by all those working on the site. For major operations, the plan should address:

- potential hazards to workers;
- potential hazards to forest users – by making them aware of operations and putting diversions in place;
- machine access, refuelling and timber stacking;
- how to safeguard sensitive or easily damaged parts of the site;
- how to ensure only the intended trees and shrubs are felled;
- how the site will be left on completion, including the disposal of waste materials;
- how to modify operations in case of bad weather.

Contingency plans

Contingency plans cover what happens in the event of an unexpected or unplanned event. For site operations this may include accidents and dealing with spillages or other problems that could pose a serious risk to water supplies and aquatic ecosystems. The Environmental Liability Directive (2004/35/EC) seeks to achieve the prevention and remedying of environmental damage and reinforces the 'polluter pays' principle, making operators financially liable for damage. Contingency plans can also be used to address other threats to the forest, for example fire, extreme weather events such as gales, or outbreaks of pests and diseases.

3 Have appropriate contingency plans in place to deal with risks to the forest, including spillages, pest and disease outbreaks, extreme weather events and fire. 18

Forest planning considerations

This section sets out the key forest management issues that should be considered when producing a forest management plan.

Forest productivity

The maintenance of the productive potential of forests includes both timber production, which serves the development of forest industries and economic well-being, and wider non-market benefits and values such as recreation, and other ecosystem services. The essential consideration for the landowner or manager is to ensure that the forest thrives and is not degraded. This includes protecting young trees to make sure they become

successfully established, and protecting the health of forests and woodlands, for example, by ensuring they have the necessary resilience to cope with emerging threats and changing conditions – in particular climate change. It also involves maintaining levels of fertility and site potential for future rotations.

4 Retain or expand the forest area and consider compensatory planting where forest area is lost through land-use change. 9

5 Ensure new woodland and replanting becomes established, and young trees are not overcome by competing vegetation.

6 Plan for forest resilience using a variety of ages, species and stand structure; consider the risks to the forest from wind, fire, and pest and disease outbreaks. 16

7 Ensure the removal of forest products from the site, including non-timber products, does not deplete site fertility or soil carbon over the long term and maintains the site potential. 7 20

Forest structure

Ensuring a forest has a varied structure in terms of age, species, origin or provenance and open space will provide a range of benefits. It will endow forests with the resilience necessary to cope with emerging threats and changing climatic conditions, and will provide for flexibility in management options, for example by allowing for modifications to forest practice (see the UKFS Guidelines on *Forests and Climate Change* and also *Forests and Biodiversity* for more information).

Structural diversity can be increased by incorporating open areas and through phased felling and restocking to ensure that, over time, a varied woodland develops. As part of this, some trees can be left as long-term forest cover to produce standing and fallen deadwood. For woods of less than 10 hectares, internal diversity is less important – in these situations diversity can be considered in the context of the landscape setting. There are also some woodlands that derive their particular landscape character or biodiversity value from a principal species and in these situations a case for divergence from the guidelines can be made.

Open space is a key element of diversity within woodland. It can be used to develop permanent internal edges, structural diversity, and flexibility for operational management. Wildlife habitat can be enhanced by developing non-woodland elements, such as streams, ponds, roads, utility wayleaves and rides. Open space is also important for the provision and development of access and recreation.

8 Diversify forest composition so that no more than 75% of the forest management unit is allocated to a single species and a minimum of the following are incorporated:

- 10% open space;
- 10% of other species or ground managed for environmental objectives;
- 5% native broadleaved trees or shrubs.

Note: (i) Where more than one species is suited to the site and matches the management objectives, opportunities must be taken to further diversify the above species composition: this is important in the context of climate change. (ii) In woodlands of less than 10 hectares and in native woods the above proportions may be relaxed providing the adjacent land uses provide landscape and habitat diversity. 11 23

9 Develop a long-term forest structure of linked permanent habitats, such as riparian woodland, open space and broadleaves. 19

10 Leave a proportion of standing and fallen deadwood: concentrate it in areas of high ecological value, where there is existing deadwood and where linkages can be provided between deadwood habitats – avoid uniform distribution across the forest management unit. 23 10

11 Retain and manage existing veteran trees and select and manage suitable individuals to eventually take their place. 24 16

12 Manage a minimum of 15% of the forest management unit with conservation and the enhancement of biodiversity as a major objective. 20

Silviculture

A range of silvicultural systems are available to provide flexibility in meeting management objectives and to add to the structural diversity of the forest. Silvicultural systems with a lower environmental impact than clearfelling are recommended in semi-natural woodland. In the context of climate change, varied silviculture will increase the resilience of forests and may limit the damage caused by extreme events such as gales or pest outbreaks.

13 Consider alternatives to clearfell systems, such as continuous cover forestry, where suitable sites and species combinations allow and management objectives are compatible. 18 17

14 Maintain a range of stand structures and silvicultural approaches across the forest as a whole, including veteran trees, open-crowned trees, open space and areas of natural regeneration. 17

Felling and restocking

Many forests, particularly those established in the 20th century, were planted or felled and replanted over a short timescale and have little diversity. Other older woods may have been neglected, leading to the development of a uniform structure. In both cases, felling and restocking presents the opportunity to restructure age classes and improve diversity. In even-aged woodlands, this may involve bringing forward felling in some areas and delaying felling and restocking in others. Following initial restructuring, further age class diversity can be introduced in subsequent rotations, especially where the nature of the forest site limited the initial scope.

Rotational felling also presents a major opportunity to reassess the forest through the forest planning process. Future felling coupes can be identified within a long-term forest structure

defined by open ground, watercourses and semi-natural habitats. The various elements of sustainable forest management, detailed in the UKFS Guidelines, can be addressed and changes made where necessary to bring the forest up to current standards. These may include aspects such as the redesign of buffer areas and drainage systems, extending habitats for biodiversity and addressing forest landscape design.

15 In forests characterised by a lack of diversity due to extensive areas of even-aged trees, retain stands adjoining felled areas until the restocking of the first coupe has reached a minimum height of 2 m; for planning purposes this is likely to be between 5 and 15 years depending on establishment success and growth rates.

16 In upland forests, identify future felling boundaries as part of the long-term forest structure; manage compartment edges to increase stability and make use of permanent features such as watercourses and open space.

17 Take the opportunity provided by felling and restocking to redesign forests to meet UKFS Requirements and address issues such as buffer areas, drainage systems, biodiversity habitats and forest landscape design.

18 In semi-natural woodland, limit felling to 10% of the area in any five-year period unless there are overriding biodiversity or social advantages.

Mammal damage

Forests and woodlands may be subject to damage or degradation due to grazing or browsing mammals, particularly when trees are at the establishment stage. The manager's role is to monitor damage and decide whether intervention is necessary.

In areas where deer pose a threat to the forest and wider environment, deer management plans – often incorporating culling – allow a strategic approach to be taken. Keeping records of both deer culled and levels of damage will help inform plans so they can be refined to give more effective levels of control. Participation and consultation with local deer management groups (where they exist) will help to achieve effective deer management on the appropriate landscape scale. In Scotland, Scottish Natural Heritage advises on the sustainable management of wild deer (formerly performed by the Deer Commission), while the Deer Initiative performs similar functions in England and Wales.

Responsibility for wild deer in Northern Ireland lies with the Northern Ireland Environment Agency of the Department of the Environment for Northern Ireland.

19 Monitor forest damage, and intervene to protect vulnerable trees from browsing and grazing mammals, including voles, deer, rabbits, hares, grey squirrels and livestock.

20 In areas where deer are a threat, develop deer management plans – ideally in co-operation with local deer management groups. 43

Pests and diseases

There has been a significant increase in the incidence of pest and disease outbreaks in forests and woodlands in recent years. Climate change is likely to exacerbate these threats in the future. It is vital that all those involved in forest management take a proactive role in monitoring damage, keeping abreast of emerging threats and deciding when intervention is necessary.

21 Consider the susceptibility of forests and woodlands to pests and diseases; take specialist advice and develop strategies for protection.

22 Be vigilant for pests and diseases in forests and woodlands, particularly in urban areas where the risks of new problems are high. 33

Use of chemicals

The use of artificial pesticides and fertilisers is generally a last resort in practising sustainable forestry, although they can have more of a role in energy crops, such as short rotation coppice. Pesticides and fertilisers are expensive, and only deployed in a reactive way to protect trees when a problem has been identified or is highly likely. Their use on special sites such as ancient woodland is particularly discouraged.

23 Minimise the use of pesticides and fertilisers in accordance with Forestry Commission and Forest Service guidance. 13 5 57

Fencing

The alignment and design of forest fences can have major impacts on wildlife, access, landscape and archaeology. Fence lines themselves are not usually prominent but they can generate striking textural changes in the landscape through differences in grazing or land use.

A particular problem of fences in upland areas is that they can be invisible to birds such as black grouse. Techniques to mark fences to improve their visibility and to align them so that they avoid obvious flight paths will help minimise collisions. Fencing also needs to be considered in relation to public access: it is illegal to obstruct rights of way and in other areas access can be an important consideration in fence alignment. When fences are replaced or become redundant, removal is a better option than leaving them as they can be a nuisance to livestock, wildlife and people.

24 Consider the impacts of fencing on biodiversity, landscape, archaeology and access, and minimise adverse effects. 45

25 Consider removing old and redundant fencing rather than leaving it in place.

Forest roads and quarries

Forest roads, quarries and associated infrastructure works can be highly visible in the landscape and therefore come within the scope of the Environmental Impact Assessment

(EIA) Regulations. In areas with landscape designations, roads and quarries that do not form part of an approved afforestation scheme may be subject to planning controls. Considering important viewpoints, and allowing road alignments to respond to the landform – rather than taking the most direct route – can both ameliorate visual impacts and sometimes reduce the amount of cut-and-fill during construction. The construction of forest roads and the extraction of material accounts for a high proportion of the total energy expended in the forest life cycle, and so has a bearing on the sustainability of the timber grown (see the UKFS Guidelines on *Forests and Climate Change*).

Forest roads and access onto them can disrupt forest drainage systems and cause water and soil problems. It is important that road drainage is designed and functions independently from the main forest drainage network. Where minor public roads and bridges are weak, consideration can be given to how the forest road network can be designed or upgraded, to avoid using public roads for timber transport. In many areas, there are timber transport groups that involve local authorities and advise the forestry industry on preferred routes and the options for using rail or sea alternatives to road transport.

26 Minimise the adverse visual impacts of forest roads and quarries; blend road alignments with landform, and locate quarries, roads and bridges to respect landscape character, especially in designated landscapes.

27 Design road surfaces, drainage and harvesting machine access points to avoid erosion and other adverse impacts on soils, watercourses and water quality.

28 Plan forest operations, civil engineering and timber transport to minimise energy use; consider using sustainable biofuels. 12

29 Consider how forest road networks can be exploited to minimise damage to public roads, and take advice from timber transport groups.

Harvesting operations

Harvesting and extraction operations are resource intensive and can have a significant environmental impact on both the forest and its surroundings. With careful operational planning it is possible to combine good silviculture and cost-efficiency with care for people and the environment. Soil compaction, leading to rutting and erosion, can be minimised by the planning and good management of forest operations, such as protecting extraction routes by using layers of fresh brash to spread the machine load. Machine choice and working method affect the ground pressure and the risk of damage. The potential of damage to soils and the water environment is usually greatest in wet weather and consideration needs to be given to how changes in weather will affect operations.

Burning of forest residues such as brash is generally discouraged and is not acceptable on ancient woodland sites. Other management options are less environmentally damaging, but if burning is the only practical alternative, a written application to the environment agencies will be required under the Waste Management Regulations (as amended). The maximum allowed is 10 tonnes in any 24-hour period. The environmental risks, safety and

potential nuisance of burning should all be taken into account as part of the application. Where felling might have an impact on road users, either from trees coming down or from vehicles emerging onto the highway, safety will need to be considered and liaison with the highway authority is advisable.

30 Minimise compaction, rutting and erosion during forest operations by selecting the most appropriate working method for site conditions; monitor operations and modify, postpone or stop procedures if degradation starts to occur. 9 36

31 Maintain adequate brash mats throughout extraction operations. 11

32 On sites vulnerable to compaction and erosion, consider the weather and aim to carry out operations during dry periods; plan ahead for changes in the weather that could affect site conditions. 10 37

33 Keep streams and buffer areas clear of brash as far as practicable; avoid felling trees into watercourses and remove them or any other accidental blockages that may occur. 39

34 Install culverts or log bridges to avoid crossing and blocking drains; restore the site and drains as extraction progresses.

35 Avoid burning brash and harvesting residues unless it can be demonstrated that it is a management necessity, all the impacts have been considered, and the necessary approvals obtained. 11 25

36 Liaise with the highway authority when felling near public highways or when lorries emerging onto the highway might pose a threat to road users.

Forests and Biodiversity

Priority habitats and priority species

1 Seek advice from the relevant forestry authority and nature conservation agency on the requirements of priority habitats and species and on suitable management options.

2 Consider options to extend and improve priority habitats and to increase and extend populations and ranges of priority species; plan forest operations to minimise any adverse impacts.

3 Consider the impacts of the silvicultural system employed; for example, where a clearfell system is used, ensure coupe sizes are compatible with the habitat requirements of priority species.

4 For new forest and woodland proposals, include an assessment of the potential impacts on priority habitats and species as part of the forest planning process.

5 Avoid establishing new forests on soils with peat exceeding 50 cm depth and on sites that would compromise the hydrology of adjacent bog habitats. 5 24

Native woodlands

6 Manage native woodlands to ensure their biodiversity is maintained or enhanced; base management proposals on protecting or extending semi-natural features and pay particular attention to ancient semi-natural woodlands.

