



Llywodraeth Cynulliad Cymru
Welsh Assembly Government

Woodlands for Wales



The Welsh Assembly Government's Strategy for Woodlands and Trees

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Minister's Foreword



Woodlands and trees can make a big difference – not just to our lives but potentially to those of future generations too. They already provide so much that helps Wales to look ahead with confidence. The environments they create offer superb opportunities for people, businesses and biodiversity. The timber they yield is a key renewable resource that helps to lock up carbon, has a very low carbon footprint and helps to support our sustainable development and climate change agendas. As we all increasingly appreciate, woodlands and trees can provide more than one of these services at the same time – especially if we get the management of this precious resource right.

This is why this strategy sets out a bold ambition for how woodlands and trees could contribute even more if we are adventurous with our decisions now. In One Wales we set out some of our priorities including promoting the role of indigenous woodlands, as well as native tree species, and our intention that all the woodlands of Wales should collectively act as the Welsh National Forest, providing a carbon sink. This strategy deals not only with how these intentions are to be achieved, but it also explains the many other services that we want from Welsh woodlands and trees. The changes needed to achieve our full vision mean that we shall have to take some new actions and make better progress on others. Only then will we achieve the balance we seek of truly diverse, well-managed multi-purpose forests, delivering a balanced suite of goods and services.

We do not pretend that making these changes will be easy, or that we can avoid difficult decisions about priorities.

Achieving the active management of more woodlands to yield timber, as well as social and environmental goods and services, is probably our biggest challenge. This is closely followed by the difficulties of increasing woodland cover across Wales, given the strong competition for land that is suitable for new woodland. And although we have more control over the pace of change in the woodlands owned on behalf of the nation by the Welsh Assembly Government, again our plans will require a long-term commitment to basic woodland management programmes. We also need to update our view on the role of this publicly owned woodland estate, managed by the Forestry Commission, in delivering our strategy. This is why I have commissioned a study into this role which will begin later this year. Only through such bold and strategic actions will we achieve our ambition to improve the range and quality of services delivered by Welsh woodlands, without compromising the ability to maintain productive woodland that yields timber for economic activities and sustainable development.

So in summary, I would encourage all those interested in woodlands and trees to support the delivery of this ambitious but focused strategy. The response to our public consultation was diverse and overwhelming. If this passion and level of enthusiasm are now translated into action, then we can all look ahead confidently to the future.

A handwritten signature in black ink that reads "Elin Jones". The signature is written in a cursive, flowing style.

Elin Jones
Minister for Rural Affairs



Betws y Coed from Clogwyn Cyrau

1. Introduction

The first *Woodlands for Wales* was published in 2001 and has had a significant influence on the direction of Welsh forestry over the past eight years. It established the role that woodlands and trees can play in improving the lives of everyone in Wales, in sustaining the wider environment and in providing opportunities for people and communities. It also firmly established the key importance of woodland management in delivering the outcomes we seek from Welsh woodlands. In the relatively short space of time since 2001, Welsh forestry has become recognised for its pioneering approach to these issues, with our focus on Woodlands for People and innovative woodland management.

Events have moved on, with the increased recognition of the threat from climate change, and the publication in 2006 of the Wales Environment Strategy. More recently, in 2007, the government developed its One Wales programme. So despite the progress of the last few years it is time to update *Woodlands for Wales*, reconfirming some existing priorities, identifying others where we need to make more rapid progress, and setting out our planned responses to the emerging issues. We also want to ensure that *Woodlands for Wales* sits in a wider international, European and UK context, 'placing Wales in the World' as set out in One Wales. Many of the challenges identified in Wales have a common thread with other countries, making a joined up approach important.

We consulted on proposals to deliver this updated agenda, and the number and quality of responses was impressive. Almost all of our proposals were supported and we have been able to deal with many of the issues highlighted.

Where stakeholders had reservations, we have been able to use this information either to modify our intentions or to propose mitigating measures to minimise the impacts.

When we first published *Woodlands for Wales*, the focus was on people, woodland management, services and jobs, and these are still key priorities, especially the development of the forest sector in Wales. But this revised version of the strategy is much more ambitious, and we have tried to be more explicit about what needs to happen and how we might make the necessary changes. The new *Woodlands for Wales* looks at the role of trees outside woodland, in towns and the countryside, and it makes the case for an increase in the area of woodland to provide even more services for the people of Wales. It sets out our proposals for increasing the diversity of woodlands and their management, and explains the role of native tree species in this endeavour. It argues the case for recognising environmental services from woodlands replacing fossil fuels, storing carbon and helping us to cope with the effects of a changing climate. It also seeks to broaden people's engagement with woodlands and trees, to ensure that the full range of opportunities and services is accessible to all sections of our diverse society in an equitable way.

So, although our vision for what we are trying to achieve through this 50-year strategy remains the same as it was in 2001, we have revisited some of the outcomes we seek along the way.

Our vision remains that:

“Wales will be known for its high-quality woodlands that enhance the landscape, are appropriate to local conditions and have a diverse mixture of species and habitats.”

These will:

- provide real social and community benefits, both locally and nationally
- support thriving woodland-based industries and
- contribute to a better quality environment throughout Wales.’

To deliver this vision, *Woodlands for Wales* is framed around **Welsh woodlands and trees** as a foundation from which to deliver four strategic themes:

- **Responding to climate change** – coping with climate change, and helping to reduce our carbon footprint
- **Woodlands for people** – serving local needs for health, education, and jobs
- **A competitive and integrated forest sector** – innovative, skilled industries supplying renewable products from Wales
- **Environmental quality** – making a positive contribution to biodiversity, landscapes and heritage, and reducing other environmental pressures

We have identified 20 high-level outcomes that will be a focus for implementation. (Fig1) Woodlands and trees can, and do, deliver multiple benefits, at the same time and in the same place.

We view this as a merit, and this principle lies at the heart of our strategy.

In the following pages, we set out our 20 high level outcomes covering the foundation of Welsh woodlands and trees and the four strategic themes. We explain why each of these outcomes matters, what we want to see happen and how we plan to achieve these outcomes.

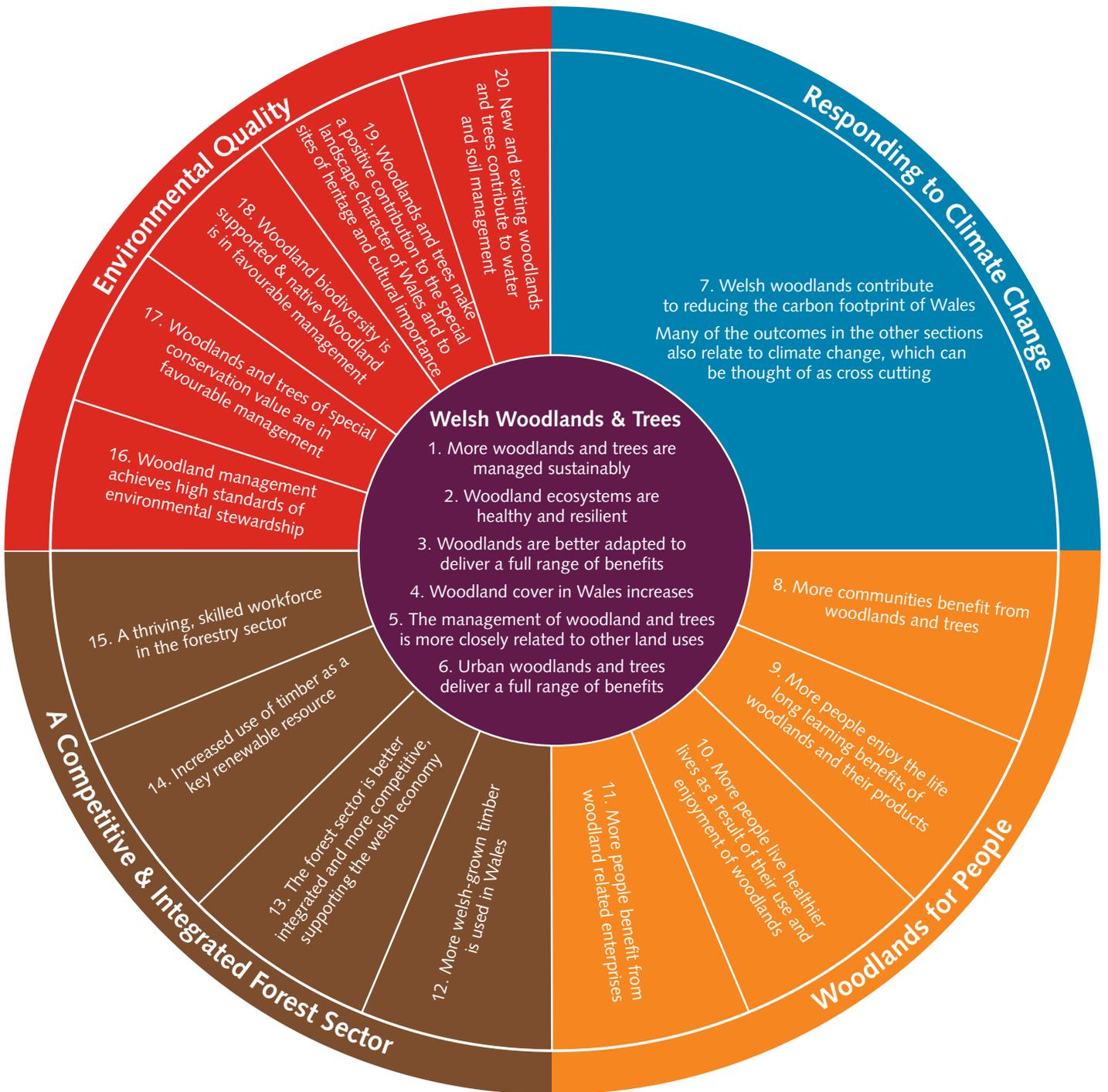
A word about Sustainable Forest Management...

The concept of sustainable forest management was developed during the 1980s and in 1993 was defined by the Ministerial Conference for the Protection of Forests in Europe (MCPFE) as:

‘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 Wales and the rest of the UK this concept is embodied in the UK Forestry Standard and its associated suite of guidelines, providing a sound foundation on which to not only manage woodlands but also to develop specific policy responses. *Woodlands for Wales* builds on these concepts of sustainability and sets out our woodland policy framework for Wales.

Fig 1: The Outcomes for the Foundation and Strategic Themes of Woodlands for Wales



“Wales will be known for its high-quality woodlands that enhance the landscape, are appropriate to local conditions and have a diverse mixture of species and habitats.”



Afan Forest Park, South Wales

2. Welsh woodlands and trees

Woodlands for Wales concerns all the woodlands that exist in Wales now, and those that will be created in the future, irrespective of size, location or ownership, together with all the trees outside woodland, in both rural and urban areas. Collectively these woodlands and trees make up the resource – a Welsh National Forest – which can be used and developed to meet the social, economic and environmental needs of Wales in the twenty-first century.

Wales is one of the least wooded countries in Europe, with woodland covering only 14 per cent of the land area (Fig 2), compared to the EU average of 37 per cent. The character of woodland in Wales has been influenced by both historic land use and previous government policy, and now most woodland is either:

- conifer woodland, mostly single-species, single-age plantations created during the twentieth century, which generally have been managed by clearfelling and are currently the main source of home-grown timber; or
- native woodland, mostly small and fragmented, often on farms and much of it not actively managed. Not all native woodland is old, but a significant proportion has been continuously wooded for at least 400 years (including some that was more recently converted to non-native plantations). This ancient woodland is irreplaceable (Fig 3).

We, the Welsh Assembly Government, own two-thirds of the conifer woodland (including plantations on Ancient Woodland Sites), but very little of the native woodland and virtually none of the ancient semi-natural woodland (Fig 4).

There are another 15 million trees in Wales outside woodlands, contributing to the economy, rural and urban landscapes, and to our quality of life. More than half of these trees are growing along linear features like hedgerows, riverbanks and roadsides, while the rest are found in orchards, parks, wood pastures and urban areas.