7 In ancient semi-natural woodlands, avoid introducing non-native species.

Landscape ecology

8 Improve the ecological connectivity of the landscape for woodland and other species by extending and linking habitat features; consider the juxtaposition of wooded and non-wooded habitats and aim for the best overall result for biodiversity. 29

Ecological processes

9 Consider using ecological processes as a way of delivering biodiversity objectives within a forest management plan – both in silvicultural systems and minimum intervention areas.

10 Assess possible areas for minimum intervention and, where these will deliver habitat objectives, allow ecological processes to develop.

Tree and shrub species selection

11 Diversify forest composition so that no more than 75% of the forest management unit is allocated to a single species and a minimum of the following are incorporated:

- 10% open space;
- 10% of other species or ground managed for environmental objectives;
- 5% native broadleaved trees or shrubs.

Note: (i) Where more than one species is suited to the site and matches the management objectives, opportunities must be taken to further diversify the above species composition: this is important in the context of climate change. (ii) In woodlands of less than 10 hectares and in native woods the above proportions may be relaxed providing the adjacent land uses provide landscape and habitat diversity. 8 23

12 When managing or creating native woodland, encourage a representative range of the native species associated with the woodland type. 24

13 When selecting trees and shrubs for new woodlands, consider the risks and opportunities of climate change for particular species and regions to decide if alternative species or increased species diversity are merited. 25

14 Choose trees or shrubs which are well adapted to the site and are drawn from a sufficiently wide genetic base of parent trees to promote future adaptation. 27

15 Encourage natural regeneration of native tree and shrub species to promote natural selection and climate change adaptation, and conserve distinctive genetic patterns – especially in and around semi-natural woodlands. 28

16 Use the information provided under the Forest Reproductive Material Regulations to establish the origin or provenance of available planting material.

Forest and stand structure

17 Maintain a range of stand structures and silvicultural approaches across the forest as a whole, including veteran trees, open-crowned trees, open space and areas of natural regeneration. 14

18 Consider alternatives to clearfell systems, such as continuous cover forestry, where suitable sites and species combinations allow and management objectives are compatible. 13 17

19 Develop a long-term forest structure of linked permanent habitats, such as riparian woodland, open space and broadleaves. 9

20 Manage a minimum of 15% of the forest management unit with conservation and the enhancement of biodiversity as a major objective. 12

21 Leave some patches of windthrow.

22 Identify sites for long-term forest cover and thin them early.

Veteran trees and deadwood

23 Leave a proportion of standing and fallen deadwood: concentrate it in areas of high ecological value, where there is existing deadwood and where linkages can be provided between deadwood habitats – avoid uniform distribution across the forest management unit. 10 10

24 Retain and manage existing veteran trees and select and manage suitable individuals to eventually take their place. 11 16

Open, scrub and edge habitats

25 Plan open space in new and existing woodland to create and enhance networks of open-ground habitats.

26 Consider practical opportunities to restore open habitats where their value could be reinstated and sustained.

27 Develop graded edge habitats; thin woodland edges to create a diverse and convoluted structure and a transitional zone between habitats.

28 Ensure wetland features such as springs, flushes and bogs are protected, and take opportunities to restore degraded features.

29 Consider how open areas and areas with partial tree or shrub cover can be managed to maintain or enhance their value for biodiversity.

Riparian zones

30 Aim for a mix of shaded and lightly shaded habitat within the riparian zone – around 50% canopy cover on average but guided by local circumstances and the requirements of priority species. 17 80

31 In the riparian zone, favour locally native tree and shrub species and control the spread of invasive and non-native species. 81

32 Remove dense stands of conifers from riparian areas and from the edges of ponds and lakes, and control excessive conifer regeneration. 83

33 Retain large woody debris within streams unless it is clear that it forms a barrier to fish or poses a flood risk; design and manage riparian woodland to sustain the delivery of large woody debris to small watercourses (less than 5 m wide). 84

Habitat creation and restoration

34 Consider expanding native woodlands by creating new woods, restoring native woodland sites and converting non-native woodlands; concentrate on areas that will enhance existing ancient semi-natural woodlands and, where possible, include sites large enough to overcome edge effects.

35 On plantations on ancient woodland sites (PAWS), ensure that features of ancient woodland remnants are protected and consider progressive restoration to native woodland.

36 Consider creating or restoring semi-natural habitats: prioritise special and designated sites, extensions to them, and areas beneficial for priority species or habitats.

Invasive species

37 Where non-native species are invasive and pose problems, control or remove them where this is feasible; take action early while populations are still small.

38 Participate in collaborative actions to control invasive species.

39 Plan for the control of invasive species where feasible by developing barriers to their dispersal; ensure newly created elements in habitat networks do not facilitate dispersal.

40 Consider how forest operations, such as felling and thinning, might promote the spread of invasive species and take action to control them beforehand.

Grazing and browsing

41 Assess grazing levels and the impact on the biodiversity value of the woodland.

42 Take action to control grazing levels that will have negative impacts on the woodland or its biodiversity.

43 In areas where deer are a threat, develop deer management plans – ideally in co-operation with local deer management groups. 20

44 Consider using controlled grazing by livestock as part of the planned management for biodiversity.

45 Consider the impacts of fencing on biodiversity, landscape, archaeology and access, and minimise adverse effects. 24

Forests and Climate Change

Mitigation

Carbon in forest products

1 Where woodlands are managed for timber production, maximise carbon sequestration through efficient management, consistent with the output of durable products.

2 Consider the potential for woodfuel and energy crops within the sustainable limits of the site.

3 Avoid removing stumps unless for tree health reasons or where a risk-based assessment has shown that adverse impacts can be reduced to acceptable levels. 15

Carbon in soils

4 Minimise the soil disturbance necessary to secure management objectives, particularly on organic soils. 13 17

5 Avoid establishing new forests on soils with peat exceeding 50 cm depth and on sites that would compromise the hydrology of adjacent bog habitats. 5 24

6 Consider the potential impacts of soil disturbance when planning operations involving cultivation, harvesting, drainage and road construction. 14 18

7 Ensure the removal of forest products from the site, including non-timber products, does not deplete site fertility or soil carbon over the long term and maintains the site potential. 7 20

Carbon in forest ecosystems

8 Conserve and enhance forest carbon stocks in the medium and long term.

9 Retain or expand the forest area and consider compensatory planting where forest area is lost through land-use change. 4

10 Leave a proportion of standing and fallen deadwood: concentrate it in areas of high ecological value, where there is existing deadwood and where linkages can be provided between deadwood habitats – avoid uniform distribution across the forest management unit. 10 23

11 Avoid burning brash and harvesting residues unless it can be demonstrated that it is a management necessity, all the impacts have been considered, and the necessary approvals obtained. 35 25

Operational carbon footprint

12 Plan forest operations, civil engineering and timber transport to minimise energy use; consider using sustainable biofuels. 28

13 Minimise the use of pesticides and fertilisers in accordance with Forestry Commission and Forest Service guidance. 23 5 57

14 Consider the use of timber for the construction of forest buildings and recreation infrastructure and the use of woodfuel for heating.

15 Consider the energy efficiency of forest buildings, the efficient management of waste and how renewable energy might be used or generated by the forestry business.

Adaptation

Forest planning

16 Plan for forest resilience using a variety of ages, species and stand structure; consider the risks to the forest from wind, fire, and pest and disease outbreaks. 6

17 Consider alternatives to clearfell systems, such as continuous cover forestry, where suitable sites and species combinations allow and management objectives are compatible. 13 18

18 Have appropriate contingency plans in place to deal with risks to the forest, including spillages, pest and disease outbreaks, extreme weather events and fire. 3

19 Consider projections of changes to rainfall patterns when specifying designs for culverts, drainage systems and roads. 31

Adaptive management

20 Review forest rotation lengths in response to changing productivity and wind risks, and review planting seasons in response to changing conditions and establishment success.

21 Review species suitability and diversity over time as forest management plans are renewed.

22 Consider the susceptibility of forests to pests and diseases and develop appropriate strategies for protection; review practice as further evidence becomes available.

Tree and shrub species selection

23 Diversify forest composition so that no more than 75% of the forest management unit is allocated to a single species and a minimum of the following are incorporated:

- 10% open space;
- 10% of other species or ground managed for environmental objectives;
- 5% native broadleaved trees or shrubs.

Note: (i) Where more than one species is suited to the site and matches the management objectives, opportunities must be taken to further diversify the above species composition: this is important in the context of climate change. (ii) In woodlands of less than 10 hectares and in native woods the above proportions may be relaxed providing the adjacent land uses provide landscape and habitat diversity. 8 11

24 When managing or creating native woodland, encourage a representative range of the native species associated with the woodland type. 12

25 When selecting trees and shrubs for new woodlands, consider the risks and opportunities of climate change for particular species and regions to decide if alternative species or increased species diversity are merited. 13

26 Where timber production is an important objective, consider a wider range of tree species than has been typical of past planting, and consider the use of planting material from more southerly origins.

27 Choose trees or shrubs which are well adapted to the site and are drawn from a sufficiently wide genetic base of parent trees to promote future adaptation. 14

28 Encourage natural regeneration of native tree and shrub species to promote natural selection and climate change adaptation, and conserve distinctive genetic patterns – especially in and around semi-natural woodlands. 15

Landscape ecology

29 Improve the ecological connectivity of the landscape for woodland and other species by extending and linking habitat features; consider the juxtaposition of wooded and non-wooded habitats and aim for the best overall result for biodiversity. 8

Environmental protection

30 When siting new woodland, consider the potential benefits in relation to flood alleviation, improvement of water quality and other ecosystem services. 79

31 On steep slopes where there is a risk of slope failure or serious erosion, consider alternatives to clearfelling. 18 35

32 In urban situations, consider the potential benefits of woodland and trees in reducing the impacts of climate change.

33 Be vigilant for pests and diseases in forests and woodlands, particularly in urban areas where the risks of new problems are high. 22

Forests and Historic Environment

Historic context

1 Contact the local historic environment services for information on the historical context; check to see if a historic assessment/categorisation has been undertaken or the landscape is listed or registered as being of historic or design interest. 8

2 Use the historic assessment/categorisation or any description given in a historic register or list, together with the landscape character assessment, to inform the development of proposals. 9

3 Consider the impacts of forestry on the historical context and landscape character in forest management plans; consider opportunities to complement, enhance or re-create landscapes of historic interest. 10

Evidence of the historic environment

4 Take advice on the historical interest of the site from the historic environment services and by checking the historic environment records.

5 Look for indications of the historic environment on the ground and conduct further investigation where evidence is found; commission specialist surveys where evidence is significant.

6 Ensure those working in woodlands are aware of the importance of the historic environment; encourage them to recognise evidence and assist in gathering information.

7 Include long-established boundaries, banks and veteran trees as historic environment features to be protected.

8 Record the nature and position of any historical features or objects such as pottery, flint or bone, and report them to the relevant historic environment services.

9 Where historic environment surveys are requested, offer access and assistance to help extend historic environment records.

Forest planning

10 Ensure the historic environment considerations are fully integrated into the forest planning process.

11 Plan an appropriate area of open space around features of historical significance; for Scheduled Monuments this will normally be a minimum of 20 m. Consider the setting as well as the individual features.

12 Where evidence suggests that significant historical remains may be present, but specific features have not been identified, identify these areas in forest management plans, restrict any planting to smaller trees or shrubs and minimise ground disturbance.

13 For new woods in areas where the landscape history is important, consider restoring tree cover on previously wooded sites.

14 Take particular care to avoid sites of historic interest where short rotation forestry crops are proposed.

Woodland heritage

15 Manage trees and shrubs that may damage important historical sites and features: limit the establishment of woody vegetation and consider removing large trees vulnerable to windthrow.

16 Retain and manage existing veteran trees and select and manage suitable individuals to eventually take their place. 11 24

17 Monitor important historic environment sites and features, including woodland features, to check they are not being damaged or degraded.

Open space

18 Aim to maintain the open settings for features of historical interest; where appropriate monitor changes in vegetation and consider using grazing or mowing as part of the management plan.

19 Manage public access so that open settings for historical features are not subject to erosion or damage caused by visitor pressure.

Forest operations

20 If operations are planned near a Scheduled Monument, consult the relevant historic environment authority before site operations commence. If operations are likely to affect other known or suspected features of historic environment interest, seek advice on operations from the local historic environment service.

21 Avoid disturbing the ground on or near sites of historical significance.

22 Identify relevant historic environment features in the operational plan and identify them on the ground; ensure they are excluded from the operational area and that the plan is communicated to all those working on the site.

23 Avoid using areas of historical importance for storing material, stacking timber or as a parking area for machinery.

24 Where operations are a necessity near vulnerable historical features, take precautions to avoid damage and take particular care with felling and extraction.

Site hydrology

25 Keep drains well away from known archaeological deposits; as a guide a minimum of 20 m, depending on the nature of site hydrology.

26 Where there is preserved archaeology, and drains may be having a detrimental effect, consider blocking or re-routing them.

27 Avoid the establishment of new woodlands or short rotation coppice on areas where changes in hydrology may affect preserved remains.

Access and interpretation

28 Consider providing access to features of historical interest.

29 Consider how the historic environment could be interpreted for visitors as part of an integrated access strategy if that is a management objective.

30 Ensure historical features and any visitor facilities associated with them are well maintained.

Forests and Landscape

Landscape context

Landscape character

1 Refer to relevant Landscape Character Assessments and associated design guidance as part of the forest planning process.

2 Study the landscape character at a local level, identifying the key characteristics of the landscape; use the analysis to inform the forest design.

3 Where new forests or woodlands are proposed, consider the capacity of the landscape to accommodate change, and design them to have a positive impact on landscape character.

Landscape and visual sensitivities

4 Analyse the visual sensitivity and local distinctiveness of the landscape; consider visibility, how people view the area, the nature of the viewing experience and the importance of views.

5 Where visual sensitivity and local distinctiveness are important, communicate the predicted visual effects of proposals to interested parties and consider local opinions in developing the best overall solution.

6 Consider making use of a Landscape and Visual Impact Assessment, proportionate to the complexity of the proposal and the sensitivity of the landscape.