Woodlands and trees are the foundation to support all the other themes of *Woodlands for Wales*. Their nature, quality, distribution and management underpins the whole strategy, and we have identified six key outcomes to strengthen this foundation and ensure that it will be fit to meet the needs of Wales for the next 50 years:

- **More woodlands and trees are managed sustainably.**
- **Woodland ecosystems are healthy and resilient.**
- **Woodlands are better adapted to deliver a full range of benefits.**
- **Woodland cover in Wales increases.**
- **The management of woodland and trees is more closely related to that of other land uses.**
- **Urban woodlands and trees deliver a full range of benefits.**

Fig 2. Welsh Woodlands
Distribution of Woodland over 2 Hectares by Ownership
Reference date 31st March 2002

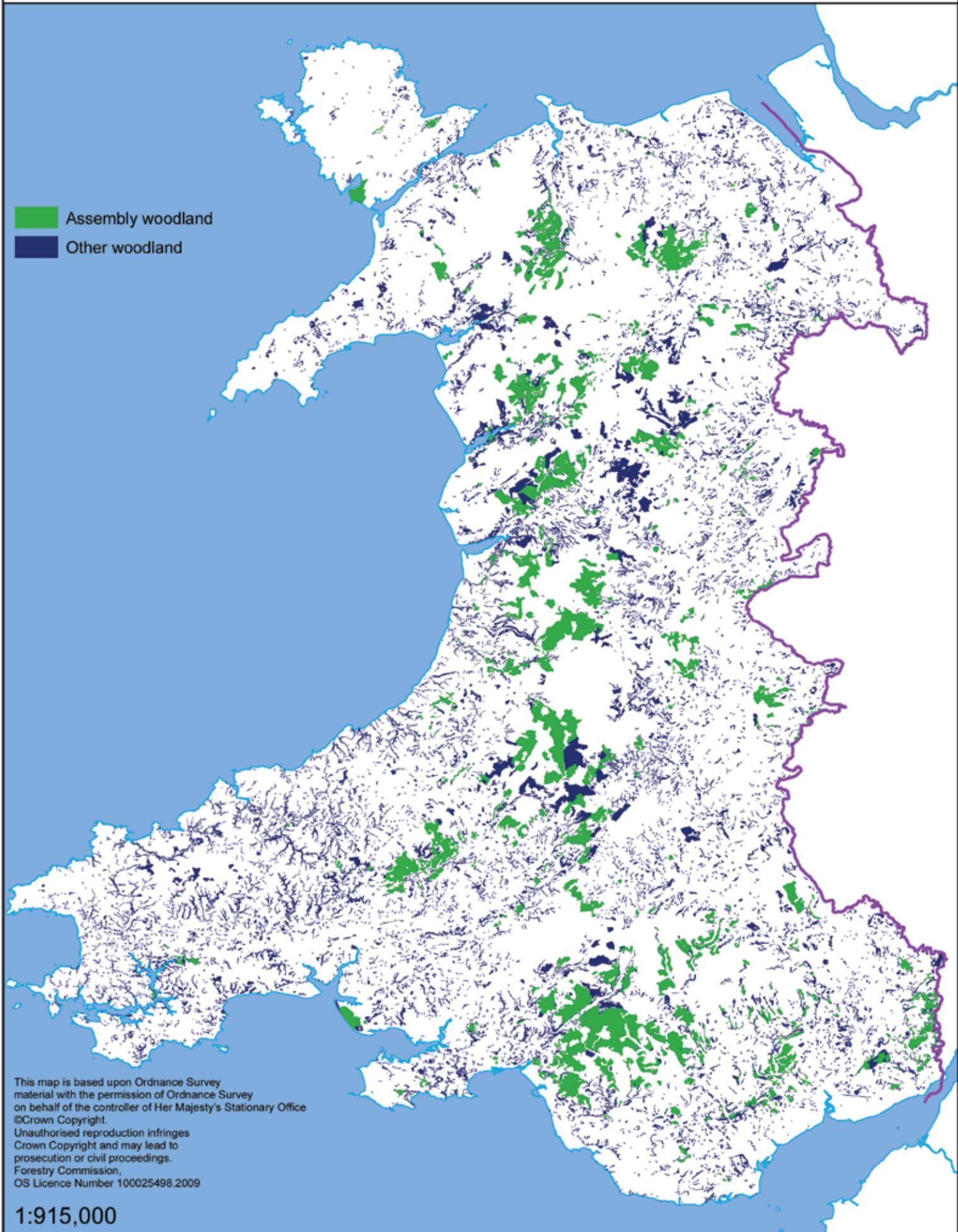
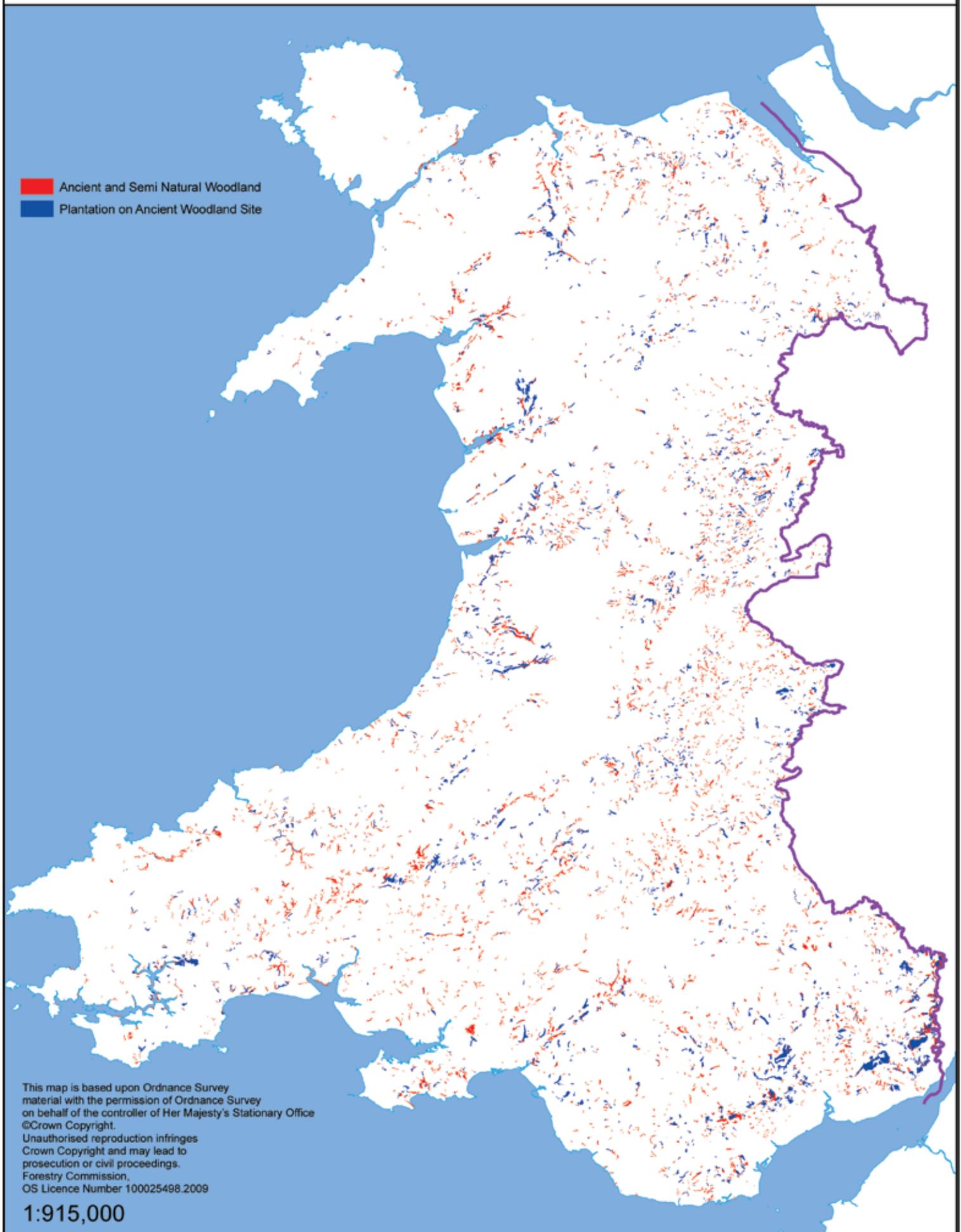


Fig 3. Distribution of Ancient Semi-Natural Woodland & Plantations on Ancient Woodland Sites
Reference date 1st April 2004



2.1 More woodlands and trees are managed sustainably

Delivering this strategy depends on Welsh woodlands being actively and sustainably managed both for timber production and to provide a range of other goods and services.

Much still has to be done to reach this goal. More than half of the 178,000 hectares of woodland that is not publicly owned has never been part of a Woodland Grant Scheme – and therefore is unlikely to have been actively managed for many years. When we consider farm woods, which account for half of native woodland in Wales, only 5 per cent are within a grant scheme. This represents a significant missed opportunity for improving biodiversity and the carbon sequestration capacity of these woods, for producing woodfuel for local use and for providing additional income for the landowners.

The significant, first step will be to bring more woodland, including many small and fragmented woodlands, into management to the UK Forestry Standard.

Beyond this, we would like to see more Welsh woodlands gaining certification to the UK Woodland Assurance Standard.

The emerging market for woodfuel and the new opportunities to add value to Welsh-grown timber could be a catalyst for sustainable woodland management, but this will require initial investment in infrastructure including tracks and fences.

Grants are needed to support these early stages of management because at first only low-value products such as firewood will be produced. In particular, we need to make special efforts to encourage farmers to bring their native and ancient farm woods into grant schemes and to manage them sustainably for biodiversity, timber, woodfuel and other environmental benefits.

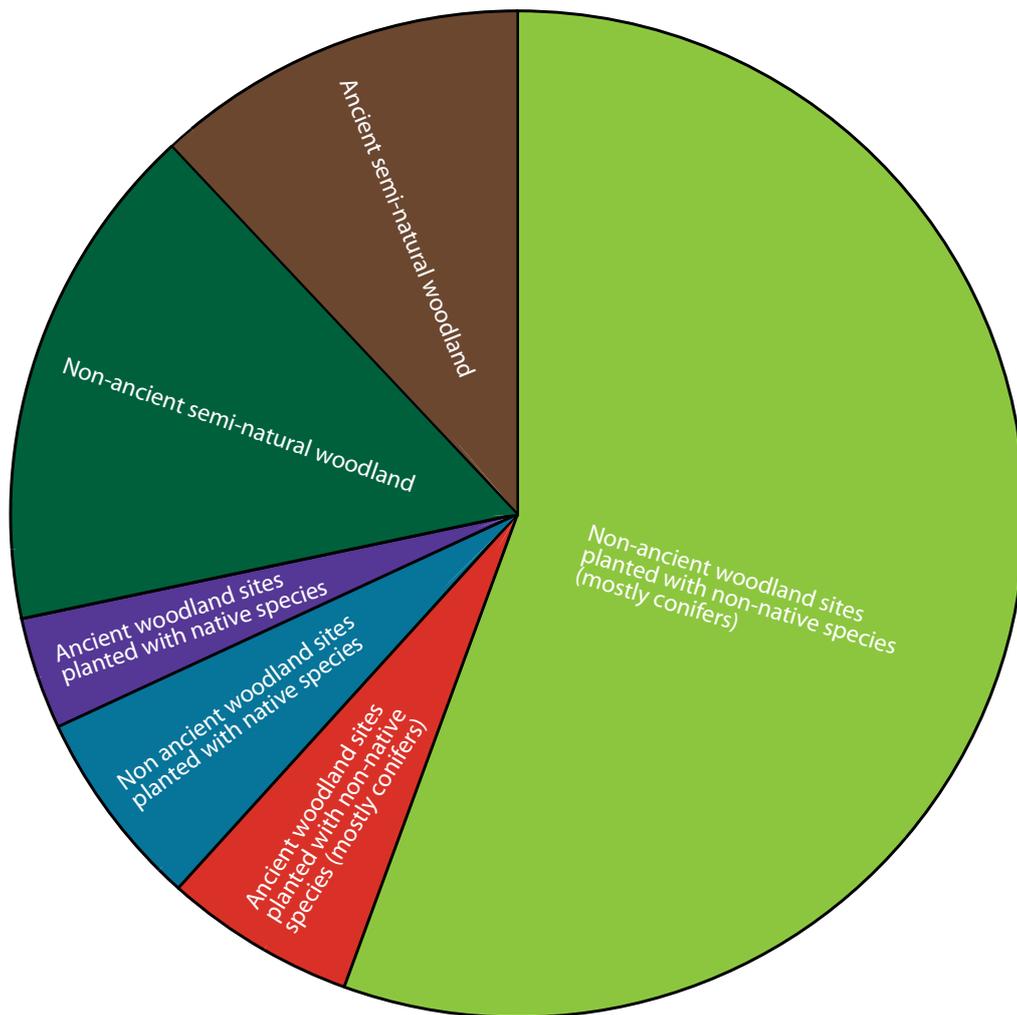
This is what we want to happen

- More woodlands are managed to the UK Forestry Standard and are capable of producing useable timber and other services.
- More woodlands are certificated to the UK Woodland Assurance Standard.
- More of the usable timber grown in Welsh woodlands is harvested, and greater value is added to it during processing.

To get there we shall

- Promote the development and use of the UK Forestry Standard and its associated guidelines.
- Actively promote the benefits of certification to the UK Woodland Assurance Standard to woodland owners and timber processors, and support improvements in access to certification for small woodland owners.
- Streamline the administration of grant aid for small woodlands and for those that already certified to the UK Woodland Assurance Standard.
- Target Rural Development Plan support at the large area of under-managed farm woodland in Wales.
- Encourage the development of local markets for woodfuel and other products.

Fig 4: Woodlands of Wales – Woodland type and ownership



Woodland Type	Assembly owned (hectares)	Other ownership (hectares)	Total
Non-ancient woodland sites planted with non-native species (mostly conifers)	104000	56000	160000
Ancient woodland sites planted with non-native species (mostly conifers)	7500	9500	17000
Non-ancient woodland sites planted with native species	2300	16000	18300
Ancient woodland sites planted with native species	4800	6200	11000
Non-ancient semi-natural woodland	6100	41000	47100
Ancient semi-natural woodland	2000	32000	34000
Total	126700	160700	287400

Other ownership = Private owners, non government organisations, community groups, educational establishments & unitary authorities

2.2 Woodland ecosystems are healthy and resilient



The health and viability of woodland trees is closely related to that of the whole ecosystem, which in turn is influenced by the structure, species composition, genetic diversity and location of the woodland. To be resilient and capable of delivering our strategy, many Welsh woodland ecosystems, particularly those of non-native woodlands, need to be diversified. The positive impacts of diverse, mixed woodlands on ecosystem and landscape quality are well understood.

In the context of *Woodlands for Wales* the objective of diversification is to move away from large single aged, single species, twentieth century plantations. Although there has already been a major programme of restructuring the age of our own woodlands over the last twenty years, there has not been the same concerted effort to diversify the species grown or develop the use of mixtures.

Now environmental and social concerns, combined with the risks of climate change mean that diversification of these single-age single-species woodlands is becoming even more important. As the climate changes we can expect a longer growing season, with increased growth and production potential, but also greater risk of winter storm damage and summer drought and fires. Changes in the pattern of outbreaks of pests and diseases could present an even more serious threat, especially to single species woodlands.

We therefore propose to make a major effort to accelerate the diversification of woodlands, which we believe is the best way of reducing risk.

This gives us the best chance of maintaining public support for Welsh forestry by establishing a resilient forest capable of delivering society's aspirations and coping with any future threats from climate change. We can then focus on ensuring that the production from these more diverse woodlands meets future market demands and supports a vibrant Welsh timber processing industry.

The nature of diversity will vary and it can be applied at different scales. We are not suggesting that all woodlands will be intimate mixtures of different ages and species, or predominantly native in origin.

Some woodlands will require change at a stand level if they are to make a significant contribution to biodiversity or social objectives

This approach is especially relevant if the objectives for the site are best achieved by avoiding clearfelling in the future, and by introducing a range of tree species and genetic diversity to widen future management options. For others, more diversity at a whole woodland level will be a better approach, where variations in site potential can be used creatively to establish a wider range of species. Both approaches, when combined strategically at a landscape level, will make a significant contribution to healthier and more resilient woodland ecosystems.

In practice diversity will be achieved on a site by site basis and will include characteristics such as species, genetic diversity, age, structure and extent of woodland cover.

A range of management techniques and silvicultural systems will all play a part in creating diversity and will be matched to site conditions and management objectives.

We do understand that more diverse woodlands require more complex management systems, which may be less affordable for some woodland owners and managers. We also recognise that the impacts of rising deer and grey squirrel populations will need to be addressed as we move towards greater diversity.

We recognise concerns that some species planted to diversify woodlands may produce lower volumes of timber and possibly have poorer market access than better-established species. This is why our support will be needed for these changes, which will deliver public benefit, and it is why we aim to maintain the overall production potential of Welsh woodlands at a national scale.

We intend to do this through our twin strategies of bringing more woodlands into management and increasing woodland cover. We will be discussing this in more detail later in the strategy.

We acknowledge that this represents a significant change for both the timber growing and processing sectors, but we believe that a stronger focus on the health and resilience of woodland ecosystems is essential if the woodlands of Wales are to deliver wider benefits that the people of Wales need.

This is what we want to happen

- There is appropriate diversification of the age structure and tree species and the genetic base of woodlands, particularly non-native woodlands, at a range of scales and using mechanisms suited to the site and the woodland management objectives.
- Priority is given to native woodland species when restoring ancient woodlands.
- The negative impacts on woodlands of species such as deer and grey squirrels are addressed.

To get there we shall

- Manage our own woodlands to make them more resilient to climate change, and use advice and incentives to encourage other owners to do the same.
- Review and improve our ability to deal with outbreaks of woodland pests and diseases.
- Develop practical guidance for diversifying and managing non-native woodlands.
- Provide guidance on improving the genetic diversity within tree species.
- Develop strategic approaches to target action to deal with the impacts of the growing deer and grey squirrel populations.

2.3 Woodlands are better adapted to deliver a full range of benefits



Although the idea of multi-purpose woodland management is widely accepted, the value of all the benefits that woodlands and trees can provide for society is often overlooked. These benefits are collectively known as ecosystem services and include:

- **Provisioning services** – producing timber for a variety of purposes, including renewable energy to replace fossil fuels and as a substitute for more carbon expensive materials such as steel and concrete.
- **Cultural services** – recreational, health, aesthetic, and spiritual benefits for people living near or visiting woodlands; biodiversity, landscapes, heritage and culture.
- **Regulating services** – protecting water and soil resources within catchments; contributing to the reclamation of contaminated land; providing shelter, shade and cooling in towns, and wind breaks (shelterbelts) on farmland

- **Supporting services** – net carbon sequestration (locking up atmospheric carbon).

Apart from timber and woodfuel most of these ecosystem goods and services cannot be sold on the open market but are nevertheless of great importance to the people of Wales.

The current supply of woodland ecosystem services is limited by three main factors – the nature, character and management of Welsh woodland; the under-management of existing woodland; and lack of woodland in places where it is needed.

Most of these challenges are dealt with elsewhere in this strategy. But of particular concern, in delivering the widest suite of ecosystem services from Welsh woodlands, is the current reliance on clear felling as a management practice for twentieth century plantations. The uniform application of this high-impact management technique makes it much more difficult to deliver the full potential of environmental and social outcomes from healthy woodland ecosystems. There is also an increasing number of timber growers convinced that reducing reliance on clearfelling will offer the opportunity to deliver a greater variety of timber products. So although the Forestry Commission has made significant progress in recent years in identifying parts of our woodland estate where clearfelling can be avoided, we wish to make even more progress in coming years. We are convinced that taking further measures to avoid clearfelling will maximise the contribution of these woodlands to the strategy outcomes, and we shall encourage a similar approach in the forests we do not own.

We are less concerned about the exact forest management system used to replace clearfelling – it is more important that the system used is appropriate to the site.

Continuous cover forestry (CCF) techniques or simply a lower impact silvicultural system (LISS) are examples of methods that could be used. We also understand that many Welsh woodlands that were established as single species plantations are difficult to transform, and some of these will need to be clearfelled so that we can start again with a better species composition, managed from the outset with the intention of avoiding clearfelling.

Much of the native and mixed woodland in Wales is not actively managed because the income from timber alone is not sufficient to pay for the management work. We believe that more of this important resource would be brought into sustainable management if the costs of providing ecosystem services could be properly reflected in the income from these woodlands. Where the market fails to do so we shall work with others to secure payments (from a variety of sources) for the provision of these woodland services, and where possible encourage the management and harvesting of wood products.

This is what we want to happen

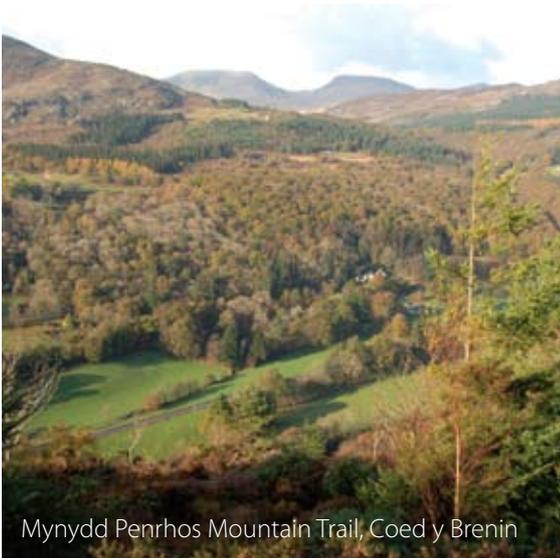
- Woodlands and individual trees in Wales are valued by their owners and society for the whole range of goods and services provided including timber, fuel, water quality and water management, climate regulation, biodiversity, and improvement of landscapes and access opportunities.

- Clearfelling is avoided where alternative management systems would make a better contribution to ecosystem services.
- Decisions about woodland creation and management take full account of all the ecosystem services the woodland could provide, not just the potential for timber production.

To get there we shall

- Seek to avoid clearfelling on our own woodland estate whenever alternative management methods would deliver a wider range of ecosystem services.
- As we implement our policy to avoid clearfelling, ensure that that we maintain the volume of timber from our woodland estate in the short to medium term to support sustainable development and the Welsh timber processing sector.
- With grants and advice, encourage the adoption of alternatives to clearfelling; the diversification of woodlands; the use of mixtures; and increased species diversity.
- Offer tiered grants and incentive payments for woodland management and the creation of new woodlands, taking account of the non-market benefits of ecosystem services and the additional costs of providing them.
- Continue to work with others to develop innovative systems of payments for ecosystem services.

2.4 Woodland cover in Wales increases



We recognise the important role that woodlands and timber use can play in sustainable development, and also the economic activity generated by timber processing in Wales. The total area of woodland in Wales has changed little in the past twenty years, and the 400 hectares or so of new native woodland planted each year more or less balances the area of woodland permanently removed for habitat restoration or in the course of approved development. The measures we shall take to ensure woodland health and resilience, and those to restore priority habitats, will reduce the production potential of some woodland at a local scale.

To help mitigate this impact, we wish to see woodland cover increase at a national scale.

By increasing woodland cover gradually in the future, we will demonstrate our commitment to the important strategic objective of ensuring that the overall production potential of Welsh woodlands is maintained.

More woodland cover is also needed to provide the full range of ecosystem services and community benefits envisaged in this strategy, and to deliver woodland's contribution to our policies for energy and the environment.

This new woodland must be genuinely multi-purpose, requiring careful design and establishment. Creating new native woodlands and growing timber will be key components.

How much new land is offered for woodland creation will be influenced by the long-term effects of changes in farm support payments, and the extent to which we are able to 'buy' ecosystem and community services from landowners.

Ensuring that woodland cover increases also means reducing the unnecessary removal of woodland.

We shall not be setting a specific target for increasing woodland cover. Instead we intend to ensure that the overall production potential of woodlands in Wales is maintained at current levels through new woodland creation, and through measures to bring more woodland into management.

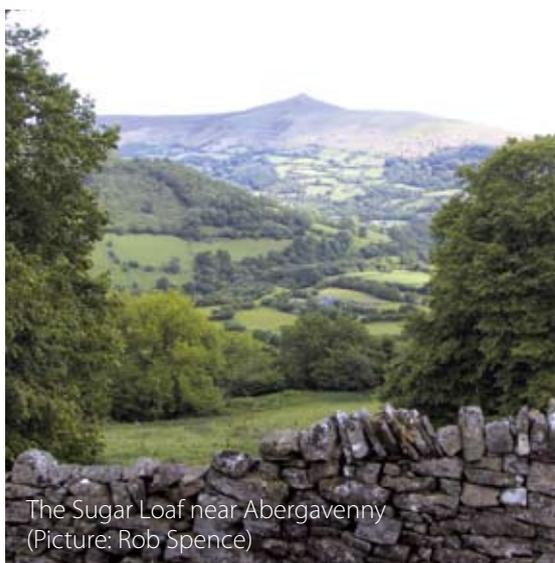
This is what we want to happen

- Woodland cover in Wales increases to meet strategy priorities and to maintain the overall production potential from Welsh woodlands.
- Priority is given to creating both new native and new mixed woodlands that can deliver multiple benefits.
- Woodland creation is guided by the objectives of this strategy and by the need to protect semi-natural habitats, historic features and characteristic landscapes.
- There is a strong presumption against the permanent removal of woodland except for the restoration of high priority open habitats and where this is necessary it is balanced by woodland creation at a national level; landscape improvement and habitat restoration are preferably achieved through modifying management systems rather than by removing woodland.
- When permanent removal of woodland is permitted for development, the losses in public benefit are offset by compensatory planting.

To get there we shall

- Provide information to landowners and communities about our priorities for woodland creation and grant aid.
- When woodland is removed for habitat restoration, the loss is offset by the creation of new woodland elsewhere, in line with the priorities of this strategy.
- Seek to ensure that planning policy reflects the need for compensatory planting, when permanent removal of woodland is permitted for development.

2.5 The management of woodland and trees is more closely related to other land uses



The Sugar Loaf near Abergavenny
(Picture: Rob Spence)

Historically native woodland would have been an integral part of most farms in Wales, carefully managed to provide timber and fuel. Individual and hedgerow trees would also have been important. In far too many instances this functional link has long been lost.

Productive private woodland management in Wales is based around the conifer plantations established by estate owners during the twentieth century. Conifer planting (other than shelterbelts) was generally seen by farmers as an alternative to agriculture, not part of it, and the Common Agricultural Policy (CAP) support payments provided a powerful incentive to overgraze farm woodlands, leading to habitat loss and lack of regeneration. Since 2005 farm payments are no longer linked to livestock numbers, offering new opportunities to revive the links between farmland and woodland.

Most of the planned increase in woodland cover in Wales is likely to come from new woodlands on farmland, providing important ecosystem services such as water management, habitat creation, timber production and local sources of woodfuel. It may also come from commercial investors and others buying land for woodland creation – perhaps linked to the value of land for carbon management. Providing quality services from woodlands is a long-term process and the management of new woodlands will need to reflect this.

Woodland creation and tree planting can have an important role in the reclamation of former industrial land and as an integral part of environmental management in urban and industrial developments. For example there are many opportunities in the post-industrial areas of Wales – such as the Heads of the Valleys area, already identified as a landscape where woodlands and trees can have a powerful regenerative impact.