7 Ensure that forest designs adequately reflect the visual sensitivity and local distinctiveness.

Historic context

8 Contact the local historic environment services for information on the historical context; check to see if a historic assessment/categorisation has been undertaken or the landscape is listed or registered as being of historic or design interest. 1

9 Use the historic assessment/categorisation or any description given in a historic register or list, together with the landscape character assessment, to inform the development of proposals. 2

10 Consider the impacts of forestry on the historical context and landscape character in forest management plans; consider opportunities to complement, enhance or re-create landscapes of historic interest. 3

Designed landscapes

11 Check if the landscape is listed in the relevant register or inventory of designed or historic landscapes. If so, seek specialist advice to inform the development of proposals.

12 If the landscape is not listed, but there is evidence that it is part of a park or designed layout, investigate the original design intentions and use these to inform design proposals.

Forest design principles

Shape

13 Analyse the main landscape influences and base forest shapes on either the landform or the enclosure pattern.

14 If the enclosure pattern is dominant, use the field pattern and links to existing hedges and woodlands to guide the design of forest shapes.

15 In landscapes where the landform dominates, design forest shapes that reflect the landform: avoid geometric shapes, symmetry and parallel lines.

16 On hillsides, where the landform predominates, use curving diagonals to run across slopes rather than straight, horizontal or vertical lines.

17 Use the natural or near-natural vegetation pattern to help guide new planting shapes and species patterns.

18 Consider how management practice will achieve the most appropriate forest shapes over time, including the effects of fences, felling coupes and access tracks.

Landform

19 Analyse the landform by identifying lines of visual force; use a combination of contour maps and photographs or a digital terrain model of the landscape.

20 Design the edges of forest shapes, such as planting areas or felling coupes, so that they respond to landform by rising up into hollows following the upward forces, and flow down on ridges with the downward forces.

21 Vary the degree to which the shapes respond to the landform. The main woodland shapes should reflect the major landforms, and the more detailed design – such as edges and internal features – should reflect the minor landforms.

22 Avoid putting straight lines of forests across distinctive landforms or over skylines; where this is unavoidable, take forest margins across skylines at low points.

Pattern of enclosure

23 Analyse the enclosure pattern, and where it is the dominant influence in the landscape use it to guide woodland planning.

24 Use new woodlands to reinforce and extend the enclosure pattern; avoid the imposition of extensive forests in important landscapes that detract from the enclosure pattern.

Scale

25 Consider the relative size of woodland elements and aim to fit with the scale of the landscape.

26 Use smaller-scale woodland elements in valleys and progressively larger elements at higher elevation.

27 On hilltops and ridges, avoid narrow slivers or patches of both trees and open ground.

28 Consider a visual proportion of one-third to two-thirds where there are two main visual elements in important woodland views.

29 Make use of enclosure, nearness and coalescence to increase apparent scale and resolve design issues.

Diversity

30 Consider the appropriate level of visual diversity: this will depend on the location, scale and character of the landscape.

31 Match elements of diversity to the scale of the landscape. Use a greater number of small elements where the landscape is contained, such as in valleys, and progressively fewer and larger elements within simpler landscapes at higher elevations.

32 Emphasise natural features and non-woodland elements as part of the visual diversity of a forest.

33 Pay particular attention to the diversity of external and internal forest edges: vary the tree density and consider adding additional tree and shrub species.

Unity

34 Apply the forest design principles, particularly shape, scale and diversity, to achieve unity in design proposals.

35 Design interlocking shapes with forest margins and edges to make the internal forest elements fit together and to tie the forest into the wider landscape.

Spirit of place

36 Identify what makes a place special or unique and consider how forest design can conserve and emphasise these qualities, rather than detract from them.

Forests and People

Public involvement

1 Consider engaging with the local community by seeking their views, developing proposals that are responsive to them and building co-operative partnerships.

2 As part of the forest planning process, consider which individuals and organisations from all groups in society may have an interest in the formulation of forest management proposals, or something to contribute.

3 Aim to communicate forestry proposals and their operational impacts clearly; consider presenting several options and try to accommodate local needs where they are compatible with management objectives.

4 Consider the cultural significance of woodland features, taking account of local opinion, and develop measures to protect important features in forest management plans.

Accessibility

5 Consider increasing public access to forests and options for how this could be achieved.

6 Ensure all members of society, including hard-to-reach groups, those with protected characteristics and those who may not have been traditional users, are considered when planning the provision of access.

7 Where public access is significant, consider producing an access management plan that involves: regular inspections of the main routes used for public access and any facilities provided; a risk assessment to identify potential woodland hazards and to ensure action is taken to minimise risks; a system for recording data on inspections, work undertaken, and any accidents and incidents.

Visitor information

8 Provide signs and information in order to manage visitors' use of forests; guide visitors away from hazards and help avoid conflicting uses in the same area of forest.

9 Where access is restricted due to forestry operations or other potential hazards, provide and maintain clear signs to inform people of the restrictions.

10 Provide information that will help people to plan their visit, in consideration of disabilities and other special requirements.

11 Consider how signage and interpretation can be used to enhance visitor experience for all groups in society.

12 Consider the guidance on signage provided by the Forestry Commission, local authorities and other specialist organisations dealing with access and accessibility issues.

13 Promote codes of responsible access.

Recreation

14 Consider providing facilities for public recreation within forests and woodlands and how these can be managed.

15 Where recreation use is extensive, consider how activities can be zoned or timed to minimise potential conflicts between different interest groups.

16 Consider developing partnerships with health interests to establish and promote forest recreation activities in relation to health and well-being.

17 Take account of environmental objectives and the impact of recreation on susceptible wildlife, especially at critical life stages such as breeding, nesting and flowering.

Traditional and cultural uses

18 Consider permitting the use of forests for sustainable low-key community uses, especially where such uses are linked to cultural activities or are established by tradition.

Education and learning

19 Consider permitting or promoting the use of forests for education and learning activities of all kinds.

20 Consider providing, or encouraging others to provide, educational interpretation for visitors – especially if a particular wood has distinctive ecological, historical or cultural features.

Volunteering

21 Consider providing, or encouraging others to provide, opportunities for volunteering in woodlands, particularly from groups who would benefit most, such as young, old or disabled people, or those who have not traditionally used woodlands.

22 Manage the health and safety of volunteers and follow appropriate procedures in working with young people and vulnerable people; ensure that landowners' or managers' liabilities in relation to volunteers are understood and insurance policies cover their activities.

Vandalism and anti-social behaviour

23 In forest management plans, use design solutions to mitigate the problems of vandalism and anti-social behaviour.

24 Where vandalism or litter occurs, aim to act promptly to remedy the situation and thus remove the likelihood of further problems.

25 Encourage regular users of woodland to act responsibly and report emerging problems so they can be dealt with quickly.

26 Co-operate with public agencies and partnerships to manage the misuse of woodlands; consider working with others to develop community policing or wardens in areas where problems are significant.

Enterprise development

27 Consider the potential for developing sustainable woodland-based businesses and livelihoods and how this might be explored with interested parties and through local co-operation.

Forests and Soil

Acidification

1 Avoid filling trenches, created for mounding on restock sites, with fresh brash. 7
Note: The above only applies to soils classified as at high risk of increased acidification and/or to catchments of water bodies identified by the water regulatory authority within the River Basin Management Plans as failing or at risk of failing good status due to acidification.

2 On soils classified as at high risk of increased soil and water acidification (regardless of water body status) avoid short rotation forestry or short rotation coppice, and the harvesting of whole trees, forest residues and tree stumps. 4

3 On brownfield sites, consider ameliorating excess soil acidity by incorporating alkaline soil additives.

Contamination

4 Avoid the contamination of forest soils and have contingency plans in place to deal with accidental spillage and pollution.

5 Minimise the use of pesticides and fertilisers in accordance with Forestry Commission and Forest Service guidance. 23 13 57

6 Place any waste or recovered oil in an impermeable container and remove from the site for disposal at a suitable licensed site. 69

7 Where it is necessary to store fuel oils on site temporarily, use double-skinned or bunded, securely lockable tanks. 67

8 When restoring brownfield sites, take particular care with existing contaminants and seek specialist advice in dealing with them.

Compaction

9 Minimise compaction, rutting and erosion during forest operations by selecting the most appropriate working method for site conditions; monitor operations and modify, postpone or stop procedures if degradation starts to occur. 30 36

10 On sites vulnerable to compaction and erosion, consider the weather and aim to carry out operations during dry periods; plan ahead for changes in the weather that could affect site conditions. 32 37

11 Maintain adequate brash mats throughout extraction operations. 31

12 Where compaction has occurred and will affect tree growth or lead to other detrimental effects, apply remedial treatment, but minimise the soil disturbance involved.

Disturbance

13 Minimise the soil disturbance necessary to secure management objectives, particularly on organic soils. 4 17

14 Consider the potential impacts of soil disturbance when planning operations involving cultivation, harvesting, drainage and road construction. 6 18

15 Avoid removing stumps unless for tree health reasons or where a risk-based assessment has shown that adverse impacts can be reduced to acceptable levels. 3

Erosion

16 Address the risks of soil erosion as part of the forest and operational planning processes.

17 Aim for a mix of shaded and lightly shaded habitat within the riparian zone – around 50% canopy cover on average but guided by local circumstances and the requirements of priority species. 30 80

18 On steep slopes where there is a risk of slope failure or serious erosion, consider alternatives to clearfelling. 31 35

19 Consider planting woodland to protect erosion-prone soils and intercept sediment-laden run-off. 9

Fertility

20 Ensure the removal of forest products from the site, including non-timber products, does not deplete site fertility or soil carbon over the long term and maintains the site potential. 7 7

21 Choose tree species and silvicultural systems that are well suited to the site and, with the exception of short rotation forestry or short rotation coppice, do not require continuing inputs of fertilisers. 44

22 Minimise the use of inorganic fertilisers and confine these to areas where analysis clearly shows management benefits, in accordance with a nutrient and soil management plan. 45

23 Plan any fertiliser applications to minimise the risks of nutrient loss. 46

Organic matter

24 Avoid establishing new forests on soils with peat exceeding 50 cm depth and on sites that would compromise the hydrology of adjacent bog habitats. 5 5

25 Avoid burning brash and harvesting residues unless it can be demonstrated that it is a management necessity, all the impacts have been considered, and the necessary approvals obtained. 35 11

Forests and Water

Unlike the rest of the UKFS Guidelines, a number of the water guidelines set out in this section have a legal status in Scotland. These General Binding Rules (indicated by GBR) are included here, where relevant. See the UKFS Guidelines on *Forests and Water* for more information.

Acidification

Note: Guidelines 1–8 apply to catchments of water bodies identified by the water regulatory authority within River Basin Management Plans as failing or at risk of failing good status due to acidification.

1. Where the area of new planting or restocking could contribute to increased acidification or delay recovery, undertake a catchment-based critical load assessment.

2. Avoid new planting or restocking where catchment assessments based on critical load calculations and relevant supporting information indicate this will lead to deterioration in water body status or prevent recovery to good status.

3. Where an area to be felled will exceed 20% of the acidified catchment in any three-year period, undertake a site impact assessment.

4. On soils classified as at high risk of increased soil and water acidification, regardless of water body status, avoid short rotation forestry or short rotation coppice, and the harvesting of whole trees, forest residues and tree stumps. WIDU 2

5. Co-ordinate the phasing and timing of felling of conifers in riparian zones to promote the ecological recovery of watercourses.

6. Limit the planting of alder to less than 10% of the area within riparian zones.

7. Avoid filling trenches, created for mounding on restock sites, with fresh brash. WIDU 1

8. For water-bound roads and tracks, avoid using material resulting in metallic, sulphide-rich or strongly acidic polluted water run-off. GBR22a

Sediment delivery

9. Consider planting woodland to protect erosion-prone soils and intercept sediment-laden run-off. WIDU 19

10. Prior to clearfelling and where access permits, assess the drainage system, identify watercourses, and plan restoration work to reduce the risk of erosion and sediment delivery.

11. Identify sites of protected aquatic and wetland habitats and species, including spawning areas, and ensure protective buffer areas are established.

12 Identify any private or public water supplies and ensure sources are protected from disturbance.

13 Assess whether culverts or other structures are de-stabilising the banks or beds of watercourses, or forming a barrier to fish access – if so plan for their replacement or removal.

Note: Guidelines 14–16 only apply to the operation of machinery in watercourses for dredging, construction of minor or temporary bridges, bank reinforcement, removal of sediment or for boulder placement. Contact the water regulatory authority or fishery organisations for information on fish spawning times, which will vary between fish species.

14 Work must not be carried out when fish are spawning in the affected surface water, or in the period between spawning and the subsequent emergence of juvenile fish. If in doubt about these times, contact the local District Salmon Fishery Board for advice. **GBR9f**

15 Any plant, vehicles or equipment must not be operated in any river, burn or ditch if there is a reasonable likelihood that there are freshwater pearl mussels within 50 m of such an operation. **GBR9g**

16 The operator shall not operate machinery in watercourses during forestry operations. **GBR9h**

17 Minimise the soil disturbance necessary to secure management objectives, particularly on organic soils. 4 13

18 Consider the potential impacts of soil disturbance when planning operations involving cultivation, harvesting, drainage and road construction. 6 14

19 Within defined buffer areas, limit cultivation to hinge mounding.

20 Avoid forest drains discharging directly into watercourses.

21 Align forest drains to run at a maximum gradient of 2° (3.5%) and lead them towards the heads of valleys.

22 No land shall be cultivated that is: within 2 m of any surface water or wetland, 5 m of any spring, well or borehole, or is waterlogged. **GBR20a**

23 No land shall be mole drained on slopes where the overall gradient is >4.5° (8%) **GBR20b**

24 Land must be cultivated in such a way that minimises the risk of pollution to the water environment. **GBR20c**

25 Run-off must be discharged in such a way to minimise the risk of pollution of the water environment. **GBR21a**

26 No discharge from drains shall result in the de-stabilisation of the banks or bed of the receiving watercourse. GBR21b

27 Build roads outside riparian buffer areas wherever possible.

28 When culverts are to be installed, site them at the point where a watercourse is intercepted by a road or track to avoid discharging the watercourse into the road-side drain.