Old Hall, Hen Neuadd. Farm woodlands

This is what we want to happen

- Farmers have better support in managing their woodlands and trees to provide ecosystem services and diversify their businesses.
- There is better protection for existing individual trees, particularly veteran trees, and more individual trees are planted in recognition of their contribution to ecosystem services and our quality of life.
- Farmers, rural businesses and communities have more incentives to use timber and woodfuel.

To get there we shall

- Restructure land management grants and other incentives, making it easier for landowners to provide integrated ecosystem services.
- Seek to match other support (e.g. for co-operatives, marketing and processing, micro-businesses and Local Action Groups) to the needs of all landowners considering integrated land management.
- Provide advice on integrated land management through initiatives such as Farming Connect.
- Promote woodland creation and tree planting as integral elements of land use planning.

2.6 Urban woodlands and trees deliver a full range of benefits



We want to see woodlands and trees playing a greater and more valued role in towns and cities, so an explicit aim of this strategy is to use the potential of trees and woodlands to improve the quality of life and surroundings of the people who live in these urban areas.

There is a need for a wider appreciation of existing street trees, to help ensure their protection, and for more planting of individual trees in Welsh towns and cities. When associated with buildings, woodlands and trees can soften the junctions between built and natural environments and contribute to greening urban areas and the restoration of industrial land. We wish to see more creative use of opportunities for planting woodlands and trees in new developments, and in the restoration of brownfield sites. We also want to see better quality, easy access to urban and rural green space.

Woodlands and trees have a vital role to play in helping people and biodiversity adapt to the effects of a changing climate, which are likely to include changes in the pattern of rainfall, an increased risk of flooding, and higher peak temperatures (particularly noticeable in urban areas).

Trees in streets and parks help to cool down urban areas in summer, and provide shade for people and buildings. They also help to reduce the pressure on urban drainage systems, by absorbing water that would otherwise run off the large areas of impermeable surfaces.

This is what we want to happen

- Woodlands and trees are used more creatively in new development and in the restoration of industrial sites to provide people with better quality, easily accessible green space.

To get there we shall

- Support local authorities in a programme of urban tree planting and woodland management.
- Improve access to urban woodlands, especially for people who currently do not have easy access to green spaces.
- Work with local authorities, landscape designers, architects and other relevant stakeholders to ensure that the environmental benefits of trees in modifying microclimate and drainage are taken into account in planning guidance and development control, and when creating sustainable urban drainage systems.
- Promote the contribution that urban woodlands and trees could make to other policy agendas, including those which concern climate change, health, social welfare, lifelong learning and biodiversity, and the management of water and soil resources.



Cooling towers

3. Responding to climate change

Climate change is going to affect the way we all live, and we must address the twin challenges of reducing carbon emissions, and coping with the effects of an already changing climate. Woodlands and trees in Wales have a role to play, and *Woodlands for Wales* explains how we shall address these challenges through woodland policy.

Although some upland sites for windfarms in Wales are (or will be) within forests, windfarms are considered as part of our renewable energy policy, rather than in this strategy. Any potential windfarm development that involves the removal of woodland will be considered within the planning system, which will take a range of policies into account to achieve the best result for society as a whole.

The woodlands and trees of Wales can contribute directly to our efforts to deal with climate change, but only if they themselves can cope with changing weather patterns and new risks from pests and diseases.

Therefore our first priority is making sure that woodlands are resilient enough to be capable of adapting to climate change, because all the resulting benefits depend on having healthy woodland ecosystems. Action is required now, because trees have a long life-cycle and changes in woodland management can take many years to implement. We have already explained that we believe that increasing woodland diversity and management is the best course to take, and how we intend to achieve this in our own woodlands and to encourage and support it elsewhere. In addition, trees can have a significant influence on the microclimate around them, and also affect the movement of water through and across the soil. The beneficial effects of woodlands and trees on water flows and urban climate will also help the people of Wales to cope with the day-to-day effects of climate change.

If we can adapt them to be resilient to climate change, then existing woodlands and trees, as well as those that might be planted, can all play a part in achieving our targets to reduce net carbon emissions.

This contribution is made in two ways:

- Firstly, through a process known as sequestration, carbon can be stored in plants and soils. Trees store some of this carbon which remains in the growing timber, branches and leaves, or accumulates in the soils where they are growing. The rest re-enters the atmosphere through respiration and the decay of fallen leaves and branches.
- Secondly, through substitution, woodland products can be used as sources of energy, or as raw materials for construction and manufacturing, in place of other products derived from, or using, fossil fuels in their production. If timber is harvested and used for construction or manufacturing, most of the carbon in the timber remains locked up for the life of the product – perhaps as long as several hundred years in the beams of old buildings or furniture. If the timber is burnt as woodfuel, the carbon is of course released to the atmosphere but, provided this carbon is ‘recycled’ each year in an equivalent amount of fresh tree growth, this is much better than unlocking carbon that has been stored for hundreds of millions of years (which is what happens when coal or oil is burnt).

Many of the key outcomes for harnessing the benefits of woodlands and trees to help society adapt to climate change are dealt with elsewhere in this strategy, but we have an additional, specific outcome relating to carbon reduction:

- **Welsh woodlands contribute to reducing the carbon footprint of Wales.**

3.1 Welsh woodlands contribute to reducing the carbon footprint of Wales



Helpu Cymru i leihau ei Hôl Troed Carbon

Help Wales reduce its Carbon Footprint

Managing the woodlands of Wales to help achieve carbon reduction targets means striking a balance between the two different contributions described above – on the one hand harvesting timber for woodfuel and manufacturing as a substitute for high energy construction materials like concrete or steel and on the other accumulating a bigger reservoir of carbon in standing timber, woodland vegetation and soils. The quantity of carbon stored every year by a tree (the sequestration rate) varies throughout its life, increasing steadily once the tree is established then levelling off as it matures. The sequestration rate of Welsh woodland increased rapidly following the massive afforestation programmes of the mid 20th century but is levelling off now as these trees mature, and when they are felled the total carbon stored in Welsh woodlands will decline for a period. However, it is possible to influence this through the management chosen for existing woodlands and for any new woodlands that are replanted or created in the future.

Recent research by the Forestry Commission suggests that woodland management aimed at growing enduring timber for construction and manufacturing, using smaller diameter timber for wood fuel and reducing soil disturbance is most likely to deliver long-term reductions in net greenhouse gas emissions. Ongoing research will help us to understand the full implications of all the different management options and to provide better guidance for woodland managers, but the basic principle is established – bringing more woodlands into active management will make a positive contribution to mitigating climate change.

Woodfuel can make a small but worthwhile contribution to the Welsh targets for reducing greenhouse gas emissions especially when used for heating. There is an opportunity to replace imported woodfuel with home-grown supplies, by bringing more woodland into active management and by increasing the total area of woodland. Other options to produce woodfuel include the establishment of short rotation forestry and short rotation coppice, usually on land not previously wooded (although never on valuable open habitats or ancient woodland sites). Both use fast growing species, but differ in the interval between harvesting and the size of timber produced. Short rotation coppice is not considered further within this strategy, because it is essentially an agricultural production system, typically growing willow for a single, very specific market (not to be confused with traditional forest management of coppice with standards, where the coppice is grown from long-established tree bases or 'stools', often hazel).

Short rotation forestry is the practice of growing trees in an intensive system, usually to produce biomass for fuel.

Higher density planting and short rotations are used and, with suitable species, these systems do offer the flexibility of delivering different management objectives if circumstances change in the future. For instance, ash established as short rotation forestry could subsequently be managed as high-forest if markets changed or management was deferred. Short rotation forestry practised within a sustainable forest management framework, using the UK Forestry Standard as a benchmark, could make a useful additional contribution to local woodfuel markets.

Alongside the carbon stored in woody biomass and the carbon substitution potential of timber it is important also to recognise the role of woodland soils in carbon storage. Long running experiments have shown that converting arable soils to mixed broadleaf woodland can double the carbon stocks in the soil. Organic soils contain more carbon than the trees themselves, particularly the peaty soils of Wales. Woodland management on these soils requires careful practice. In some cases the best course may be to take no action, retaining the current tree cover and leaving the site undisturbed, or to continue a careful mixture of management systems to encourage native woodland and open space. In other cases removing woodland cover permanently and actively restoring the bog habitat may be appropriate. On specific deep peat sites, which have been identified as high priority open habitats, no or low-impact woodland management will be appropriate.

This is what we want to happen

- New woodlands are created and existing woodlands are managed in a way which balances the achievement of other objectives of this strategy and the yield of usable timber and wood products, whilst also helping to sequester carbon in living biomass.

- Where short rotation forestry is grown with the objective of maximising woodfuel for energy purposes, then this site-based objective is pursued within a wider sustainable forest management framework that conforms to the UK Forestry Standard.
- The carbon storage capacity of woodlands is protected by balancing the potential damage from operational management against the carbon benefits of both the harvested material and the biomass which remains (above ground and in the soil).

To get there we shall

- Encourage the production of timber and woodfuel from woodlands managed in a more sustainable way.
- Encourage co-operative action by groups of farmers and owners of small woodlands to bring their woodlands into sustainable management;
- Promote the use of home-grown wood as a sustainable building and manufacturing material, and a source of renewable energy.
- Taking into account the objectives of our Bioenergy Strategy we will support the planting of new short rotation forestry to produce woodfuel where there is local demand, provided the size, location, species and management regime of the proposed planting poses no threat to the environment, and meets the UK Forestry Standard.
- Contribute to developing a UK code of good practice for forest carbon management projects that is relevant to Wales.
- Provide advice on woodland management techniques to minimise carbon loss.



Family on a way-marked woodland walk

4. Woodlands for People

Woodland has long been recognised as a valuable setting for a wide range of community activities and public involvement for all sectors of society. This can help to improve people's health and well-being, support community development and provide learning opportunities. In many cases the same activities also support economic objectives such as job creation and enterprise development. These jobs and businesses may involve the direct use of trees and timber products, or the use of woodlands as a setting for leisure and tourism enterprises - which are a significant part of the Welsh economy, particularly in rural areas. To make the most of all these opportunities, we want to make sure that the woodlands of Wales, especially those we own, are managed in ways that can support the objectives of local communities including the most disadvantaged, and minority and hard to reach groups.

We have identified four key outcomes where woodlands could improve the quality of life:

- **More communities benefit from woodlands and trees.**
- **More people enjoy the life-long learning benefits of woodlands and their products.**
- **More people live healthier lives as a result of their use and enjoyment of woodlands.**
- **More people benefit from woodland related enterprises.**

4.1 More communities benefit from woodlands and trees

Woodlands and trees are important to communities across Wales. Since 2001 much work has been done with community groups, both to conserve and manage woodlands and to involve local people in decision-making about the future of woodlands in their area.

This involvement can present challenges to woodland owners and community groups alike. The objectives of all concerned need to be carefully communicated and understood so that expectations can be realistic and satisfactory outcomes achieved.

More than 160 projects were funded in North and West Wales and the South Wales Valleys as part of the £16 million Cydcoed scheme. The evaluation of Cydcoed has given us a better understanding of the benefits that community groups have gained as a result of involvement in woodlands. Although not all of these benefits are easy to quantify, community groups expressed a strong sense that they had experienced improved health and well-being, greater community cohesion, education and learning opportunities for different age groups, improved access to woodlands, a better quality environment and, in some cases, economic opportunities. Many of these groups were from some of the most disadvantaged communities in Wales. It is therefore important that we continue to encourage community involvement in woodlands and provide the right kinds of support to enable it to happen.

In addition to recognising the range of benefits that flow from involvement in woodlands, the Cydcoed experience has also highlighted the differing needs and interests of community groups, and the varying ways in which community interests are represented. Enabling more community involvement in future will require us to have more effective mechanisms for engagement, strong networking abilities and the right tools to support the needs of different groups, and communities.

This is what we want to happen

- More communities are involved in the decision making and management of woodlands so that woodlands deliver greater benefits at a community level.

To get there we shall

- Encourage effective dialogue between woodland managers and community groups about community involvement in planning and managing woodlands.
- Use the experience gained from projects throughout Wales to develop practices which overcome the challenges facing both community groups and woodland owners.
- Assist community groups to gain access to woodland grants and other funding streams that can support local initiatives.
- Encourage greater networking and 'lesson learning' between community groups.
- Work closely with community groups and local authorities to develop legal agreements and other forms of support that are required to improve the variety and level of community involvement in woodlands.
- Encourage effective joint working to enable woodlands to contribute to community development objectives, taking account of local needs and social diversity.

4.2 More people enjoy the life-long learning benefits of woodlands and their products



Wood, trees and woodlands are being used in Wales by the public and the voluntary sector to support many learning initiatives. These include working with others using approaches such as Forest School (an innovative educational approach to outdoor play and learning). Through schemes like the Forest Education Initiative we are also supporting local partnerships to develop lifelong learning and interest in the use of wood and woodlands. We need to build on our experience to encourage more lifelong learning, from school to young adulthood and ideally into employment and beyond.

An outdoor setting, particularly woodland, has been shown to support both conventional and informal learning by providing a stimulating environment where children and adults can learn. Woodlands offer a rich resource for a wide range of subjects, and provide an ideal setting to learn life skills, such as team working and communication.

Woodland management and the use of wood to make products also requires a wide range of technical skills. Woodlands can be managed to provide a very adaptable environment to support the learning needs of very different groups, from children with learning difficulties through to adults and older people.

Learning in woodlands also provides an ideal setting to introduce concepts such as sustainable development and global citizenship, which are becoming increasingly important as society adapts to climate change. Learning outdoors also has major physical and mental health benefits, especially for children, and initiatives to support regular informal play in woodlands can complement more structured learning.

This is what we want to happen

- More people of all ages benefit from the use of woodland as a setting for learning and play, leading to an improved understanding of woodlands and trees and the wider benefits which they provide in terms of our economy, society, environment and employment opportunities.

To get there we shall

- Provide safe, well-managed woodlands as a setting for learning for all age groups.
- Continue to develop and deliver Forest School.
- Encourage public involvement in woodland-related learning of all kinds through schemes like the Forest Education Initiative and support for community groups.
- Strengthen the links between existing learning and training initiatives in the public, private and voluntary sector to encourage life-long learning.

- Through partnership working with local authorities and third sector organisations, encourage more use of woodlands for education and training.
- Encourage a culture of global citizenship and the appreciation and understanding of the woodland environment in all learning and training in woodlands.

4.3 More people live healthier lives as a result of their use and enjoyment of woodlands



Following a woodland trail

The use and enjoyment of woodlands and green space can contribute to the physical, mental and emotional well being of all people in Wales and can make a particularly important contribution to the specific health needs of communities. Well-managed, welcoming woodlands provide an excellent setting for outdoor recreation such as walking, cycling and horse riding. More regular outdoor exercise lowers rates of obesity, cardiovascular disease, osteoporosis and type-2 diabetes, as well as some cancers.

It can contribute to a lifelong pattern of healthy living if encouraged amongst the young, and in the elderly it contributes to greater mobility and fewer injuries associated with ageing.

The experience of a natural environment and the opportunity for exercise can assist in treating people with severe mental health problems, in modifying anti-social behaviour in young children and adolescents, in supporting people dealing with stress and depression, and can also help to improve concentration in the workplace.

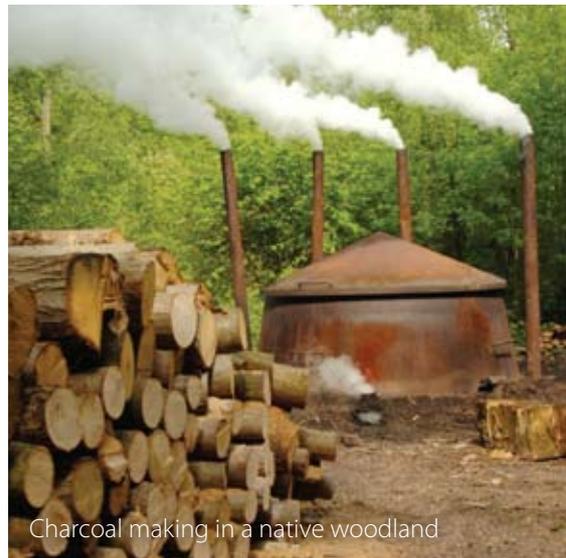
This is what we want to happen

- More people lead healthier lives because they take advantage of opportunities to use and enjoy woodlands.

To get there we shall

- Encourage the development and promotion of woodland access throughout Wales with suitable infrastructure and well managed woodlands which feel safe and welcoming.
- Support tree planting to improve the landscape and provide opportunities to use green space for outdoor recreation, taking account of local needs.
- Support communities to identify local access and recreation needs.
- Encourage joint working with providers of health, education and social care services to promote the use of woodlands by people of all ages, appropriate to their physical and mental health needs.
- Look for opportunities where woodlands could contribute to volunteering initiatives that encourage physical good health and social inclusion.

4.4 More people benefit from woodland related enterprises



Charcoal making in a native woodland

Woodlands and trees can provide a setting for individuals and community groups to start up and operate businesses, developing skills and creating jobs locally. In Wales we have many examples of small enterprises that use woodlands in a variety of ways. Woodlands support a wide range of land-based contracting businesses, some of them specialist forestry contractors and others offering more general services such as fencing or track maintenance. Woodlands also supply the raw materials for a variety of small businesses involved in timber processing, woodfuel, charcoal making and a range of woodland crafts.

Woodlands play a significant role in supporting the sustainable tourism industry in Wales. Specialist recreation facilities in woodlands can attract visitors who then support other local businesses, including restaurants and accommodation providers.

Wales can boast some of the best mountain bike routes in the world in its woodlands, and strong links with organisations like Visit Wales ensure that the routes themselves are well promoted and that local businesses can make the most of the opportunities the trails bring, boosting the local economy. Woodlands also provide ideal settings for other activities including canoeing, game shooting, horse riding and walking.

Woodlands and wood products also support a variety of social enterprises. Examples include the use of the woodland as a venue for training and skills development where income generated is reinvested back into other social projects. Some community groups have gone on to set up spin-off contracting services, giving employment or work experience to local people.



Twrch Trail, Cwmcarn

This is what we want to happen

- More people operate businesses, develop skills and create jobs in enterprises associated with woodland and timber.

To get there we shall

- Encourage woodland-based small and emerging enterprises to use the community support elements of the Wales Rural Development Plan (RDP), and other services
- Support initiatives such as the Wales Forest Business Partnership in providing support to small timber-related businesses for product development and marketing
- Develop legal agreements and other support needed to improve the level of small enterprise activity in woodlands, especially those we own
- Provide safe, well-managed woodlands as a setting for tourism-related activity in woodlands, and manage woodland landscapes to support tourism in Wales.
- Aim to increase the number of visitors to Wales by working with the private sector and voluntary sectors to develop and maintain tourism infrastructure in woodlands.
- Help to develop models for woodland-related social enterprises that create jobs, develop skills and provide a mechanism for sustainable local development.



Extracting oak thinnings

5. A competitive and integrated forest sector

The Welsh market for forest products is dominated by imports, which means that both timber growers and manufacturers operate in a fiercely competitive environment. The forest sector in Wales now contributes an estimated £429 million to the national economy and directly employs nearly 9,000 people¹, and we recognise the vital role of Welsh timber in financing woodland management and in supporting the growth of Welsh forest industries, especially in rural areas. We also value the role of timber as a key renewable resource to support our sustainable development policies.

Table 1: Forest sector contribution to the economy and jobs in Wales

(rounded estimates derived from Office of National Statistics Annual Business Inquiry data)

	Gross Value Added (2004)	Estimates of numbers directly employed (2007)
Forestry & harvesting	£26 million	1300
Primary processing (sawmilling, panels and pulp)	£167 million	1600
Secondary processing (builders carpentry and other wood products)	£236 million	6000
Estimated total	£429 million	8,900

In Wales, most sawmills rely heavily on coniferous timber with three-quarters of their requirements coming from Welsh forests. An estimated two thirds of the milled timber that is produced remains in Wales and there is clearly potential to increase its value through secondary processing.

The Welsh forestry sector, including management, harvesting and processing, is characterised by long established family owned businesses with a generally rural base. These provide valuable employment opportunities for local communities. Some of these enterprises are also involved in the management of the smaller and widely diverse native woodlands.

The sector produces a range of timber products from, panel boards, sawn timber, packaging, flooring and fencing, to niche products such as charcoal and high end-value, low quantity furniture and craft products.

There are large areas of currently unmanaged broadleaf and farm woodland in Wales. Although not all of this woodland is suitable for market-orientated management, collectively it represents a major opportunity to increase production of usable timber in response to increasing demand, especially for energy, and thereby support the development of these smaller businesses.

¹ The forest sector here is defined using the Standard Industrial Codes from the Office of National Statistics as follows: Forestry and harvesting: SIC02; Primary processing: SIC 20.1, 20.2 and 21.1; secondary processing: SIC 20.3, 20.4, 20.5 and 21.2. This definition excludes woodland-based recreation and tourism, and energy generation. It also excludes timber transport, suppliers, merchants and importers, and the furniture and joinery sectors and is therefore narrower than the definition of the sector used in the 2004 Jaako Pöyry study Mapping and Benchmarking the Welsh forest industry, which estimated the forestry industry to contribute £1.7 billion in gross value added (GVA) and to directly support 16,300 jobs.

We wish to see a resurgence of economic activity in Welsh woodlands, which in turn could help to 'kick-start' a longer term commitment to sustainable woodland management and so help to deliver the other outcomes of this strategy.

Our plans to diversify the species mix and management of our own woodlands presents real challenges for the processing sector in Wales over the next 20 to 30 years. The major sawmills have invested heavily to build the capacity to utilise and add value to the timber produced from the current Welsh woodland resource – most notably the conifer crops grown as a strategic reserve of timber in the post-war era. That confidence was based in part on reliable information on the quantity and nature of future timber production, and also on confidence in the supply chain. Realising the potential of a more diverse Welsh woodland resource in the future will require further investment in processing capacity, and good information on future timber production.

For all these reasons we have adopted the strategic objective of maintaining national woodland production potential at current levels. We intend to achieve this by supporting the sustainable management of currently under-managed woodland, and by increasing woodland cover, whilst maintaining output from our own woodlands in the short to medium term.

These changes and opportunities pose many challenges for both timber growers and processors, as well as government. Support in making changes is likely to need both 'pull' from market development and 'push' from grants; advice; the provision of information and business support; as well as a robust supply chain.

Mechanisation, poor financial returns over the past decade and a disconnection between the growing of timber and local uses of timber have led to the industry suffering from a diminishing skills base with a low level of new participants and equally low levels of retention. Working in many of the less accessible woodland sites involves the use of small-scale machinery and a greater reliance on skilled manual labour.

Given this changing context we have identified four key outcomes for the Welsh forest sector:

- **More Welsh grown timber is used in Wales.**
- **The forest sector is better integrated and more competitive, supporting the Welsh economy.**
- **Increased use of timber as a key renewable resource.**
- **A thriving, skilled workforce in the forestry sector.**

5.1 More Welsh-grown timber is used in Wales



Adding value to the timber currently available is just as important as increasing overall output. Wales already has a track record of investment and innovation in developing new uses for wood and acting as an early adopter for new technologies developed elsewhere. An example of this is the work of Coed Cymru and others in helping to develop new uses for small sections of timber in window frames and end-grain flooring, as well as the heat treatment of wood and sectional timber building systems.

A 2004 report by Jaakko Pöyry concluded that using progressively more home-grown timber, and developing higher quality timber would add value to the whole supply chain, from harvesting to secondary processors. The primary processing sector (including sawmills, fibreboard manufacturers, pulp and paper mills) could gain by supplying products required for secondary processing and end uses, and the development of the whole sector could be launched from an already strong secondary processing industry in Wales (e.g. furniture and joinery).

For our part we intend to provide more accurate information on the utilisable timber becoming available from Welsh woodlands, to allow current businesses to adapt and respond to long-term changes.

This is what we want to happen

- The forest sector is helped to seize the opportunities and overcome the challenges of the changes needed to implement this strategy, and the different segments of the sector have a better understanding of how this can be achieved.
- When diversifying woodlands, owners choose species with timber properties that future markets are likely to utilise (e.g. for construction, fuel, fencing or packaging).
- The demand for woodfuel acts as a catalyst to bring more woodland into active management.

To get there we shall

- Encourage and support investment in long-term woodland management, and adaptation and innovation to meet new opportunities.
- Encourage research and development work to support innovation, development and knowledge transfer on: harvesting, handling, processing and product development.
- Provide advice to growers on the timber properties of different species.
- Help the sector to stimulate demand for woodland products from Wales.
- Provide accurate information on the impact on future timber supplies of the long-term changes to Welsh woodlands.

5.2 The forest sector is better integrated and more competitive, supporting the Welsh economy



Timber for processing in Wales

A thriving forest industry is important to the Welsh economy. The Jaakko Pöyry report highlighted the good demand for timber products, and we expect this demand to increase with the focus on sustainability and awareness of the carbon footprint of materials. These drivers should lead to a greater demand for wood products including those that are both local (with lower carbon footprint) and sustainably produced.

The Welsh Forest Business Partnership is well established as an industry-led group actively trying to improve cohesion within the whole woodland sector.

The Partnership's objectives are to ensure that Welsh wood-based industries are able to compete with the best in the world; to expand and develop the market for higher value products and services; to encourage a wood-using culture in Wales and the UK so that wood becomes the first choice for customers; to build an innovative industry that understands and responds to customers' needs; and for woodland to be recognised as a sector that makes major contributions to the Welsh economy, the environment and to communities.

One of the Partnership's projects, Woodsource Wales, is a marketing initiative led by businesses in the forestry and wood products sectors. It offers support throughout the timber supply chain, from the one person operation to the multi-national corporation, with products ranging from paper to kitchens, and flooring to timber framing. It aims to provide businesses with opportunities for business development and increased market exposure, and works to raise the profile of timber as a sustainable material by targeting procurement teams, individuals and contacts. Its sister project, Wood Knowledge Wales, leads on innovation, research and development. It acts as an information source for Welsh wood-using businesses, assisting in the transfer of knowledge into those businesses especially from pan-European projects and research organisations. It helps in the development of new products and processes which will make the industry in Wales more competitive, and promotes research and development within the wood sector through business initiatives, either individually or jointly.