29 Ensure the installation of bridges or culverts does not present barriers to fish movement, or promote channel erosion or bank collapse.

30 Where there is a necessity for in-stream work, ensure this is undertaken in a way that minimises the risk of pollution and damage to freshwater life.

31 Consider projections of changes to rainfall patterns when specifying designs for culverts, drainage systems and roads. 19

32 Avoid road drains discharging directly into watercourses.

33 Where there is a risk of spreading invasive non-native species (such as signal crayfish) take action to clean footwear and vehicles before moving between sites and avoid moving gravel between rivers and catchments.

In Scotland, a large number of additional GBRs apply to the construction of minor GBR6a-f and temporary bridges GBR6g-k, small-scale bank reinforcement GBR8a-f, and the removal of sediment from culverts GBR13a-d.

34 Avoid clearfelling more than 20% of the catchment of a public water supply within any three-year period.

35 On steep slopes where there is a risk of slope failure or serious erosion, consider alternatives to clearfelling. 31 18

36 Minimise compaction, rutting and erosion during forest operations by selecting the most appropriate working method for site conditions; monitor operations and modify, postpone or stop procedures if degradation starts to occur. 30 9

37 On sites vulnerable to compaction and erosion, consider the weather and aim to carry out operations during dry periods; plan ahead for changes in the weather that could affect site conditions. 32 10

38 Plan felling and timber extraction to minimise the number of stream and drain crossings, and protect any crossing points from damage by harvesting machinery.

39 Keep streams and buffer areas clear of brash as far as practicable; avoid felling trees into watercourses and remove them or any other accidental blockages that may occur. 33

40 Avoid fording streams and rivers, unless there is an existing purpose-built ford and measures are taken to minimise the potential risk to the water environment; seek advice from the water regulatory authority.

Nutrient enrichment

41 Consider opportunities for woodland planting to reduce nutrient leaching and run-off to watercourses.

42 Where water bodies are sensitive to nutrient enrichment, including shallow coastal lochs designated for shellfish, limit any clearfelling to less than 20% of the catchment in any three-year period.

43 Within Nitrate Vulnerable Zones (NVZs), ensure any fertiliser applications or organic soil amendments adhere to NVZ Regulations.

44 Choose tree species and silvicultural systems that are well suited to the site and, with the exception of short rotation forestry or short rotation coppice, do not require continuing inputs of fertilisers. 21

45 Minimise the use of inorganic fertilisers and confine these to areas where analysis clearly shows management benefits, in accordance with a nutrient and soil management plan. 22

46 Plan any fertiliser applications to minimise the risks of nutrient loss. 23

47 If heavy rain is forecast, wind conditions are inappropriate, or if the ground is frozen, waterlogged or covered with snow, delay the application of inorganic fertiliser or sewage sludge.

48 Within buffer areas, restrict the application of inorganic fertilisers and only apply by hand; exclude the application of sewage sludge or other organic materials, and avoid the storage of fertilisers or empty fertiliser bags being left overnight.

49 On restock sites in catchments of water bodies sensitive to nutrient enrichment, avoid filling trenches with fresh brash, and avoid applying inorganic fertiliser or sewage sludge until sites have re-vegetated.

50 No fertiliser shall be stored on land that is: within 10 m of any surface water or wetland; within 50 m of any spring, well or borehole; waterlogged; or has an average soil depth of less than 30 cm and overlies gravel or fissured rock, except where stored in an impermeable container. GBR18a

51 No organic fertiliser shall be applied to land that is: within 2 m of any drainage ditch or 5 m of any surface water or wetland; within 50 m of any spring, well or borehole; sloping with an overall gradient in excess of 15°, or 25° on uncultivated land designated for forestry; or has an average soil depth of less than 30 cm and overlies gravel or fissured rock, except where the application is for forestry operations; or is frozen (except where the fertiliser is farmyard manure), waterlogged or covered with snow. GBR18c

52 No inorganic fertiliser shall be applied to land that is: within 2 m of any surface water or wetland, or 5 m of any spring, well or borehole; has an average soil depth of less than 30 cm and overlies gravel or fissured rock, except where the application is for forestry operations; or is frozen, waterlogged or covered with snow. GBR18d

53 No fertiliser shall be applied to land in excess of the nutrient needs of the crop. GBR18e

54 Maintain all equipment used in fertiliser applications in a good state of repair. GBR18f

55 Fertiliser shall be applied on land in such a way and at such times that the risk of pollution to the water environment is minimised. GBR18g

Pesticides

56 Identify opportunities for new woodland to reduce the adverse effects of adjacent pesticide spray drift, leaching and run-off to watercourses and groundwater.

57 Minimise the use of pesticides and fertilisers in accordance with Forestry Commission and Forest Service guidance. 23 13 5

58 Plan the storage, transportation, disposal and handling of pesticides, including containers and planting bags used for treated trees, to prevent spillage and the pollution of watercourses; ensure a contingency plan is in place to mitigate any accidental spillage.

59 If heavy rain is forecast, wind conditions are inappropriate, or if the ground is frozen, waterlogged or covered with snow, delay the application of pesticides.

60 Within buffer areas, exclude field application of pesticides, unless approved for use in or near water, subject to the consent of the water regulatory authority; buffer areas should incorporate boggy source areas and flushes, even if dry at the time of pesticide application.

61 Prior to spraying pesticides, check that the drainage channels in the area to be treated do not discharge directly into watercourses; extend buffer areas to incorporate individual drains where they are not separated from watercourses.

62 The preparation of pesticide for application and the cleaning or maintenance of pesticide sprayers shall be undertaken in conditions such that any spillage, run-off or washings will be prevented from entering watercourses. GBR23a

63 Pesticide spraying equipment shall be maintained in a good state of repair. GBR23b

64 Pesticide sprayers shall not be filled with water taken from the water environment unless a device preventing back siphoning is fitted or the water is first placed in an intermediate container. GBR23c

65 Pesticide treated planting stock shall not be soaked in any watercourse prior to planting. GBR23d

Fuel oils, lubricants and fire-fighting chemicals

66 Plan the storage, transportation and handling of fuels, oils and fire-fighting chemicals to prevent spillage and pollution of watercourses; ensure a contingency plan is in place to mitigate any accidental spillage.

67 Where it is necessary to store fuel oils on site temporarily, use double-skinned or bunded, securely lockable tanks. 7

68 Within buffer areas, exclude the storage and handling of fuel oil, lubricants or fire-fighting chemicals.

69 Place any waste or recovered oil in an impermeable container and remove from the site for disposal at a suitable licensed site. 6

70 Any refuelling must take place at least 10 m away from any surface water. GBR9b

71 Any static plant or equipment used within 10 m of surface water shall be positioned on a suitably sized and maintained impervious drip tray with a capacity equal to 110% of the capacity of the fuel tank which is supplying the tank or equipment. GBR9c

72 Any plant or equipment used in or near surface water must not leak oil. GBR9d

73 The washing of any plant or machinery must take place at least 10 m away from any surface water and the washings must not be allowed to enter any surface waters. GBR9e

Water yield and low flows

74 Where the maintenance of water flows is an issue, consult the water regulatory authority (or water undertaker) and conservation agency before carrying out large-scale woodland establishment – especially involving conifer or short rotation forestry crops with a high water use; consider the projected impacts on future water yield, including the effects of climate change.

Peak flows and flooding

75 In catchment flood risk management plans, consider opportunities for woodland creation and management to reduce flood risk; this includes their use as part of sustainable urban and rural drainage systems.

76 Within areas of high flood risk, phase clearfelling to minimise the risk of increasing local flood flows.

77 Where practicable, amend drains on restock sites to slow down surface run-off.

78 Consider opportunities to restore forest wetlands and create ponds to increase flood storage and slow flood flows, e.g. by building dams of large woody debris.

79 When siting new woodland, consider the potential benefits in relation to flood alleviation, improvement of water quality and other ecosystem services. 30

Shade and shelter

80 Aim for a mix of shaded and lightly shaded habitat within the riparian zone – around 50% canopy cover on average but guided by local circumstances and the requirements of priority species. 30 17

81 In the riparian zone, favour locally native tree and shrub species and control the spread of invasive and non-native species. 31

82 Provide and maintain defined buffer areas along watercourses and waterbodies.

83 Remove dense stands of conifers from riparian areas and from the edges of ponds and lakes, and control excessive conifer regeneration. 32

84 Retain large woody debris within streams unless it is clear that it forms a barrier to fish or poses a flood risk; design and manage riparian woodland to sustain the delivery of large woody debris to small watercourses (<5 m wide). 33

7. Implementation and monitoring

The revised edition of the UK Forestry Standard and its supporting series of Guidelines have not changed the legal framework for forestry or introduced new regulations. The aim is to provide greater clarity by outlining the scope of relevant existing regulations, and using these, together with the principles of sustainable forestry, to define forest management requirements in a more explicit way.

This section explains the mechanisms for regulating forestry in the UK and ensuring that forests are managed sustainably according to UKFS Requirements.

The regulatory framework

The Forestry Commission has a range of powers under the Forestry Act 1967 (as amended) through which the primary regulatory powers over forestry in Great Britain can be exercised. In Northern Ireland, the equivalent role in respect of the Forestry Act (Northern Ireland) 2010 is performed by the Forest Service, an agency within the Department of Agriculture and Rural Development. Some legislation is specific to forestry, but much legislation of relevance to forest and woodland owners and managers has wider application to any land management activity. The implications for forest managers of the main statutes of relevance are set out in the UKFS Requirements (Section 5).

Forestry policy in England, Scotland, Wales and Northern Ireland is the responsibility of the respective governments. Their forestry policies and strategies set out the priorities and programmes agreed in each country. For the public forest estate, policy is applied directly by the Forestry Commission and the Forest Service. For other forests, policy is implemented through a range of regulatory instruments and incentives. The forestry authorities also fund research and provide advice and guidance to support policy development. Increasingly, forestry policy is delivered through or in partnership with a range of other departments of government, agencies and organisations.

Felling

Under the Forestry Act, it is illegal to fell trees in Great Britain without prior approval, although there are exceptions for trees below a specified size, dangerous trees, and very small-scale felling operations. Cases of illegal felling are rare, but suspected cases are investigated, and prosecution may ensue. Where trees are subject to designations, for example on Sites of Special Scientific Interest, the consent of the relevant statutory authorities is required for management activity. In addition, deforestation for the purposes of conversion to another type of land use may be subject to the Environmental Impact Assessment Regulations (see below).

In Northern Ireland, the Forestry Act (Northern Ireland) 2010, with its provisions for felling licences and felling management plans, now aligns more closely with Great Britain.

Restocking

There is a presumption against the removal of woodland and the loss of forest cover in the UK, and it is normally the case that felling approval is granted subject to restocking. Restocking is required as a policy priority linked to a number of national and international commitments to prevent forest losses worldwide and to mitigate the effects of climate change. In Great Britain, the Forestry Commission may serve a Restocking Notice, which requires restocking and establishment to take place.

In Northern Ireland, granting of a felling licence will be subject to conditions set out in a felling management plan, which may refer to the restocking of the land with trees. In addition, a restocking notice may be served following unauthorised felling. This provision of the Forestry Act will come into operation when subordinate legislation is made. There are some special cases in the UK where trees can be established elsewhere (usually referred to as compensatory planting) or permanently removed.

The permanent removal of trees may be sanctioned if there are overriding environmental considerations, for example to allow the restoration of important habitats;

such projects have to be individually assessed, taking into account the practicality of restoration, together with the implications for future management.

The removal of trees may also take place to enable development, authorised under the planning regulations, to proceed. Such developments may include alternative sustainable land uses such as windfarms or hydroelectric schemes. In such cases, all the arguments, including impacts on climate change through loss of forest cover, will need to be addressed within the framework of woodland removal policies at country level and the planning legislation. As deforestation is involved, an Environmental Impact Assessment is likely to be required.

Environmental impacts of forestry

Proposals for new planting (including short rotation coppice and Christmas trees), deforestation, and the construction of forest roads and quarries come under the forestry provisions of the EU Environmental Impact Assessment (EIA) Regulations. The Forestry Commission and the Department of Agriculture and Rural Development in Northern Ireland are responsible for the implementation of the Regulations, and will advise applicants about their scope and whether there is likely to be a need for an EIA. Forestry proposals that may have significant environmental impacts will require an EIA before approval is granted.

If an EIA is required, the applicant must prepare a comprehensive forest management plan, together with an exploration of the potential environmental impacts – this process will involve appropriate specialists. The applicant must submit an Environmental Statement to the forestry authority, and this and the EIA will be made available to the public and to the various statutory environmental authorities. The Forestry Commission or Department of Agriculture and Rural Development will take account of any comments received before making their decision.

The Environmental Liability Directive (2004/35/EC) establishes a common framework for liability with a view to preventing and remedying damage affecting the land, including damage to animals, plants, natural habitats and water resources. The Directive is the first EC legislation whose main objectives include the application of the 'polluter pays' principle. It requires those responsible for the most significant cases of environmental damage to take immediate action to prevent the damage occurring and to put right damage where it does occur.

Consultation on forestry proposals

The forestry authorities make provision for anybody to comment on forestry proposals before a decision is reached. The mechanisms for doing this vary across England, Scotland, Wales and Northern Ireland, and with the significance and extent of the proposal. Consultation is extensive where an Environmental Impact Assessment is involved. The minimum consultation requirement in Great Britain is that clearfelling applications, forest management plans (for the public forest estate and for other woodlands) and grant applications are entered on the Public Register of New Planting and Felling. The arrangements for viewing the Register are on the Forestry Commission website at: www.forestry.gov.uk/publicregister.

In addition to the Public Register, local authorities and other statutory bodies are sent details of proposals under formal consultation and notification procedures. This process ensures a wide range of views is taken into account. The majority of applications, often with amendments, are approved through this process. If objections are lodged and sustained, the Forestry Commission may ask for advice from an advisory committee, and/or refer to the appropriate forestry minister before arriving at a decision. The above procedures do not negate the requirements for forest and woodland owners to consult other statutory agencies with regard to particular woodlands, for example the conservation agencies in the case of Sites of Special Scientific Interest.

Plant health and forest reproductive material

The Forestry Commission and the Forest Service also exercise legal powers to prevent the entry and spread of non-endemic pests and diseases of trees, under the 1967 Plant Health Acts. Trade in forest reproductive materials (seed, plants or cuttings) is also controlled under the 2002 Forest Reproductive Material Regulations (as amended), which implement the EU Directive 1999/105/EC on the marketing of forest reproductive material.

Meeting UKFS Requirements

The UKFS Requirements in Section 5 provide the basis for assessing whether the UK Forestry Standard has been implemented. Guidelines for forest and woodland managers on meeting the Requirements are given in Section 6 of this publication and in the supporting series of Guidelines for each individual element of sustainable forest management. The numbered Guideline points will enable an assessment to be made as to whether the relevant Requirements of the UKFS have been achieved.

The current regulatory mechanisms for forestry allow two options for the approval of forest and woodland management proposals:

- Felling licences
- Forest management plans

The forestry authorities also provide incentives to encourage the creation of new woodlands and the management of existing woodlands. The payment of grants is conditional on meeting UKFS Requirements.

Felling licences

The felling licence is a straightforward statutory instrument that gives permission to fell trees and is separate from the offer of incentives. There are many situations where a felling licence will be the most appropriate way to get approval for forestry proposals. Felling licences offer proportionate and expedient regulation to suit many UK situations, particularly where management activities are of limited scope, modest impact or infrequent occurrence.

In Northern Ireland, a felling management plan will be an integral part of a felling licence under the Forestry Act (Northern Ireland) 2010.

A felling licence gives the owner the legal authority to proceed on the basis of the discrete operational area and activity involved. The licence requires the applicant to submit a range of information and to exercise good forestry practice. However, the licence does not extend to the wider context and area covered by a forest management plan – as a result, there will be UKFS Requirements and Guidelines that are not relevant or applicable to the individual licence area.

While the Requirements and Guidelines that are relevant or applicable to the licence area must be complied with, the limited scope of a felling licence necessarily restricts the levels of assurance that can be provided in relation to sustainable forest management. Accordingly, the minimum levels of UKFS assurance provided by a felling licence will be confined to the discrete operational area and defined as:

- Legality.
- Environmental suitability to the site.
- Conservation of high-value habitats and protected sites.
- Protection of society values and the provision of opportunities for public comment.
- Protection of the forest area through a replanting condition.

Forest management plans

The forest management plan provides a more comprehensive basis for assessment that extends beyond the discrete operational area. This area is defined as the forest management unit (FMU). Forest management plans set proposals in a broader context, both in the area covered and over time. They also provide a clear statement of intention and allow proposals to be communicated to others. Forest management plans will be assessed for approval, monitored and periodically updated and their approval renewed. All publicly owned forests are managed using forest management plans which are available for public comment. The level of assurance provided by a forest management plan will therefore extend to all the UKFS elements of sustainable forest management applicable to the FMU.

Incentives

The Forestry Commission and the Forest Service offer a range of incentives for woodland creation, woodland management and related activities. Each country in the UK has grant programmes aimed at supporting the delivery of their forestry policies and strategies. For forests and woodlands that are not part of the public forest estate, most planting, natural regeneration and some management operations take place with the assistance of grants and through the approval of a forest management plan. However, the approval required by the Forestry Commission or the Forest Service to proceed with proposals may be separate from the offer of a grant.

In Great Britain, the offer of incentives for forestry will be conditional on meeting the UKFS Requirements. This will have to be demonstrated through the submission and approval of a forest management plan. In Northern Ireland, there is no general requirement for forest management plans at the current time. However, essential planning information including maps, a statement of objectives and establishment prescriptions is required for forest and woodland grant applications.

Monitoring

Monitoring is carried out at a strategic level, which is used for international and national level reporting, and at the level of individual forests and woodlands, to check that agreed proposals are being implemented.

Strategic reporting

The UK is committed to international agreements on sustainable forest management and these require countries to report at intervals of about five years on indicators developed by the Global Forest Resources Assessment (GFRA) and Forest Europe (formerly the Ministerial Conference on the Protection of Forests in Europe). These indicators show the extent and condition of forests and woodlands, together with environmental, social and economic aspects of sustainable forest management.

The range of reportable indicators was greatly increased for the GFRA in 2005 and 2010 and for the Ministerial Conference on the Protection of Forests in Europe in 2007. These, together with indicators at country level, now form the main basis for strategic monitoring that has superseded the earlier UK Indicators of Sustainable Forestry. Forestry also features in other international indicator sets on which the UK reports, such as those for the UN Convention on Biological Diversity (UNCBD) and the UN Framework Convention on Climate Change (UNFCCC).

A range of mechanisms provides data for this monitoring and reporting. For indicators concerned with UK forests, the national forest inventories, where the total forest and woodland resource is comprehensively assessed, have been the main source of data. Additional data are provided by a range of research plots across the UK that are used for environmental monitoring, and which form part of international co-operative programmes. Aspects covered include biodiversity, forest health, air pollution and climate change.

In the UK, each of the country forestry programmes or strategies has developed a set of performance indicators linked to strategic priorities. Where regional strategies exist within countries, indicators can also be linked to their strategic aims. These country indicators also draw upon existing statistics and surveys (for example, the current National Forest Inventory), and projects such as the Native Woodland Survey of Scotland will improve the scope of data collection and future reporting.

In Great Britain, the Forestry Commission has prepared a digital base map for all woodlands over 0.5 hectares, as part of the National Forest Inventory. This will ensure that monitoring will take place against definitive woodland areas. A sample survey, based on the digital map, will be undertaken for all these woodlands and data collected on species, structure, timber potential, and a range of environmental attributes. (A separate survey has been proposed for woodlands less than 0.5 hectares.) New technologies, including remote sensing, will enable the forestry authorities to carry out further checks on forest management and ensure the woodland map and associated survey data are regularly updated. In Northern Ireland, the Forest Service is in the process of completing an analysis of data on woodland area and type and will, in the future, provide and maintain a register of woodland.

Monitoring of individual forests and woodlands

Within the framework of the UKFS, the Forestry Commission in England, Scotland and Wales and the Forest Service in Northern Ireland will develop their own approaches to assessing forestry proposals for approval and verifying their implementation. These approaches will be informed by the nature of forests and woodlands in each country and risk factors associated with non-compliance.

The UKFS Requirements and Guidelines provide explicit statements against which proposals can be checked and their implementation monitored. The approval and monitoring regime will extend to individual forests and woodlands, but, as with all aspects of compliance, a risk-based approach appropriate to the context will be

taken. This will reflect the relevance and importance of the various elements of sustainable forest management, and individual Guidelines.

The implementation of forest management plans will be checked by the forestry authorities for grant payment purposes and again periodically as plans are amended or revised. At intervals, active forest management plans will be updated and formally re-submitted for an assessment of implementation to date and approval. Inspections will be based on a proportion of approved plans, selected at random, and the remainder based on the perceived risk profile of non-compliance.

Inspectors will offer advice on meeting the UKFS Requirements and allow the opportunity for remedial work to be carried out. However, where there are serious or persistent departures from UKFS Requirements, and these are not remedied, approved plans may be suspended and grants may be reclaimed. Where there is failure to meet the legal requirements, legal action may ensue.

Operational plans are a requirement of good forestry practice (see General Forestry Practice – Section 5), and the forestry authorities may ask to see these on site visits and more formally when forest management plans are due for renewal. Other UK regulatory authorities and organisations responsible for environmental standards, water quality, health and safety and employment may carry out checks to provide assurance of operational and legal compliance. As with other aspects of forest monitoring, the authorities will take a risk-based approach.

In addition, a new representative sampling survey will be introduced as a general audit on the implementation of UKFS Requirements and the systems in place. Taken together, these various measures will give assurance that the UKFS is being applied for the forest resource as a whole and, on the basis of a risk-based sample programme, will give assurance for individual woodlands.

Monitoring and forest certification

The processes of government regulation and independent forest and woodland certification will remain distinct. However, the forestry authorities will take account of certification in adopting a risk-based approach to monitoring. The UK Woodland Assurance Standard (UKWAS), which is used as the basis of independent certification in the UK, draws on the UKFS and is compatible with the UKFS Requirements. UKFS monitoring will therefore be done with a lighter touch where additional assurance is provided by independent certification. All the forests and woodlands managed by the Forestry Commission and the Forest Service are independently certified and this will similarly be taken into account in the monitoring regime.

Evidence of legality and sustainability

For the majority of timber production in the UK, certification can be used to provide evidence that timber and wood products are legal and sustainable. For forests and woodlands that are not certified, the UKFS may be used to provide a risk-based approach to demonstrating legal and sustainable forest management. All active forest management plans will be regularly assessed and renewed against the UKFS Requirements, but checks on the detailed implementation of plans will be undertaken on a sample basis. As with certification, evidence will also be needed that links products to the forest covered by the management plan (see Timber and wood products, page 22). Where a felling licence is issued but a forest management plan is not in place, the levels of assurance will be lower and extend to legality and the aspects of sustainability outlined under Felling licences (see above).

Further reading and useful sources of information

Detailed information and resources for the UK Forestry Standard and each of its supporting series of Guidelines can be found at:

www.forestry.gov.uk/ukfs
www.forestry.gov.uk/ukfs/biodiversity
www.forestry.gov.uk/ukfs/climatechange
www.forestry.gov.uk/ukfs/historicenvironment
www.forestry.gov.uk/ukfs/landscape
www.forestry.gov.uk/ukfs/people
www.forestry.gov.uk/ukfs/soil
www.forestry.gov.uk/ukfs/water

Forestry Commission and Forest Service publications

Forestry Commission publications can be viewed and downloaded from: www.forestry.gov.uk/publications

Forest Service publications can be viewed and downloaded from: www.dardni.gov.uk/forestservice/publications

Forestry Commission and Forest Service websites

For information on **forestry statistics**, including forestry facts and figures: www.forestry.gov.uk/statistics

For information about the **National Forest Inventory**: www.forestry.gov.uk/inventory

For information about **forest research**: www.forestry.gov.uk/forestresearch

For information on **plant health** and biosecurity issues: www.forestry.gov.uk/planthealth

For information and guidance on **Environmental Impact Assessments**: www.forestry.gov.uk/eia
www.dardni.gov.uk/forestservice/environment

For information and guidance on **felling**:
www.forestry.gov.uk/felling
www.dardni.gov.uk/forestservice

For information and guidance on **grant schemes**:
www.forestry.gov.uk/grants
www.dardni.gov.uk/forestservice

To view the **public registers** on grants and felling applications, and Environmental Impact Assessments:
www.forestry.gov.uk/publicregister

Other useful websites

Forest and timber certification

www.ukwas.org.uk
The UK Woodland Assurance Standard (UKWAS) is used for independent certification in the UK. The UKWAS standard is endorsed by two independent forestry certification schemes:

FSC UK (Forest Stewardship Council) – www.fsc-uk.org

PEFC UK (Programme for the Endorsement of Forestry Certification schemes) – www.pefc.co.uk

Legislation

www.legislation.gov.uk
All enacted legislation and revisions for the United Kingdom, Scotland, Wales and Northern Ireland.

www.hse.gov.uk/legislation
Information on workplace health and safety legislation.

Safety

www.hse.gov.uk
The Aboriculture and Forestry Advisory Group (AFAG) produce safety guides which are available from HSE Books.

Timber procurement

www.cpet.org.uk
The Central Point of Expertise on Timber procurement (CPET) provides information and advice on meeting the UK Government's Timber Procurement Policy, and the EU Due Diligence Regulation for timber and timber products.

International context

www.fao.org/forestry/cpf
Collaborative Partnership on Forests (CPF) is a voluntary arrangement among 14 international organisations and secretariats with substantial programmes on forests

http://ec.europa.eu/agriculture/fore/forestry_strategy_en.htm
European Union forestry strategy and forest action plan.

www.foresteurope.org
Forest Europe, formerly the Ministerial Conference on the Protection of Forests in Europe (MCPFE).

www.unece.org/forests
The United Nations Economic Commission for Europe (UNECE).

The UNECE Timber Committee and the FAO European Forestry Commission work together to promote sustainable forest management in Europe, the Commonwealth of Independent States (CIS) and North America.

www.fao.org/forestry
The United Nations Food and Agriculture Organization (FAO) Forestry Department helps nations manage their forests in a sustainable way.

www.un.org/esa/forests
United Nations Forum on Forests.

Contact addresses

Forestry authorities

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Forestry Commission Wales
Welsh Assembly Government
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www.forestry.gov.uk/wales

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Forest Research

Forest Research is the agency of the Forestry Commission and the UK leader in forestry and tree-related research.

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www.forestry.gov.uk/forestresearch

Appendix 1 – Pan-European Level Operational Guidelines for Sustainable Forest Management

These guidelines were agreed through the Forest Europe process (known until 2010 as the Ministerial Conference on the Protection of Forests in Europe (MCPFE)). The ministers responsible for forests in Europe have developed common principles, criteria and guidelines for sustainable forest management. At the Second Ministerial Conference, held in Helsinki in 1993, ministers adopted Resolution H1, which included the United Nations Conference on Environment and Development (UNCED) definition of sustainable forest management:

'the stewardship and use of forests and forest lands in a way, and at a rate, that maintains their biodiversity, productivity, regeneration capacity, vitality and their potential to fulfil, now and in the future, relevant ecological, economic and social functions, at local, national, and global levels, and that does not cause damage to other ecosystems'.