This is what we want to happen

- Existing and emerging enterprises flourish at many different scales, using home-grown timber and contributing to the Welsh economy.
- The whole supply chain is much better integrated, involving owners and growers, managers and contractors, primary, secondary, tertiary processors and the end user, with the private sector providing leadership and direction.
- The private sector engages with and informs the debate about choice of tree species to diversify woodlands.

To get there we shall

- Provide economic development support for all scales of industry-led initiatives to revitalise the sector.
- Develop projects to build capacity in the wood-based supply chains, using the Rural Development Plan and other sources of funding.
- Continue to promote co-operative initiatives across the whole sector.



Stacked sawlogs

5.3 Increased use of timber as a key renewable resource



Timber-frame housing development, Powys.

Timber is a key renewable resource because its ability to store carbon contributes directly to reducing the carbon footprint of Wales. Demand for certified timber products is increasing, and growing consumer awareness of environmental issues, public policy on climate change and regulations to reduce the carbon footprint of buildings all create favourable conditions for marketing locally-grown wood, both as a sustainable building material and for low-carbon fuel. Wood is a finite resource within Wales and we must ensure that it is used intelligently to meet these demands – our priorities are adding value to Welsh-grown timber and locking up carbon in long-term uses. We also wish to see strategies for reducing the carbon footprint of Wales taking full account of the sustainable life cycle benefits of reusing, recycling and burning wood.

A key challenge for the sector in Wales is a market dominated by imported timber, now and in the future. The properties of Welsh timber are such that the sector must continue to make the best use of what it has by innovation and product development through timber modification and other creative techniques. Both public and private sector end users have an important role to play, in choice of materials for building, manufacturing and fuel supplies, and in their procurement policies.

This is what we want to happen

- There is a much better 'pull' for wood and timber products from Wales, as sustainable, renewable building and construction materials.
- Local procurement of timber materials and processing services increases.

To get there we shall

- Promote the best use of the finite resource of Welsh-grown wood.
- Promote the use, reuse, recycle approach to the use of wood.
- Encourage the public sector to take a lead with timber and wood product procurement policies that reflect the sustainability of the whole supply chain.
- Work with policy makers, planners, architects, the building sector and others who can stimulate this domestic market 'pull'.

5.4 A thriving, skilled workforce in the forestry sector



Skilled chainsaw operator

The sector needs a wide range of skills. It needs people with practical skills as well as good managers and agents with well-developed business skills. It also needs the capacity to deliver woodland management to a high level of environmental stewardship. An even wider range of skills will be needed in woodland-based jobs related to tourism, specialist recreation activities and community work. At present there are skill shortages across most of the sector, an ageing workforce and a shortage of new entrants. Despite the availability of training courses, young people are not attracted to an industry with low pay, where they can see no clear career path. A focus on apprenticeships could help, by providing both training and a secure job with the opportunity to move elsewhere in the sector after a few years.

It is also important to make the link between lifelong learning in woodlands and the recruitment of a high-quality, well-motivated workforce. If children use, enjoy and understand woodlands as part of their education, as they grow up they are more likely to understand the purpose and value of woodland and the jobs it provides. Although only a small proportion will go on to work within the sector, others will work in businesses and professions which use renewable woodland products and services, and many will become consumers of woodland products and services.

This is what we want to happen

- People recognise that a job in the forest sector makes a valuable contribution to the sustainability agenda in Wales.
- More people with the right skills enter all levels of the supply chain.
- There are more robust and reliable career paths.
- More opportunities are created for local people to be involved with woodlands.

To get there we shall

- Address the skills shortage by promoting and developing opportunities for new entrants to the forestry sector, including through apprenticeships
- Promote and develop opportunities for career paths throughout the sector.
- Work with those responsible for generic skills development programmes in Wales to ensure that the needs of our woodland strategy are embedded in their programmes.



Processed wood chips for fuel



Preparing wood chips for wood burning boiler



Wetland area, Pembrey Forest Nature Reserve near Llanelli

6. Environmental quality

Welsh woodlands and trees are an important element within Wales's rural and urban landscape character, culture and heritage. Irreplaceable ancient woodlands and other species-rich habitats have a vital role in providing ecosystem services, and help us to cope with a changing climate by contributing to pollution control and water resource management. The quality of woodland habitats is determined by the condition and function of woodland soils, water, biodiversity, landscape and heritage. Achieving improvements in the condition and management of woodlands will be the key to healthy and resilient woodland ecosystems, unlocking the potential in woodlands and trees to sustain long-term delivery of a wide variety of high quality ecosystem goods and services.

We have identified five key outcomes to safeguard and improve the environmental quality of woodlands and trees in Wales, and to extend the range of ecosystem services they provide:

- **Woodland management achieves high standards of environmental stewardship.**
- **Woodlands and trees of special conservation value are in favourable management.**
- **Woodland biodiversity is supported and native woodland is in favourable management.**
- **Woodlands and trees make a positive contribution to the special landscape character of Wales and to sites of heritage and cultural importance.**
- **New and existing trees and woodland contribute to water and soil management.**

6.1 Woodland management achieves high standards of environmental stewardship

Improved environmental stewardship lies at the heart of this strategy. It is the key to healthy and resilient woodland ecosystems and will be critical to the ability of woodlands to deliver the range of ecosystem services we need from them over the next 50 years. Individual woodland management actions require better and more effective application of the UK Forestry Standard and its associated suite of guidelines. The quality and consequences of every site-management decision will have an impact on the woodland ecosystem and affect its ability to deliver the long-term environmental improvements that we seek.

There are several invasive native and non-native woodland species that seriously affect the ability of woodland owners to deliver many of the outcomes set for this strategy, including that of improved woodland diversity. None of the impacts of species such as grey squirrel, deer and rhododendron, can be considered in isolation from other policies or the wider interests of society. For this reason we intend to deal with these issues in a strategic and targeted manner. We shall encourage other parts of government, as well as our delivery partners and stakeholders, to work closely together to develop countrywide approaches, and make best use of limited resources to achieve agreed priorities.

Wildlife crime is an issue in some woodlands, where rare species are threatened by plant and egg collectors, whilst other woodland managers have to deal with environmental nuisances such as fly-tipping and off-road vehicle access. Illegal fires and poaching pose a risk to local communities, woodland users and wildlife. Woodland management work can sometimes pose a threat to the protected species such as hazel dormouse, bats and water vole. We want to make people understand how best practice woodland management can help to protect wildlife, woodland users and woodland habitats.

This is what we want to happen

- All woodlands are managed to high standards of environmental stewardship, safeguarding and enhancing biodiversity, water quality and water resources, soil resources and soil function, landscape and the historic environment.
- Woodland managers use the most appropriate management techniques to achieve site-specific objectives.
- There is a woodland management culture of sharing successes and learning from problems, which leads to higher standards of environmental stewardship.

To get there we shall

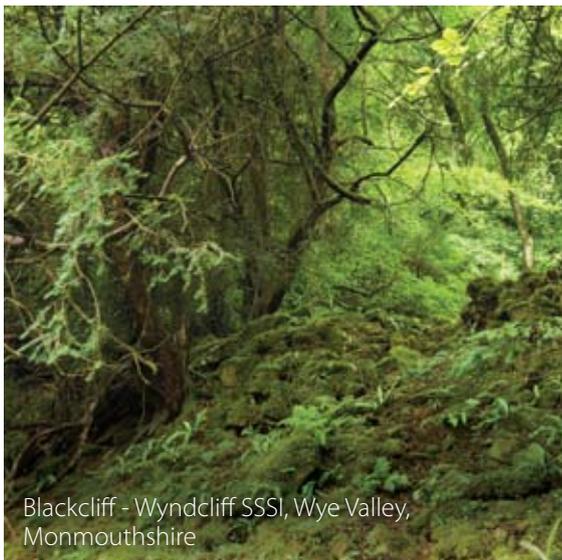
- Encourage the provision and uptake of information, advice and training in environmental stewardship.
- Encourage more widespread and effective application of the UK Forestry Standard guidelines.

- Advocate and support management planning of woodlands that is inclusive, integrated, and focused on objectives and outcomes.
- Develop strategic and targeted approaches to help tackle threats from non-native and invasive species, particularly deer, grey squirrel and rhododendron.
- Co-operate with regulatory authorities such as the Countryside Council for Wales to minimise the risk of criminal damage to woodlands and their biodiversity.
- Take action in our own woodlands and co-operate with other landowners to minimise environmental nuisances such as litter, fly-tipping, dog fouling and noise pollution.



View west to Moel Siabod from A5,
Gwydyr Forest Park

6.2 Woodlands and trees of special conservation value are in favourable management



Blackcliff - Wyndcliff SSSI, Wye Valley, Monmouthshire

Around 5 per cent of woodlands in Wales have designated conservation status, and latest figures show that only 26 per cent of these are in 'favourable condition' with a further 21 per cent in unfavourable but recovering condition.

There is still some way to go if we are to meet our target of having 95 per cent of internationally designated woodland sites in favourable or recovering condition by 2010, and 95 per cent of woodlands on Sites of Special Scientific Interest (SSSIs) in favourable or recovering condition by 2015. On behalf of the Wales Biodiversity Partnership, the Countryside Council for Wales manages the database of the site actions required to achieve favourable condition.

As well as ancient woodlands, individual and particularly veteran trees in rural and urban areas should not be overlooked.

More information on their location and status can help us ensure these trees are protected and effectively managed.

Most of the ancient semi-natural woodland (fig 3) and other native woodland in Wales is not publicly owned. We know that much of this valuable resource is fragmented and isolated, and we believe that much of it is not actively managed and may be in deteriorating ecological condition. Nearly a third of Ancient Woodland Sites in Wales have plantations of mostly non-native conifers on them. We have already made progress in restoring some of these Plantations on Ancient Woodland Sites (PAWS) with restoration started on more than 5,000 hectares over the past 8 years. There is concern that over time, further progress on restoration will reduce Welsh timber production, as a number of these sites are highly suitable for growing quality non-native species. We recognise this concern, but we aim to help deal with it through our twin strategies of bringing more woodlands into sustainable management and increasing overall woodland cover in Wales.

With these safeguards in place, we aim to improve the basis of our inventory of Ancient Woodland Sites in Wales and then gradually restore all PAWS under our ownership to a more natural state, with ongoing management to improve their ecological condition. The exception will be those PAWS that have insufficient ancient woodland remnants to enable successful restoration, but when restoration is not possible based on consideration of the remnant evidence, then a change of woodland character may still be appropriate for wider landscape, ecological or cultural reasons. We shall follow best practice

restoration guidance and the restoration programme will be prioritised by these wider considerations of ecological restoration potential, sites most at risk and other factors such as cultural importance.

We still want these restored PAWS to be productive, as well as providing the full range of environmental and social benefits that restored ancient woodlands can offer. This means continued management for timber production, so we envisage a gradual and continual transformation to a more natural state, creating a mixed-species woodland with a range of stand structures. For this reason we intend to tolerate regeneration of non-native species if this poses no threat to the overall habitat restoration objective and is a useful addition to production potential – in such cases it will be entirely consistent with our restoration policy. We recognise that other woodland owners may have different objectives for their PAWS, but we shall continue to encourage the adoption of similar practices, through specific grant support.

This is what we want to happen

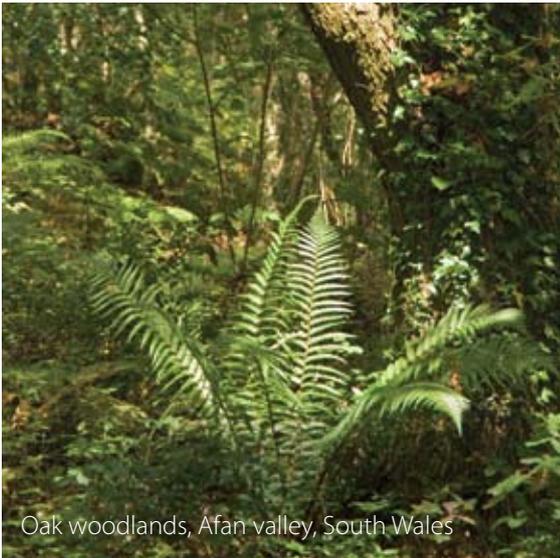
- Woodland sites of international, national and local importance are in favourable ecological management, and are able to adapt to climate change.
- We have more information about Ancient Woodland and veteran trees in Wales, so that we can improve mapping and monitoring of their extent and condition.
- In our parks, gardens, towns and countryside, individual trees, and particularly veteran trees, are better managed for their biodiversity, landscape, heritage and cultural value.

- All PAWS on our own woodland estate are prioritised for restoration, after considering the remnant evidence and wider ecological, landscape and cultural factors; and are gradually restored to a more natural state with ongoing management to improve their ecological condition and, where appropriate, to produce timber.
- Other woodland owners are encouraged and supported to restore their PAWS.