In addition, Resolution H2 was adopted on 'General Guidelines for Sustainable Management of European Forests' and 'General Guidelines for the Conservation of the Biodiversity of European Forests'.

Six pan-European criteria (PEC) were identified as the core elements of sustainable forest management. The Pan-European Level Operational Guidelines (PELOG), follow the structure of the six elements and are divided into 'Guidelines for Forest Management Planning' and 'Guidelines for Forest Management Practices'. These are fundamental to the scope and remit of the UK Forestry Standard.

CRITERION 1

Maintenance and appropriate enhancement of forest resources and their contribution to global carbon cycles.

1.1 Guidelines for Forest Management Planning

a. Forest management planning should aim to maintain or increase forest and other wooded area, and enhance the quality of the economic, ecological, cultural and social values of forest resources, including soil and water. This should be done by making full use of related services such as land-use planning and nature conservation.

b. Inventory and mapping of forest resources should be established and maintained, adequate to the local and national conditions and in correspondence with the topics described in these Guidelines.

c. Management plans or their equivalents, appropriate to the size and use of the forest area, should be elaborated and periodically updated. They should be based on legislation as well as existing land-use plans, and adequately cover the forest resources.

d. Monitoring of the forest resources and evaluation of their management should be periodically performed, and their results should be fed back into the planning process.

1.2 Guidelines for Forest Management Practices

a. Forest management practices should safeguard the quantity and quality of the forest resources in the medium and long term by balancing harvesting and growth rates, and by preferring techniques that minimise direct or indirect damage to forest, soil or water resources.

b. Appropriate silvicultural measures should be taken to maintain the growing stock of resources at – or bring to – a level that is economically, ecologically and socially desirable.

c. Conversion of abandoned agricultural and treeless land into forest land should be taken into consideration, whenever it can add economic, ecological, social and/or cultural value.

CRITERION 2

Maintenance of forest ecosystem health and vitality

2.1 Guidelines for Forest Management Planning

a. Forest management planning should aim to maintain and increase the health and vitality of forest ecosystems and to rehabilitate degraded forest ecosystems, whenever this is possible by silvicultural means.

b. Health and vitality of forests should be periodically monitored, especially key biotic and abiotic factors that potentially affect health and vitality of forest ecosystems, such as pests, diseases, overgrazing and overstocking, fire, and damage caused by climatic factors, air pollutants or by forest management operations.

c. Forest management plans or their equivalents should specify ways and means to minimise the risk of degradation of and damages to forest ecosystems. Forest management planning should make use of those policy instruments set up to support these activities.

2.2 Guidelines for Forest Management Practices

a. Forest management practices should make best use of natural structures and processes and use preventive biological measures wherever and as far as economically feasible to maintain and enhance the health and vitality of forests. Adequate genetic, species and structural diversity should be encouraged and/or maintained to enhance stability, vitality and resistance capacity of the forests to adverse environmental factors and strengthen natural regulation mechanisms.

b. Appropriate forest management practices such as reforestation and afforestation with tree species and provenances that are suited to the site conditions or the use of tending, harvesting and transport techniques that minimise tree and/or soil damages should be

applied. The spillage of oil through forest management operations or the indiscriminate disposal of waste on forest land should be strictly avoided.

c. The use of pesticides and herbicides should be minimised, taking into account appropriate silvicultural alternatives and other biological measures.

d. In case fertilisers are used they should be applied in a controlled manner and with due consideration to the environment.

CRITERION 3

Maintenance and encouragement of productive functions of forests (wood and non-wood)

3.1 Guidelines for Forest Management Planning

a. Forest management planning should aim to maintain the capability of forests to produce a range of wood and non-wood forest products and services on a sustainable basis.

b. Forest management planning should aim to achieve sound economic performance taking into account possibilities for new markets and economic activities in connection with all relevant goods and services of forests.

c. Forest management plans or their equivalents should take into account the different uses or functions of the managed forest area. Forest management planning should make use of those policy instruments set up to support the production of merchantable and non-merchantable forest goods and services.

3.2 Guidelines for Forest Management Practices

a. Forest management practices should be ensured in quality with a view to maintain and improve the forest resources and to encourage a diversified output of goods and services over the long term.

b. Regeneration, tending and harvesting operations should be carried out in time, and in a way that do not reduce the productive capacity of the site, for example by avoiding damage to retained stands and trees as well as to the forest soil, and by using appropriate systems.

c. Harvesting levels of both wood and non-wood forest products should not exceed a rate that can be sustained in the long term, and optimum use should be made of the harvested forest products, with due regard to nutrient offtake.

d. Adequate infrastructure, such as roads, skid tracks or bridges should be planned, established and maintained to ensure efficient delivery of goods and services while at the same time minimising negative impacts on the environment.

CRITERION 4

Maintenance, conservation and appropriate enhancement of biological diversity in forest ecosystems

4.1 Guidelines for Forest Management Planning

a. Forest management planning should aim to maintain, conserve and enhance biodiversity on ecosystem, species and genetic level and, where appropriate, diversity at landscape level.

b. Forest management planning and terrestrial inventory and mapping of forest resources should include ecologically important forest biotopes, taking into account protected, rare, sensitive or representative forest ecosystems such as riparian areas and wetland biotopes, areas containing endemic species and habitats of threatened species, as defined in recognised reference lists, as well as endangered or protected genetic *in situ* resources.

4.2 Guidelines for Forest Management Practices

a. Natural regeneration should be preferred, provided that the conditions are adequate to ensure the quantity and quality of the forests resources and that the existing provenance is of sufficient quality for the site.

b. For reforestation and afforestation, origins of native species and local provenances that are well adapted to site conditions should be preferred, where appropriate. Only those introduced species, provenances or varieties should be used whose impacts on the ecosystem and on the genetic integrity of native species and local provenances have been evaluated, and if negative impacts can be avoided or minimised.

c. Forest management practices should, where appropriate, promote a diversity of both horizontal and vertical structures such as uneven-aged stands and the diversity of species such as mixed stands. Where appropriate, the practices should also aim to maintain and restore landscape diversity.

d. Traditional management systems that have created valuable ecosystems, such as coppice, on appropriate sites should be supported, when economically feasible.

e. Tending and harvesting operations should be conducted in a way that does not cause lasting damage to ecosystems. Wherever possible, practical measures should be taken to improve or maintain biological diversity.

f. Infrastructure should be planned and constructed in a way that minimises damage to ecosystems, especially to rare, sensitive or representative ecosystems and genetic reserves, and that takes threatened or other key species – in particular their migration patterns – into consideration.

g. With due regard to management objectives, measures should be taken to balance the pressure of animal populations and grazing on forest regeneration and growth as well as on biodiversity.

h. Standing and fallen dead wood, hollow trees, old groves and special rare tree species should be left in quantities and distribution necessary to safeguard biological diversity, taking into account the potential effect on health and stability of forests and on surrounding ecosystems.

i. Special key biotopes in the forest such as water sources, wetlands, rocky outcrops and ravines should be protected or, where appropriate, restored when damaged by forest practices.

CRITERION 5

Maintenance and appropriate enhancement of protective functions in forest management (notably soil and water)

5.1 Guidelines for Forest Management Planning

a. Forest management planning should aim to maintain and enhance protective functions of forests for society, such as protection of infrastructure, protection from soil erosion, protection of water resources and from adverse impacts of water such as floods or avalanches.

b. Areas that fulfil specific and recognised protective functions for society should be registered and mapped, and forest management plans or their equivalents should take full account of these areas.

5.2 Guidelines for Forest Management Practices

a. Special care should be given to silvicultural operations on sensitive soils and erosion-prone areas as well as on areas where operations might lead to excessive erosion of soil into watercourses. Inappropriate techniques such as deep soil tillage and use of unsuitable machinery should be avoided on such areas. Special measures to minimise the pressure of animal population on forests should be taken.

b. Special care should be given to forest management practices on forest areas with water protection function to avoid adverse effects on the quality and quantity of water resources. Inappropriate use of chemicals or other harmful substances or inappropriate silvicultural practices influencing water quality in a harmful way should be avoided.

c. Construction of roads, bridges and other infrastructure should be carried out in a manner that minimises bare soil exposure, avoids the introduction of soil into watercourses and that preserve the natural level and function of watercourses and river beds. Proper road drainage facilities should be installed and maintained.

CRITERION 6

Maintenance of other socio-economic functions and conditions

6.1 Guidelines for Forest Management Planning

a. Forest management planning should aim to respect the multiple functions of forests to society, have due regard to the role of forestry in rural development, and especially consider new opportunities for employment in connection with the socio-economic functions of forests.

b. Property rights and land tenure arrangements should be clearly defined, documented and established for the relevant forest area. Likewise, legal, customary and traditional rights related to the forest land should be clarified, recognised and respected.

c. Adequate public access to forests for the purpose of recreation should be provided taking into account the respect for ownership rights and the rights of others, the effects on forest resources and ecosystems, as well as the compatibility with other functions of the forest.

d. Sites with recognised specific historical, cultural or spiritual significance should be protected or managed in a way that takes due regard of the significance of the site.

e. Forest managers, contractors, employees and forest owners should be provided with sufficient information and encouraged to keep up to date through continuous training in relation to sustainable forest management.

6.2 Guidelines for Forest Management Practices

a. Forest management practices should make the best use of local forest related experience and knowledge, such as of local communities, forest owners, NGOs and local people.

b. Working conditions should be safe, and guidance and training in safe working practice should be provided.

c. Forest management operations should take into account all socio-economic functions, especially the recreational function and aesthetic values of forests by maintaining for example varied forest structures, and by encouraging attractive trees, groves and other features such as colours, flowers and fruits. This should be done, however, in a way and to an extent that does not lead to serious negative effects on forest resources, and forest land.

Glossary

Adaptation Initiatives and measures to reduce the vulnerability of natural and human systems against actual or expected climate change effects (IPCC Assessment Report 4). In this context initiatives and measures to reduce the vulnerability of forests to climate change as well as using forests to reduce the vulnerability of society.

Adaptive management A systematic process for continually improving management policies and practices by learning from the outcomes of operational programmes.

Aesthetic Relating to the appreciation of art and beauty.

Afforestation The process of establishing a new forest on land that was not previously forest or land which has not been forest in the recent past.

Agenda 21 A comprehensive United Nations plan of action to tackle the effects of human impacts on the environment agreed at the Earth Summit in 1992.

Alkaline The property of a solution to neutralise acids to the equivalence point of carbonate or bicarbonate.

Ancient semi-natural woodland (ASNW) Ancient woodland composed of mainly locally native trees and shrubs that derive from natural seedfall or coppice rather than from planting.

Ancient woodland Woodland which has been in continuous existence since before AD 1600 in England, Wales and Northern Ireland, and before AD 1750 in Scotland. The term ancient woodland site refers to the site of an ancient woodland irrespective of its current tree cover. Where the native tree cover has been felled and replaced by planting of tree species not native to the site it is referred to as a plantation on ancient woodland site (PAWS).

Ancient Woodland Inventory A map-based record of the location and boundaries of ancient woods held and maintained by the statutory conservation agencies in Great Britain. In Northern Ireland, the Woodland Trust produced the inventory. The inventories are provisional, and subject to the evidence available.

Approvals (herbicide or pesticide) Chemical products, for which usage and methods of application have been approved by the UK Chemicals Regulation Directorate.

Arboriculture The management of individual trees, but sometimes used to include the management of trees and woodlands in urban situations.

Area of Special Scientific Interest (ASSI) An area or site designated in part IV of The Environment (Northern Ireland) Order 2002 as having special scientific interest.

Area Plan A document providing a planning framework for areas of change including intensive growth, or regeneration, and areas of conservation.

Biodiversity The variety of plant and animal life (species), including genetic variation within species.

Biodiversity Action Plan (BAP) A programme of action to conserve and enhance biological diversity. The UKBAP articulates the UK response to the UN Convention on Biological Diversity. This is implemented at country, regional and local levels and co-ordinates action plans for key habitats and species (known as Habitat Action Plans (HAPs) and Species Action Plans (SAPs)) and cross-sectoral programmes to encourage biodiversity conservation within all land uses and businesses.

Biofuels Fuels derived from biomass (plant matter) rather than fossil fuels (coal, oil or gas).

Biosecurity A set of measures designed to prevent the spread of harmful organisms or diseases.

Brash The residue of branches, leaves and tops of trees, sometimes called 'lop and top', usually left on site following harvesting.

Brash mats Brash (mainly cut branches) laid along the route where forestry machinery will be driving to spread the load and reduce soil damage.

Broadleaves Trees and shrubs that belong to the angiosperm division of the plant kingdom (as distinct from the gymnosperm division that includes conifers). Most in the UK have laminar leaves and are deciduous. Sometimes referred to as hardwoods but not all produce hardwood timber.

Brownfield (sites) Land or sites that have been used in the past for industrial activity or development; sometimes abandoned, under used or contaminated by past activities. When work is required to restore them to useful purposes they are also known as derelict land.

Buffer (area/zone) An area of land which protects the watercourse from activities on the adjacent land, such as by intercepting polluted run-off. The buffer area will usually include the riparian zone and may extend into the adjacent land.

Carbon sequestration (or capture or uptake) The accumulation of carbon in the forest reservoir. Over the lifetime of a forest stand, there is a net accumulation of carbon in the forest up until the point when equilibrium is reached. Thus the quantity of carbon accumulated is finite. The process is also reversible and carbon can be returned to the atmosphere through dieback, decay, the burning of wood or disturbance to the soil.

Carbon storage The act of storing carbon, for a finite period, in a component of the Earth system, or a carbon pool. Examples of carbon pools include trees, deadwood, litter and soil as well as harvested wood products which retain carbon during their use.

Central Point of Expertise on Timber (CPET) A service of the UK Government. CPET has been set up by the Department for Environment, Food and Rural Affairs (Defra) to provide advice on the responsible purchasing of timber and timber products.

Certification scheme A voluntary scheme that establishes a forest management standard together with an auditing system to verify compliance. Forestry certification schemes are owned by international non-governmental organisations and exist to promote good forest practice. They offer product labels to demonstrate that wood or wood products emanate from well-managed forests.

Characteristic An element or feature that is repeated or distributed in a design or landscape which is distinctive in itself or contributes to the landscape character.

Clearfelling Cutting down of an area of woodland (if it is within a larger area of woodland it is typically a felling greater than

0.25 ha). Sometimes a scatter or small clumps of trees may be left standing within the felled area.

Coalescence When several elements overlap and combine to visually reinforce each other. A technique used to create the appearance of greater scale in landscape design by using a number of small elements.

Community (of interest) All the people living in one district or a group of people with shared origins or interests.

Compaction The compression of soil leading to reduced pore space, usually due to the weight of heavy machinery. Compacted soils become less able to absorb and transmit rainfall, thus increasing run-off and erosion.

Compensatory planting Creating new woodland on previously unwooded land should an area of woodland be lost due to change in land use.

Compliance Acting in accordance with something, particularly in accordance with the law. In the context of this standard, the term 'compliance' refers to meeting the requirements of the UK Forestry Standard.

Conifers Trees and shrubs that belong to the gymnosperm division of the plant kingdom (as distinct from the angiosperm division that includes broadleaves). Conifers mostly have needles or scale-like leaves and, with the exception of larches, all are evergreen. Sometimes referred to as 'softwoods', they produce softwood timber.

Conservation agencies The statutory nature conservation agencies: Natural England, Scottish Natural Heritage, the Countryside Council for Wales and the Northern Ireland Environmental Agency.

Contingency plan A plan of action to address potential threats to the forest such as spillages, pollution, pest attack or wind damage.

Continuous cover forestry A silvicultural system whereby the forest canopy is maintained at one or more levels without clearfelling.

Controlled activities Activities that affect the water environment as defined in The Water Environment (Controlled Activities) (Scotland) Regulations 2005. These include discharges and disposal to land, abstractions from wetlands, surface waters and groundwaters; impoundments such as dams and weirs, and engineering works in inland waters and wetlands.

Controlled water All streams, rivers, lakes, groundwaters, estuaries and coastal waters to three nautical miles from the shore.

Coppice An area of woodland in which the trees or shrubs are periodically cut back to ground level to stimulate growth and provide wood products. *see also* **Short rotation coppice (SRC)**

Copse A small wooded area historically used for small-wood production, often through coppicing.

Coupe An area of woodland that has been clearfelled or is planned for clearfelling.

Critical load (of acidity) The highest deposition of acidifying compounds that will not cause chemical changes leading to long-term harmful effects on the ecosystem structure and function.

Cultivation Any method of soil disturbance to aid the establishment of trees.

Cultural heritage Man-made things of a nation, people, community or group passed down from previous generations. They can be divided into the tangible (such as paintings, sculpture, monuments and archaeology) and the intangible (such as customs, intellectual achievements, history and institutions).

Cultural value The weighting or worth attributed to the arts, customs, intellectual achievements, history and institutions of a nation, people, community or group.

Deadwood All types of wood that are dead including whole or wind-snapped standing trees, fallen branch wood and stumps, decaying wood habitats on living trees such as rot holes, dead limbs, decay columns in trunks and limbs, and wood below the ground as roots or stumps. Deadwood of native species that exceeds 200 mm diameter and is associated with sites of high ecological value contributes the most to biodiversity.

Designed landscape A pleasure ground, park or large garden laid out with the primary purpose of creating an aesthetically pleasing scene or sequence of vistas.

Development Change of land use authorised by the planning authorities, usually for building and urbanisation.

Diffuse pollution Pollution arising from land-use activities (urban and rural) that are dispersed across a catchment. These are distinct from 'point' sources of pollution associated with discharges of industrial wastes, municipal sewage, and deep mine or farm effluent.

Diversity (visual) The range or variety of different elements in a landscape or design. In a forest these include variety in ages and species of trees and other elements such as open ground or water. An important factor in design, but one subject to a diminishing return.

Due Diligence Regulation (EU Timber Regulation) This Regulation which requires operators to undertake due diligence on their supply chains to check the timber has been harvested legally in accordance with the laws in the country of harvest. The placing on the internal market for the first time of illegally harvested timber or timber products derived from such timber is prohibited. This responsibility applies to all operators first placing timber on the EU market, regardless of where the timber was harvested. Internal traders throughout the supply chain are also required to keep a record of from whom they have bought timber and to whom they have sold it. The Regulation is to be enacted in 2013.

Duty of care A legal, contractual or moral obligation, depending on circumstances. The obligation is to ensure that reasonable measures are taken to ensure that individuals will be safe when they participate in an activity, such as visiting a forest.

Ecosystem The interaction of communities of plants and animals (including humans) with each other and the non-living environment. Ecosystems are considered to be 'in balance' when they remain stable over the long term (hundreds of years in the case of woodland).

Ecosystem services The benefits people obtain from ecosystems. These include provisioning services such as food

and water; regulating services such as regulation of floods, drought, land degradation and disease; supporting services such as soil formation and nutrient cycling; and cultural services such as recreational, spiritual, religious and other non-material benefits.

Element (landscape) A fundamental component or basic building block of the landscape such as trees, woods, hedges, buildings and roads.

Enclosure An area of land defined by a boundary such as a fence, wall, hedge or woodland belts. The enclosure pattern is the distribution of such boundaries in a tract of landscape. A sense of enclosure is the degree to which views or spaces are limited by surrounding landscape elements.

Energy crops Crops grown to provide energy for heating or the production of electricity. In forestry these are usually fast-growing species. *see also* **Short rotation coppice (SRC)** *and* **Short rotation forestry (SRF)**

Enterprise development A process to encourage the establishment and growth of businesses which will contribute economically and socially to society.

Environmental Impact Assessment (EIA) The process and documentation associated with the statutory requirement under the EU Environmental Impact Assessment Directive 85/337/EEC as amended by 97/11/EC and 2003/35/EC. This introduced a Europe-wide procedure to ensure that environmental consequences of projects are evaluated and public opinion is taken into account before authorisation is given.

Environmental Statement A statement of environmental effects that is required where an Environmental Impact Assessment is called for.

Erosion The wearing away of the land surface by rain, wind, ice, or other natural or anthropogenic agents that abrade, detach and remove geologic parent material or soil from one point on the Earth's surface and deposit it elsewhere.

Establishment (period) The formative period which ends after young trees are of sufficient size so that, given adequate protection, they are likely to survive as woodland at the required stocking density.

European Protected Species Species of plants and animals (other than birds) which are protected under European and UK law.

Fast-growing crops *see* **Energy crops**

Fertility The availability and balance of nutrients required for plant growth.

Field pattern *see* **Enclosure**

Forest Land predominately covered in trees (defined as land under stands of trees with a canopy cover of at least 20%), whether in large tracts (generally called forests) or smaller areas known by a variety of terms (including woods, copses, spinneys or shelterbelts).

Forest carbon stock The sum of all the carbon in the forest ecosystem at a given point in time, including the whole tree, leaf litter and the forest soil.

Forest certification *see* **Certification scheme**

Forest design principles Principles of design, such as shape, scale, proportion etc related to the design of forests by the Forestry Commission and adopted as the recognised approach to forest design in the UK and beyond.

Forest Europe Until 2010 known as MCPFE (Ministerial Conference on the Protection of Forests in Europe), Forest Europe is the pan-European policy process for the sustainable management of the continent's forests. Forest Europe develops common strategies for its 46 member countries and the European Union on how to protect and sustainably manage forests.

Forest infrastructure Structure and facilities practice of forestry such as roads, tracks, stacking and landing areas, and buildings.

Forest Law Enforcement, Governance and Trade (FLEGT) A commitment to tackle illegal logging globally through an action plan agreed by the EU.

Forest management plan (woodland management plan) A plan which states the objectives of management together with details of forestry proposals over the next five years and outlines intentions over a minimum total period of 10 years. Forest plans allow managers to communicate proposals and demonstrate that relevant elements of sustainable forest management have been addressed, and can be used to authorise thinning, felling and other management operations.

Forest management unit (FMU) The area subject to a forest management plan or proposal. A convenient management area determined by the nature of the woodland, the management objectives and proposed operations. Extensive FMUs allow a strategic approach to be taken to meeting UKFS Requirements and Guidelines.

Forest potential The capability of a forest area to produce goods and services within the limits of sustainability. *see* **Sustainable forest management**

Forest Service An agency within the Department of Agriculture and Rural Development in Northern Ireland responsible for the regulation of forestry and the management of state forests in Northern Ireland.

Forestry The science and art of planting, managing and caring for forests.

Forestry authorities The Forestry Commission and Forest Service are the principal forestry authorities in the UK. Other bodies also have roles in regulating forestry in particular circumstances.

Forestry Commission The government department responsible for the regulation of forestry, implementing forestry policy and management of state forests in Great Britain. Forestry policy is devolved, with the exception of some reserved issues, such as international forestry, plant health and forestry standards, and a range of common issues addressed on a Great Britain basis. The abbreviations FCE, FCS and FCW refer to the respective parts of the Forestry Commission in England, Scotland and Wales.

Forestry operations Work or procedures carried out within a forest such as felling, extraction, cultivation and planting.

Freshwater pearl mussel *Margaritifera margaritifera* Long-lived mussels that live in the bottom of clean, fast-flowing rivers;

designated as a protected species.

Functional landscapes Landscapes that typically provide more habitat, greater habitat diversity, and larger populations of known and unknown species, and that sustain key ecological processes within their natural ranges of viability over the long term.

Game Animals that are either wild or reared that are managed for hunting, shooting or fishing, usually for food.

Geometric A description of shape or form derived from geometry, usually simple and regular, comprising straight lines, rectangles, triangles, arcs of circles etc.

Greenhouse gases (GHGs) Gases in the atmosphere, both natural and man-made, that absorb and emit thermal infrared radiation emitted by the Earth's surface, the atmosphere itself and clouds. The primary greenhouse gases in the Earth's atmosphere are water vapour (H_2O), carbon dioxide (CO_2), nitrous oxide (N_2O), methane (CH_4) and ozone (O_3). Forests exchange all of these GHGs with the atmosphere to a larger or smaller extent. There are also a number of man-made greenhouse gases. The Kyoto Protocol deals with six of these: CO_2, N_2O and CH_4 as well as sulphur hexafluoride (SF_6), hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs). Others are dealt with under the Montreal Protocol on Substances that Deplete the Ozone Layer.

Green infrastructure The planned network of multifunctional open spaces of parks, trees, shrubs, grass areas etc with access routes and inter-connecting links designed, developed and managed to meet the environmental, social and economic needs of communities and to contribute to a high quality natural and built environment.

Groundwater All water which is below the surface of the ground in the saturation zone and in direct contact with the ground or subsoil. This zone is commonly referred to as an aquifer, which is a subsurface layer or layers of rock or other geological strata of sufficient porosity and permeability to allow a significant flow of groundwater or the abstraction of significant quantities of groundwater.

Health and Safety Executive (HSE) The government body charged with ensuring that risks to people's health and safety from work activities are properly controlled.

Historic environment All tangible evidence of past interactions between humans and their environment, incorporating archaeological sites, historic landscapes and natural heritage.

Historic environment record(s) (HER(s)) A central record of known heritage, maintained by local authority historic environment services. Previously referred to as Sites and Monuments Records (SMRs).

Historic Landscape Assessment (HLA) The process of mapping the extent of past and present land-use areas, categorised according to their form, function and period of origin. In Scotland, HLA is a joint project between Historic Scotland and the Royal Commission on the Ancient and Historical Monuments of Scotland (RCAHMS).

Historic Landscape Character (HLC) The character of a landscape defined by its historical interest such as historic buildings, ornamental landscapes and evidence of past uses, and embracing features such as hedge patterns and managed woodland. It recognises that the landscape itself can be of historical interest, in addition to the individual historic features within it. Historic Landscape Characterisation is a process (undertaken in England and Wales) to map the extent of past and present land-use areas, and categorise them according to their form, function and period of origin. (A similar process in Scotland is known as Historic Landscape Assessment (HLA).)

Hydromorphology The physical characteristics of the shape, the boundaries and the content of a water body.

Indicative forestry strategies In Scotland, these strategies provide a focus for local authority responses to consultations on grant scheme proposals and inform those developing proposals for forestry of possible sensitivities when considering options for planting. Local forestry frameworks provide a focus on key local issues within indicative forestry strategies.

Infiltration The entry of water into the soil.

Interested parties People directly affected by, or who have a financial or other interest in, the woodland being managed; also sometimes called stakeholders.

Interlock A relationship between two elements, where one extends into the other and creates a visual connection; this can increase the unity of a design, or the unity between elements in a landscape.

Invasive species Animal or plant species which spread rapidly to the exclusion of other species. Many invasive species are not native or locally native.

Ironpan A soil with a hardened impervious layer, in which iron oxides are the chief cementing agents, that impairs drainage and plant growth.

ISO 14001 An international standard for environmental management systems (EMS) developed by the International Organization for Standardization (ISO). It can be applied to any industry sector. ISO 14001 requires a company to undertake a review of its environmental impact, and, based on this, to develop a policy, objectives and targets and a programme to ensure they are implemented. ISO 14001 does not set specific performance targets, other than legal compliance, and therefore sector-specific performance targets can be linked with the standard.

Landform The three-dimensional shape of the land or terrain.

Landscape An area, as perceived by people, the character of which is the result of the action and interaction of natural and/or human factors (Article 1, European Landscape Convention Council of Europe, 2002).