To get there we shall

- Use advice and grants to support the management required in woodlands of special value (Special Areas of Conservation (SACs), Sites of Special Scientific Interest and sites of local importance), as identified on the Wales Biodiversity Partnership Special Sites actions database
- Update and publish a revised Ancient Woodland Inventory
- Promote the value of ancient woodlands and veteran trees, and support owners in managing them appropriately, so that they are safeguarded for the future
- Target the management of Ancient Woodland Sites, using woodland grants, land management payments and advice funded by the Wales Rural Development Plan
- Continue to restore and manage PAWS on our own woodland estate, using best practice restoration guidance
- Offer grants to other owners to restore their PAWS and continue to manage them

6.3 Woodland biodiversity is supported and native woodland is in favourable management



Oak woodlands, Afan valley, South Wales

The UK Biodiversity Action Plan (BAP) sets targets for the maintenance, restoration and expansion of native woodland habitats and priority woodland species. In addition to the restoration of Ancient Woodland Sites, many woodlands could be converted to a more natural state, bringing great benefits for biodiversity while continuing to yield marketable timber products.

We intend to target an expansion of native woodland, based primarily on the ecological potential of individual sites and the principles of inter-connectivity of semi-natural habitats.

We are committed to halting the loss of biodiversity from woodlands in Wales, with recovery underway in wildlife numbers, range and genetic diversity by 2026.

Whilst many woodland-dependent species show steady increases, for example the lesser horseshoe bat, populations of other woodland animals and plants are in decline, including the pied flycatcher and some have been lost altogether. There is clearly more to be done to improve their native woodland habitats. Some threatened species such as the nightjar, red squirrel and the hazel dormouse occupy more recently planted woodlands, often conifers, and their importance should not be overlooked.

It is important to protect the structure and functioning of woodland habitat networks and, where necessary, to reverse the fragmentation of semi-natural habitats. By improving woodland networks we will make it easier for wildlife populations to reach new habitats and to move in response to a changing climate. There is no 'one-size fits all' approach to reducing the fragmentation of woodlands and improving the connection of woodland with other semi-natural habitats. We recognise that ecological network approaches can open up opportunities for the dispersal not just of desirable species but also of pathogens and problem species such as the grey squirrel. Improving woodland networks will require a strategic approach that is integrated with other land uses and sensitive to local needs.

This is what we want to happen

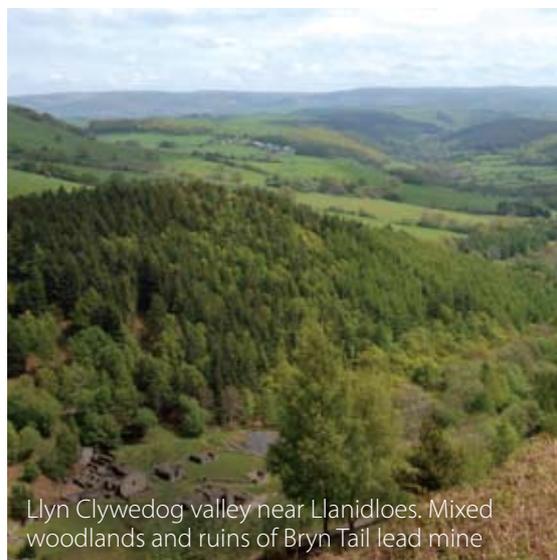
- The published BAP targets for native woodland to 2010 and beyond are met, including those for maintaining the net extent of native woodland; achieving favourable or recovering condition; and restoring and expanding a proportion of the native woodland resource.
- There is better support for decision-making and management to improve the condition of priority native woodland habitats, and of woodlands that support priority species.
- Where there is a clear ecosystem service benefit, existing non-native woodlands are restored to priority open habitats.
- The woodland network is strengthened in key areas of Wales, by improved management of existing woodland, creation of new woodland, or by making the intervening spaces more friendly to woodland species (without harming priority species that rely on open habitats).

To get there we shall

- Convert our own non-ancient woodland to a more natural state, using best practice guidance; and offer other owners grants to do the same, and to continue to manage these woodlands.
- Continue to restore priority open habitats on our woodland estate, where there is a clear ecosystem service benefit, seeking further guidance on managing habitat restoration on deep peat soils.
- Manage our own estate to improve the ecological condition of priority native woodland habitats and for the benefit of woodland species (including those which rely on non-native woodland); encourage and support other woodland managers to do the same, using woodland grants, land management payments and advice funded by the Wales Rural Development Plan.

- Target conservation efforts for priority woodland species at appropriate woodland networks and, in some cases, at specific sites (where there is clear evidence of opportunities to improve their biological status).
- Use grants and advice to strengthen the inter-connectivity of semi-natural habitats with the woodland network, taking evidence for landscape scale interventions into account and reflecting local needs and impacts.

6.4 Woodlands and trees make a positive contribution to the special landscape character of Wales and to sites of heritage and cultural importance



Many of Wales's most cherished landscapes depend on constituent woodlands for their distinctive character, and need the protection offered by appropriate woodland management. In addition there is a significant opportunity to create more special landscapes in Wales, through the appropriate creation and management of more woodlands.

Veteran trees are a cultural resource linking people to place, environment and culture (past and present), and also provide continuity of habitat for some increasingly rare lichens, mosses and fungi. Sometimes described as green monuments, veteran trees are too often perceived as a problem rather than an asset, and not properly cared for.

Hedgerow trees can often be overlooked, poorly managed and at risk of damage by livestock, yet they are distinctive features in the landscape and provide breeding sites, food and shelter for many species. We have some rare native trees in Wales, for example round-leaved whitebeam and Ley's whitebeam and also some magnificent non-native specimen trees in parks and gardens.

Woodlands and wooded parklands can themselves be historical or archaeological features which contribute to the character of the landscape. Although in many cases woodland cover protects the archaeological integrity of heritage sites there are instances where tree roots may be causing damage, and such sites may need special care. The long history of settlement in Wales has left its mark, and there are some historic landscapes where new woodland would not be appropriate.

This is what we want to happen

- Woodlands and trees make a positive contribution to the special landscape character of Wales, its historic environment and cultural heritage.
- Current and historic wooded landscapes are protected, taking account of changing cultural values and preferences and their influence on working landscape.

- Individual trees and woodlands are protected for their cultural significance, aesthetic quality and heritage value.
- In managing existing woodlands and trees, the value of archaeology within the woodland is respected, as well as the archaeology of the woodland; in creating new woodland, existing heritage sites are protected from damage and the integrity of historic landscapes is preserved.
- Visitors can experience the cultural history of woodlands and their historic features, in particular Ancient Woodland Sites.
- More use is made of Welsh wood products in the restoration of historic buildings.

To get there we shall

- Work with partners to improve knowledge, understanding and management of trees and woodland in the special landscapes, heritage and culture of Wales.
- Improve public involvement in decisions affecting the landscape quality of woodlands and trees.
- Take action to improve the quality of visitor access to and experience of cultural and historic features of woodland, particularly Ancient Woodland Sites.
- Promote the architectural use of Welsh timber for restoration projects.

6.5 New and existing woodlands and trees contribute to water and soil management



In the right place, woodlands can be an effective way of tackling environmental problems such as diffuse pollution, poor water quality and soil erosion. They can also hold back water run-off, reducing flood risk and maintaining flows during dry weather. To get the best results for water and soil management, new woodlands and trees will need to be planted in appropriate locations and existing woodlands may need to be managed differently in the future.

Trees can help to alleviate floods in different ways. Tree roots make it easier for soils to soak up rainfall, so less water runs off into drains and rivers – this can be useful in the upper parts of river systems where rainfall is higher. Further downstream, when heavy rainfall causes river levels to rise, the risk of flooding can be reduced if the flow is slowed down, and woodlands can be a cost-effective way of doing this.

Fallen logs and branches can form woody dams and pools that help enrich freshwater habitats and slow down flood flows.

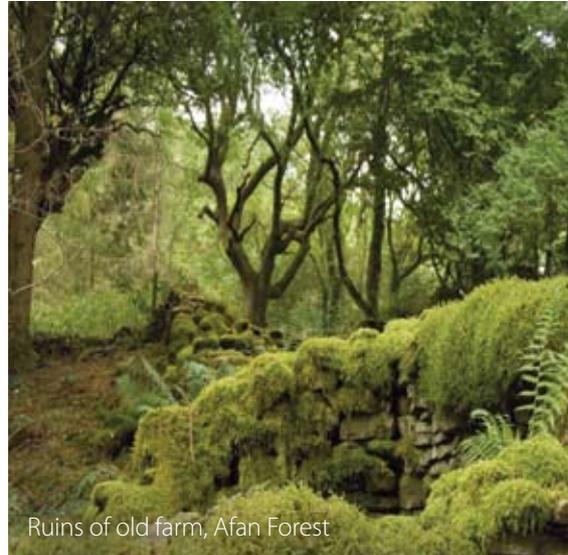
Carefully planned and managed woodland created alongside watercourses can reduce the risk of soil erosion, pollution and nutrient run-off from neighbouring fields and in urban areas, run-off from roads and buildings. Tree roots strengthen stream banks and woodland plants trap the sources of diffuse pollution before they reach the watercourse. Trees provide an important source of food and shelter for streamlife and the intermittent shade provided by trees alongside rivers can help moderate water temperatures to the benefit of fish and insects (but management is essential because dense tree cover can harm the river ecosystem). In comparison to pasture, woodland can use more water, reducing the amount of water available in a catchment and it will be important to control this impact by varying species choice, age and the scale of wooded cover. Ongoing research and monitoring will be important, and the positive effect of woodland on water quality, landscape and associated recreational value may outweigh any impact on water supplies.

This is what we want to happen

- The management of existing woodlands fully contributes to the protection and conservation of water and soil.
- There is a more strategic and integrated approach to land use decisions and land management actions, so that woodlands can play their full role in improving environmental quality and particularly water and soil resources in Wales.
- Woodlands and trees are used, where appropriate, to reduce surface water run-off from the upper catchments of our rivers.
- Woodlands are managed or created as part of the measures to deal with the increased flood risk in the lower reaches of rivers.
- People recognise the importance of individual trees in both rural and urban areas.

To get there we shall

- Manage our own woodlands, and use grant support to encourage the management of other woodlands to contribute to the careful management of water and soil resources.
- Use woodland grants, land management payments and advice funded by the Wales RDP to target new woodlands where they will help to reduce diffuse pollution, soil erosion and flood risks.
- Continue to work with partners such as the Environment Agency and the Countryside Council for Wales to monitor the environmental impact of woodlands.



Ruins of old farm, Afan Forest



Douglas Fir, Artist's Wood, Bettws y Coed



Forest School leader and pupils carrying felled tree to build shelter, Flintshire Forest School

7. Delivering *Woodlands for Wales*

This strategy has set out the outcomes that we require from woodlands and trees, to benefit the economy, environment and people of Wales. Delivering this ambition, in the context of the challenges facing land use and management, is going to require sustained, concentrated and co-operative effort from the public, private and voluntary sectors.

To progress implementing the strategy we have set out for each of our 20 outcomes what we want to see happen and how we plan to get there. These key activities are the basis from which we will develop an Action Plan, providing the short-term focus to make progress towards our long-term ambitions. The Action Plan will aim to capture all the activities required to implement this strategy, not just those to be undertaken by us or by the Forestry Commission. It needs to be fully inclusive and equitable across all sectors of society, and we recognise that we shall need many delivery partners to achieve success.

We realise that there is much detail to develop and that prioritising our actions will require more analysis and explanation, including spatial modelling. This is why we shall be developing a series of policy position statements to support this revised *Woodlands for Wales*. Collectively the position statements will help to shape the Action Plan for the strategy.

We also appreciate that we are at the limits of our scientific and technical knowledge for some of the issues to be addressed. For instance, we need to know more about how best to manage our woodlands not only to deal with a changing climate but also to contribute to mitigating climate change. We need a better understanding of the ecosystem services delivered by different options for land use and woodland management. More specifically, we also need to know at what scale increasing the diversity of our woodlands becomes critical for delivering our desired outcomes.

For all these reasons and more, we shall continue to develop our evidence base and technical implementation to ensure that the specific options we choose will best deliver our requirements. A combination of scientific and applied research, as well as technical development, will be required to continue the innovation in forestry practice in Wales, which has been such a feature over the last 100 years.

The Forestry Commission will be aligning its corporate planning process to take into account the new and re-emphasised priorities set out in *Woodlands for Wales*. This will include a study to consider the future role of our woodland estate in delivering these priorities. And as part of our continued support for the delivery of policy priorities in the non-state owned woodlands of Wales, the Forestry Commission will ensure that the Better *Woodlands for Wales* grant scheme is fully focused on delivering the outcomes of this strategy.

We expect to use other sources of public funding for delivery, where these are relevant to the outcomes in this strategy, notably support from all four elements of the Wales Rural Development Plan (businesses, environment, communities and Leader). We know that delivering our full ambition for *Woodlands for Wales* not only requires a wider collective effort but will also involve innovative and bold thinking to develop successful delivery partnerships.

We aim to monitor and report on progress against both the Action Plan and our longer-term efforts to achieve the outcomes set in this strategy. As we highlighted in the introduction, these outcomes are inter-dependent and in many cases individual actions will contribute towards more than one outcome. For this reason we shall be monitoring a suite of indicators, which in total will give us the confidence to assess progress across the whole breadth of *Woodlands for Wales*.