Landscape character The distinct and recognisable pattern of elements that occur consistently in a particular type of landscape and combine to describe its essential nature.

Landscape Character Assessment The process of systematic description, classification and analysis of landscape in order to identify, describe and understand its character. The scale and detail of the assessment will depend upon the purpose for which it is being undertaken (*Landscape character assessment guidance for England and Scotland.* The Countryside Agency and Scottish Natural Heritage, 2002).

Landscape context The relevant circumstances pertaining to the site, situation and local area; in landscape these will include the landscape character, sensitivity, distinctiveness, historic and cultural significance.

Large woody debris Pieces of deadwood larger than 100 mm diameter and 1.0 m length, comprising whole trees, logs, branches and root boles that can accumulate within river systems.

Leaching The removal of soluble elements from one zone in soil to another via water movement in the profile.

Listed building A structure recognised as being of special architectural or historic interest, as specified under the relevant legislation, and one that requires listed building consent before any alterations, extensions or demolitions can be made which might affect its character.

Local authority Local government and planning authority.

Local distinctiveness The qualities of a particular locality that give it identity and make it unique and special to the people who live there or visit.

Locally native *see* Native species

Main River Designated stretches of river in England and Wales where the Environment Agency has permissive powers for flood defence purposes to construct and maintain defences and to control the actions of others through byelaws and the issuing of consents.

Margins The borders or edges of a forest; divided into the external margins between forest and other land uses and the internal margins or boundaries between species, felled areas, open ground etc.

MCPFE Ministerial Conference on the Protection of Forests in Europe. *see* Forest Europe

Mineralisation The production of inorganic ions such as nitrate in the soil by the oxidation of organic compounds.

Minimum intervention Management with only the basic inputs required to protect the woodland from external forces or to ensure succession of key habitats and species.

Mitigation (climate change) A human intervention to reduce the sources or enhance the sinks of greenhouse gases (IPCC Assessment Report 4). In this context, establishing and managing forests and their products to enhance their potential as a 'sink' of greenhouse gases.

Mounding The process of forming a small mound on which to plant a tree, thus increasing the aerobic zone of soil and maximising root extension. Hinge mounding is where an excavator scoops out and inverts a mound of soil with one edge of turf remaining intact.

Native species Species which have arrived and inhabited an area naturally, without deliberate assistance by humans. For trees and shrubs in the UK, usually taken to mean those present after post-glacial recolonisation and before historical times. Some species are only native in particular regions. Differences in characteristics and adaptation to conditions occur more locally – hence 'locally native'.

Native wood(lands) Woods mainly or entirely composed of native species.

Natural regeneration Plants growing on a site as a result of natural seed fall or suckering. The term is also used to describe the silvicultural practices used to encourage natural seeding and establishment.

Nearness (visual) The proximity of elements to each other so that they appear to be part of a group in a composition; this can increase the perception of scale.

Nitrate Vulnerable Zones (NVZs) Designated areas of land designed to protect waters against nitrate pollution from agriculture.

Notification The process of informing someone (about something). The forestry authorities have various arrangements for notifying interested parties of forestry proposals.

Nutrient enrichment (eutrophication) Excessive richness of nutrients in waters or soils which results in adverse effects on the diversity of the biological system, the quality of the water, and the uses to which the water may be put.

Open space Areas within a forest without trees, such as glades, stream sides, grass or heath land, water bodies, rocky areas, roads and rides.

Operational plan The operational details of how planned work will be implemented at site level within the framework of a forest management plan. Also called a site plan.

Organic An attribute of shape or form derived from a resemblance to natural shapes, especially those of plants or animals, which lack straight lines and geometry and are usually asymmetric, with diffuse and ill-defined edges.

Organic matter The organic fraction of the soil exclusive of undecayed plant and animal residues.

Origin The geographic locality within the natural range of a species where the parent seed source or its wild ancestors grew.

Peat A largely organic substrate formed of partially decomposed plant material. The Forestry Commission soil classification defines peat as soil having an predominantly organic (peat) layer of depth greater than 45 cm.

Perception An awareness (of something) through the senses usually referenced to experience, associations or expectation. Sight is a large part of perception for most people.

Permissive (use) Use by permission, whether written or implied, rather than by legal right.

Pesticide Any substance, preparation or organism prepared or used, among other uses, to protect plants or wood or other plant products from harmful organisms, to regulate the growth of plants, to give protection against harmful creatures or to render such creatures harmless.

Plantations Forests that have been planted or sown and are characterised by intensive silviculture treatment to meet a specific objective or limited range of objectives. Plantations lack most of the characteristics of natural forests.

Plantation on ancient woodland site (PAWS) Planted forests of native or non-native tree species that have replaced the original 'natural' woods on sites with a long history of woodland cover. *see* Ancient woodland

Productivity (of woodland) The capacity to produce forest goods and ecosystem services.

Proportion (visual) The relative size or extent, the visual relationship of parts of a design or composition to the whole; rules and theories of satisfactory visual proportion have been established from ancient times.

Protected characteristics The Equality Act 2010 covers nine 'protected characteristics', which cannot be used as a reason to treat people unfairly. The protected characteristics are: age; disability; gender reassignment; marriage and civil partnership; pregnancy and maternity; race; religion or belief; sex; sexual orientation.

Protected habitat or species Habitats or species protected by EU Directives and transposed into UK law by the Habitat Regulations. These provide a range of protection and conservation measures including the Natura 2000 network of protected sites and schedules of European Protected Species. In addition, a range of UK and country wildlife, countryside and conservation legislation provides protection for special sites and listed species.

Provenance Location of trees from which seeds or cuttings are collected. Designation of Regions of Provenance under the Forest Reproductive Materials Regulations is used to help nurseries and growers select suitable material. The term should not be confused with 'origin', which is the original natural genetic source.

Public Register Public listing by the Forestry Commission of grant schemes, felling proposals and Environmental Impact Assessments to allow public comment.

Regeneration The regrowth of a forest through sowing, planting or natural regeneration, or regrowth following coppicing.

Resilience The ability of a social or ecological system to absorb disturbances while retaining the same basic structure and ways of functioning, the capacity for self-organisation, and the capacity to adapt to stress and change.

Restocking Replacing felled areas by sowing seed, planting, or allowing or facilitating natural regeneration.

Restoration of derelict land *see* **Brownfield (sites)**

Restructuring Diversifying the distribution of age classes of a forest, usually by advancing felling in some areas and retarding it in others. Restructuring is usually associated with wider measures to redesign a forest as part of a forest management plan.

Retentions Trees retained, usually for environmental benefit, beyond the age or size generally adopted by the owner for felling.

Ride (or ryde) Open space used to separate forest areas and provide an access route.

Riparian Relating to or situated adjacent to a watercourse or water body.

River basin The area of land from which all precipitation eventually drains to the sea at a single river mouth, estuary or delta, through a sequence of streams, rivers and lakes.

River Basin Management Plan A detailed document describing the characteristics of the basin, the environmental objectives that need to be achieved and the pollution control measures required to achieve these objectives through a specified programme of work.

Rotation The period required to establish and grow trees to a specified size, product, or condition of maturity. The period varies widely according to species and end use, but for conifers in the UK this is usually about 35 years and for broadleaves at least 60 years.

Rutting (vehicle) Making deep tracks in the ground by the repeated passage of the wheels of vehicles.

Salmonids Fish belonging to the family Salmonidae, including salmon, brown trout, sea trout, grayling, powan and charr.

Scale The relative size (of visual elements) as perceived by the observer. Scale varies with the position and distance of the observer.

Scarifying A method of shallow cultivation designed to create suitable positions for tree planting or a seed bed for natural regeneration.

Scheduled Monument A monument or area of archaeological remains of national importance that is entered into a schedule maintained by the Secretary of State under the relevant legislation and is subject to legal protection under that legislation.

Semi-natural woodland Woodland composed of mainly locally native trees and shrubs that derive from natural seedfall or coppice rather than from planting. However, the definition varies according to the local circumstances in England, Scotland, Wales and Northern Ireland.

Sequestration *see* **Carbon sequestration**

Shape The outward form produced by the outline, such as a forest or area within a forest.

Shelterwood system Felling of a proportion of the trees within an area leaving some trees as a seed source and shelter for natural regeneration. The seed trees are subsequently removed.

Short rotation coppice (SRC) Trees (usually willow or poplar) typically grown as an energy crop and harvested at intervals of about three years.

Short rotation forestry (SRF) The practice of growing single or multi-stemmed trees of fast-growing species on a reduced rotation length primarily for the production of biomass.

Siltation Deposition of waterborne, mainly soil-derived, particles within a watercourse, other body of water, or wetland.

Silviculture The growing and cultivation of trees, including techniques of tending and regenerating woodlands, and harvesting their physical products.

Site plan *see* **Operational plan**

Sites of Local Nature Conservation Importance (SLNCI) Sites identified in local plans and managed as nature reserves, while not being designated sites of international or national importance.

Soil carbon Carbon stored within the soil; primarily associated with the organic component of soil, it can be classified into three main fractions: rapidly cycled carbon stored in microbial biomass and easily decomposed plant residues; slowly cycled stable carbon held through chemical and physical processes for around 100 years; and an inert or passive store which takes more than a thousand years to recycle.

Soil structure The combination or arrangement of primary soil particles into secondary units or peds. The secondary units are characterised on the basis of size, shape, and grade (degree of distinctness).

Special Protection Area (SPA) Area designated under the EU Birds Directive.

Spinney A small area of trees and bushes traditionally surrounded by a hedge.

Spirit of place The intangible factor that gives a specific location special character and makes it unique to people. Often it is a combination of character, features, quality, space and associations which creates the sense of identity of a location.

Stakeholder *see* **Interested parties**

Statutory body(ies) The authorities and bodies responsible for nature conservation (Natural England, Scottish Natural Heritage, Countryside Council for Wales and the Northern Ireland Environment Agency); environmental protection (Environment Agency (England and Wales), Scottish Environment Protection Agency and Northern Ireland Environment Agency); and the historic environment (English Heritage, Northern Ireland Environment Agency, Historic Scotland and Cadw).

Structural diversity Degree of physical variation in the elements of a forest, particularly the spatial distribution of trees, and vertical distribution of the canopy and other layers of vegetation.

Stump removal Harvesting of the basal part of the tree, including most of its woody roots, that remains after felling of the stem/log.

Substitution The use of wood products in place of other more energy-intensive materials such as concrete, metals and glass, or the use of wood as a fuel in place of fossil fuels such as coal, oil and gas.

Sustainable forest management The stewardship and use of forests and forest lands in a way, and at a rate, that maintains their biodiversity, productivity, regeneration capacity and vitality and their potential to fulfil, now and in the future, relevant ecological, economic and social functions at local, national and global levels, and that does not cause damage to other ecosystems. (MCPFE 1993)

Texture (visual) The appearance of a surface due to the size, nature and density of surface elements, coarser textures having larger elements at wider spacing and fine textures having smaller elements at closer spacing. In forestry, different ages and species of tree appear as different textures in the landscape.

Thinning The removal of a proportion of trees in a forest after canopy closure, usually to promote growth and greater value in the remaining trees.

Traditional and customary uses Access or uses in relation to specific areas of land which are not established as a right in law but have been exercised through habitual or customary actions with uninterrupted acquiescence on the part of the landowner.

UK Biodiversity Action Plan (UKBAP) *see* **Biodiversity Action Plan**

Unity (visual) The appearance of wholeness and continuity between an element and its background or landscape, or when all the elements of a design or landscape appear part of the whole. Unity is achieved when forests or woods are well integrated and have the appearance of belonging.

Veteran tree A tree of considerable age that is of interest biologically, culturally or aesthetically because of its age, size or condition, including the presence of deadwood micro-habitats.

Visual force The illusion of movement, or potential movement, found in a static image or object. The landscape is full of visual forces, especially influencing the way we look at landform.

Visual sensitivity An attribute determined by the visibility of the landscape, the main views of the forest, by whom and how it is seen, the nature of the viewing experience and the value placed on the landscape. Cultural or historical associations all contribute to this value.

Water body The basic water management unit defined under the Water Framework Directive for which environmental objectives are set. Water bodies can be parts of rivers, lakes and estuaries, stretches of coastal water or distinct volumes of groundwater.

Water catchment The area of land from which precipitation drains to a defined point in a river system, or to a lake or reservoir.

Watercourse Any natural or man-made channel through which water flows continuously or intermittently.

Wetlands Wetlands are transitional areas between wet and dry environments: they range from permanently or intermittently wet land to shallow water and water margins. The term can describe marshes, swamps and bogs, some shallow waters and the intertidal zone. When applied to surface waters, it is generally restricted to areas shallow enough to allow the growth of rooted plants.

Whole-tree harvesting The removal from a felled site of every part of the above-ground tree, except the stump.

Windthrow (or windblow) Uprooting of trees by the wind.

Woodfuel Wood used as a fuel. Woodfuel may be available in a number of forms such as logs, charcoal, chips, pellets or sawdust.

Wood pasture Areas of historical, cultural and ecological interest, where grazing is managed in combination with a proportion of open tree canopy cover.

Notes

www.forestry.gov.uk/ukfs/biodiversity

www.forestry.gov.uk/ukfs/climatechange

www.forestry.gov.uk/ukfs/historicenvironment

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Practising sustainable forestry means managing our forests in a way that meets our needs at present but that does not compromise the ability of future generations to meet their needs. They will rightly expect that their forests and woodlands offer at least the same benefits and opportunities as we enjoy today. To sustain these expectations, the UK governments have set out the UK Forestry Standard and its supporting Guidelines. At the heart of this approach is the importance of balancing the environmental, economic and social benefits of forests and the recognition that our forests serve a wide range of objectives. The Guidelines publications define sustainable forest management in the UK under a series of subject areas. The UK Forestry Standard requirements have been set out in each and guidance given on how to achieve them.

www.forestry.gov.uk/ukfs

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