8. Monitoring progress

These are the indicators we will use to monitor the progress of the delivery of outcomes. The first group relates to the foundation for the strategy – Welsh woodlands and trees themselves. The others relate to the goods and services that Welsh woodlands and trees provide across the four strategic themes.

Welsh Woodlands and Trees Indicators	
Woodland and trees	Area of woodland and number of trees (including veterans) and linear features outside woodlands.
Sustainable woodland management	Area of woodland known to be managed to the UK Forest Standard (including area certified to the UK Woodland Assurance Standard).
Management system	Area of woodland by management system (clearfell and other systems).
Species diversity	Area of woodland and planting by tree species.
Farm woodland	Area of farm woodland actively managed and the contribution to farm income.
Urban woodland and trees	Area of urban woodland and number of urban trees outside woodland.

Goods and Services Indicators	
Carbon balance	Carbon stocks in woodland soil, biomass and wood products, and carbon offset due to product and fuel substitution.
Tree health and resilience	Extent of disease and provenance of planting stock.
Public opinion	Perceived public benefits of woodlands.
Community involvement	Numbers of people having some involvement in woodlands.

Recreation	Amount and range of recreational activity taking place in woodlands.
Accessibility	Proportion of population with accessible woodland close to where they live.
Local enterprises	Number of enterprises using woodlands.
Use of Welsh wood	Proportion of available wood that is harvested, and proportion processed in Wales.
Value of forestry sector	Value of the forestry sector to the Welsh economy.
Demand for wood	Demand for wood products and consumption of wood in Wales.
Health of forestry sector	Business health in the forestry sector.
Woodland habitats and ancient trees	Area and condition of native woodland, plus woodland on designated or ancient sites.
Woodland species	Status of priority woodland species.
Connectivity	Woodland networks, and habitat connectivity.
Woodlands as a pressure on water	Woodlands that are a pressure for water quality or quantity.
Woodlands as a solution for water	Woodlands that are contributing to improved water quality or quantity.
Heritage and landscape	Aesthetic suitability of woodland within areas where it forms an important part of the landscape character.



Douglas Fir on the Kings Guard Trail. Coed y Brenin

9. Glossary

Adaptation: Measures reducing vulnerability to climate change, e.g. increasing readiness for pests and winds, creating woodland networks, using woodlands in flood management.

Ancient woodland: sites that have been continuously wooded since before 1600AD.

Ancient semi-natural woodland (ASNW): an ancient woodland where the trees and shrubs are semi-natural. These are generally the most important woodlands for biodiversity.

Biodiversity: the variety of ecosystems and living organisms (species), including genetic variation within species.

Biodiversity Action Plan (BAP): a national action plan for a key habitat or species, to establish the factors for their decline and the work necessary for recovery. BAPs are approved by Government, and form part of the overall UK Biodiversity Action Plan. The original impetus for these plans derives from the 1992 Convention on Biological Diversity.

Carbon footprint: a representation of the effect that human activities have on the climate in terms of the net amount of greenhouse gases produced, usually measured as tonnes of carbon in the form of carbon dioxide equivalent.

Carbon sequestration: the flow of carbon into terrestrial or marine reservoirs. Biological sequestration includes direct removal of carbon dioxide from the atmosphere through land-use change, afforestation, reforestation, carbon storage in landfills and agricultural and forestry practices that enhance soil carbon.

Clear felling: Cutting down an area of woodland (if within a larger area of woodland it is typically a felling area greater than 0.25 hectares). Sometimes scattered or clumps of trees may be left standing within the felled area.

Climate change: natural and human-induced changes in the 'average weather' of a region. Note: 'global warming' was previously used synonymously with 'climate change', but this term has now been largely dropped.

Community: a group of people holding something in common – a place, or a common interest.

Coed Cymru: all Wales initiative to promote the management of broadleaf woodlands and the use of locally grown hardwood timber in Wales.

Continuous cover forestry (CCF): silvicultural systems whereby the forest canopy is maintained at one or more levels without clearfelling. CCF is just one example of a low impact silvicultural system.

Coppice: management based on regeneration by regrowth from cut stumps (coppice stools). The same stool is used through several cycles of cutting and regrowth. Coppice is just one example of a low impact silvicultural system.

Coppice with standards: coppice with a scatter of trees of seedling or coppice origin, grown on a long rotation to produce larger sized timber and to regenerate new seedlings to replace worn out stools.

Cyddoed: a Forestry Commission Wales project funded by the European Union and the Welsh Assembly Government. It ran for 7 years 2001 – 2008 and provided grants of up to 100% of costs to community groups in the European Objective 1 region of Wales to help them make use of woodland for community development.

Deforestation: the creation of permanent open ground that decreases the area of the woodland. (The internal re-design of woodlands to meet the requirements of the UK Forestry Standard is not considered to be deforestation in the context of this strategy).

Ecosystem: the interaction of communities of plants and animals (including humans) with each other and the non-living environment. Balanced ecosystems are stable when considered over the long term (hundreds of years in the case of woodlands)

Ecosystem services: humankind benefits from a multitude of resources and processes supplied by natural ecosystems. Collectively, these benefits are known as ecosystem services. Ecosystem services are distinct from other ecosystem products and functions because there is human demand for these natural assets. Many studies have attempted to quantify the economic value of these services.

They include:

- **Provisioning services** – such as food water and timber
- **Cultural services** – such as the provision of recreational, health, aesthetic, and spiritual benefits

- **Regulating services** – such as the protection of water and soil resources within catchments; of contaminated land; providing shelter, shade and cooling in towns, and wind breaks (shelterbelts) on farmland
- **Supporting services** – such as net carbon sequestration (locking up atmospheric carbon), soil formation and photosynthesis

Forests: generally large areas of predominantly tree covered land.

Forest Education Initiative: a partnership between the forestry and timber-processing sectors, environmentalists and educators. FEI aims to increase the understanding and appreciation, particularly among young people, of the environmental, social, and economic potential of trees, woodlands and forests and of the link between the tree and everyday wood products. FEI works with young people through its national network of local cluster groups

Forestry Commission Wales:

Forestry Commission Wales acts as the Welsh Assembly Government's Department of Forestry. They are responsible for managing the 38 per cent of Welsh woodlands owned by the Assembly. Forestry Commission Wales advises, on behalf of the Welsh Assembly Government, on the development of forestry policy and its implementation.

They also encourage sustainable woodland management within the private sector and are responsible for administering grants and regulatory work, including licensing for felling and replanting.

Forest School: an innovative educational approach to outdoor play and learning. The philosophy of Forest Schools is to encourage and inspire individuals of any age through regular positive outdoor experiences. Forest Schools in Britain have been developed and adapted from the original concept implemented in Sweden in the 1950s and developed throughout other Scandinavian and European Countries.

Global citizenship: the concept of citizenship at a global level with the acknowledgement of one's responsibilities not only to other people but to the Earth itself. Global Citizenship is about understanding the need to tackle injustice and inequality, and having the desire and ability to work actively to do so. It is about valuing the Earth as precious and unique, and safeguarding the future for those coming after us.

Gross Value Added: the current recognised method of assessing the economy and the proportion which different industries contribute towards it formerly known as (formally known as GDP – Gross Domestic Product).

Low impact silvicultural systems (LISS): silvicultural systems which are alternatives to clear-felling and minimise the environmental impact. They include a range of less intensive silvicultural systems such as group selection or shelterwood.

Mitigation: interventions to reduce climate change, e.g. greater use of wood as a source of renewable energy or as a carbon store.

Mixed woodland: mixtures can occur at a number of different scales. Intimate mixtures are stands containing a variety of tree species. Group plantings of various sizes, prescriptions and complexity. Also included here are Line mixtures, traditionally quite common in British forestry, often with one species used as a nurse for the main crop. Landscape-scale mixtures with plantings of individual species at a stand scale but creating a matrix of mixed species at a landscape scale. Reducing the size of clearfell coupes also creates a more mixed landscape in terms of age.

All types of mixtures have their place, with differing advantages and disadvantages in meeting objectives, impacts on the intensity and style of management required and operational implications, particularly where regular timber harvesting is an objective. General assumptions are that more intimate mixtures are best within lower, more fertile woodlands, and simpler structures and species diversity in woodlands at higher elevations and of lower fertility.

Native species: one that arrived in Wales without assistance of humans during post-glacial colonisation.

Native woodland: woods mainly or entirely composed of locally native species.

New native woodland: newly established woodland of at least 80 per cent native species. The creation of new native woodland can be through natural regeneration, colonisation or planting on currently unwooded ground.

Origin (of trees): the geographic location within the natural range of a species where the parent seed source or its wild ancestors grew.

Plantation: a woodland where the current trees have been planted. Often includes naturally regenerating trees as well. Includes former semi-natural woodlands restocked by planting.

Planted Ancient Woodland Sites (PAWS): former Ancient Semi-natural Woodland (ASNW) that has been more or less completely replanted with native or non-native species and the ecological value has been degraded. The degree of loss of biodiversity varies markedly with species planted and subsequent management.

Priority open habitats: habitats identified as threatened and subject to a UK BAP. These include upland heathland, blanket bog, lowland dry acid grassland, lowland meadows and lowland calcareous grassland.

Priority species/priority woodland species: species identified as threatened and subject to a UK BAP. Priority woodland species in Wales include the spotted flycatcher, wood warbler, black grouse, bullfinch, red squirrel, dormouse and several species of bat.

Priority woodland habitats/priority native woodland habitats: woodland habitats identified as threatened and subject to a UK Biodiversity Action Plan. There are five types in Wales: upland oak woodland, upland mixed ash woodland, wet woodland, lowland beech and yew woodland and lowland mixed broadleaf woodland.

Production potential: the volume of timber that could potentially be harvested sustainably from the woodland area. This volume is determined by factors such as the growth rate of the trees on site, the practicality of harvesting the timber, and other site objectives such as biodiversity, conservation and recreation.

Provenance: the geographic location where the tree seeds were collected. Designation of Regions of Provenance under the Forest Reproductive Materials regulations is used to help nurseries and growers select suitable material. The term is often confused with 'origin', which is the original natural genetic source.

Renewable energy: includes non-carbon technologies such as solar energy, hydropower, wind and tidal power, as well as carbon-neutral fuel sources such as biomass.

Semi-natural woodland: in the UK no truly 'natural' woods remain. Semi-natural woodlands have current stands predominantly composed of trees and shrubs that are native to the site and are not obviously planted. Thus they appear to have arisen mainly from natural regeneration or from coppice/pollard growth from naturally regenerated individuals.

Shelterbelts: one or more rows of trees planted to provide windbreaks and protection from soil erosion. They may also act as visual screens, wildlife habitat, or a source of wood products.

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): coppice grown as a long-term woody perennial crop that is harvested usually every 3 years. The growing of willow SRC is more comparable to agricultural cropping methods than to forestry.

Short rotation forestry (SRF): cultivation of fast-growing trees for 8 – 20 years. Often the trees are coppiced.

Silviculture: the techniques of tending and regenerating woodlands, and harvesting their physical products.

Stand: a distinct sub-division of a woodland, having relatively uniform species composition, age, and condition; to be considered an homogeneous unit for management purposes.

Sustainability: in a general sense, the capacity to maintain a certain process or state indefinitely. The concept of sustainability applies to all aspects of life on Earth and is commonly defined within ecological, social and economic contexts.

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’. (Second Ministerial Conference on the Protection of Forests in Europe, Helsinki; 1993).

Tiered grant: a grant scheme design where the delivery of higher policy priorities attracts higher levels of grant.

UK Forestry Standard: the UK government’s approach to sustainable forestry. It sets out the criteria and standards for the sustainable management of all forests and woodlands in the UK.

UK Woodland Assurance Standard: This is an independent certification standard for verifying sustainable woodland management in the UK. The UK Woodland Assurance Standard (UKWAS) is currently the central component of the forest certification programme operated in the UK by the Forest Stewardship Council for example.

Veteran tree: a tree which, because of its great age, size or condition is of exceptional value culturally, within the landscape or for wildlife.

Wales Forest Business Partnership:

a voluntary grouping of businesses and other organisations across the forestry sector which has been established to meet the objective of developing world class forest product industries. Its members believe that collaborative activities undertaken by the partnership will strengthen the competitiveness of their businesses and the forestry sector as a whole.

Welsh National Forest: all woodlands in Wales – the total of all Welsh woodlands (public and private), now and in the future.

Woodland: land where the ecological condition is, or will be, strongly influenced by the tree canopy. In terms of land cover statistics (in the UK), woodland is currently defined as land with trees where the mature trees would cover more than 20 per cent by area. Large tracts are generally called forests, smaller units are described in a variety of terms such as woodlands, woods, copses and shelterbelts. There is no minimum size for a woodland.

Woodland sites of local, national and international importance: internationally protected sites include Natura 2000 sites protected under the EC Habitats and Birds Directives (Special Areas of Conservation (SACs) and Special Protection Areas (SPAs)) and sites protected under the RAMSAR Convention on Wetlands of International Importance. Nationally protected sites include National Nature Reserves (NNRs) and Sites of Special Scientific Interest (SSSIs).

Sites of local conservation interest are designated by Local Authorities and are a material consideration when planning applications are being determined. In Wales they are usually referred to as Sites of Importance for Nature Conservation (SINCs), or Regionally Important Geological and Geomorphological Sites (RIGS).