

River Basin Management Plans

Programme of measures

Key Sectors — Forestry

Pressure Type — Diffuse and Point Source Pollution

Introduction

The fundamental importance of forests is now recognised globally in appreciation of their capacity to provide many social, economic and environmental benefits. Forest and woodland cover now accounts for just over 6% of Northern Ireland's land area, up from about 1% in 1920. The 6% woodland cover is still the lowest of any European country with the exception of Iceland.

In Northern Ireland, forestry expansion was driven first by a need to develop a strategic reserve of timber for use in a national emergency, and then by a need to promote economic development through the supply of raw material to the timber processing industry. The Northern Ireland Forestry Strategy states that a major objective is to steadily expand woodland over the next 50 years to achieve 12% forest cover. Expansion of the forest area may help to offset carbon emissions as trees are considered to be net carbon users thereby helping to meet Kyoto protocol commitments.

Forests habitats enhance biodiversity particularly when replacing other more intensive land uses. Forests also provide an alternative energy source reducing dependence and consumption of fossil fuels. Public forests amount to 70% of Northern Ireland's woodland. Private forest owners have been planting in significant amounts since the 1980s. The composition of new planting within private forests is predominantly broadleaf. This reflects better soil conditions with consequently no anticipated fertiliser requirement. As these trees mature they will account for a greater proportion of forest cover and of timber harvesting which currently occurs mainly in public forests.

Local concerns were raised during consultations that some afforested areas are situated in sensitive salmon and trout spawning areas in upland headwaters. This underpins the need for adequate control on forestry operations in sensitive areas.

What causes the environmental impact?

Forests, although providing many positive benefits, have the potential to negatively impact on the environment. The negative impacts are largely related to poor management or to planting on unsuitable soils, and many of the current water problems associated with afforestation are a legacy of old practices, which have been subsequently amended. When a forest is established, site cultivation and drainage may give rise to nutrient or sediment loss.

Forest canopies intercept rainfall, some of which is returned to the atmosphere; the remainder is stored or finds its way to soil, underlying rock or surface waters. Changing canopy cover can alter the quantity and quality of water flowing from forested areas. Forest canopies can absorb air pollutants and depending on the underlying geology, this process may affect water quality. Road construction and harvesting may also result in sediment and nutrient loss. Depending on the subsequent land use, inappropriate deforestation may result in soil erosion, slope instability, nutrient leaching and reduced water-holding capacity in floodplains.

The key potential water problems that can result are:

- **Acidification:** forest canopies can capture sulphur and nitrogen compounds from the atmosphere. Rain becomes more acidic as it passes through the canopies to the ground below, and may worsen the chemical balance of receiving waters. Acidification of water by forests is not a significant issue in NI because land areas exceeding critical loads of total acidity (i.e. where the buffering capacity of soils and underlying rocks is low) are limited to areas with little forest cover e.g. Mourne Mountains. As a result of the introduction of clean air policies throughout the EU, it is expected that there will be a continuing reduction in airborne pollutants for forest canopies to scavenge, thereby reducing the impact of 'acid rain' on our waterways in the future;
- **Nutrient enrichment:** forestry activities can introduce extra nutrients which, in naturally nutrient-poor areas, can lead to problems such as algal growth;
- **Sedimentation:** road-making and harvesting operations can cause erosion and sedimentation on susceptible soils. Mobile sediments may reduce water quality or damage sensitive areas;
- **Flow pattern changes:** the amount of water reaching the soil surface is reduced by evaporation

of water intercepted by the canopy. Clearfelling of forests may lead to a change in flow patterns;

- Pesticide contamination: incorrect application of pesticides may result in contamination of waters;
- Phosphates within the soil may become mobile as a result of timber harvesting on peat soils and may enter nearby drains and watercourses.

What action are we already taking?

Key legislation

The Forestry Act

The Forestry Act (Northern Ireland) 1953 establishes statutory responsibility for promoting the interests of forestry, afforestation, production and supply of timber and the maintenance of adequate reserves of growing timber. Recent policy developments are anchored in the UK Government's international commitments on sustainable forest management, biodiversity and climate change.

Environmental Impact (Forestry) Regulations

Forest Service implements Environmental Impact Assessment (Forestry) Regulations (NI) 2006, carrying out environmental impact assessments on projects relating to afforestation, deforestation, forest roadworks and forest quarries. The regulations require Forest Service to formally consult with the Northern Ireland Environment Agency (NIEA) in relation to proposed forestry projects.

The Control of Pesticides (Amendment) Regulations (Northern Ireland) 1997

Prior to the aerial application of pesticides within 250 m of a watercourse, consultation with the water regulatory authority is legally required under the Control of Pesticide Regulations.

Other Legislation which the sector must comply with include:

- Groundwater Regulations (Northern Ireland) 1998
- The Water (Northern Ireland) Order 1999
- Food and Environment Protection Act 1985 (FEPA)
- Plant Protection Products Regulations (Northern Ireland) 2005

The legislation is covered in detail in the key sectors on **Industry & Other Businesses** and **Agriculture**.

Codes of Practice & Guidelines

Northern Ireland Forestry – A Strategy for Sustainability and Growth

Legal responsibility for forestry policy and the statutory regulation of forestry lies with the Forest Service, Department of Agriculture and Rural Development (DARD). Northern Ireland forest policy is stated in Northern Ireland Forestry – A Strategy for Sustainability and Growth, published in 2006.

The strategy outlines priorities and sets targets, including for example the introduction of regulation in relation to felling and regeneration of forests, in order to compel forest owners to manage their woods with greater consideration to sustainability, including the timing and extent of felling and the composition of regenerating woods.

The UK Forestry Standard

The UK Forestry Standard sets out the criteria for sustainable forest management as the basis for forest monitoring and also the foundation for the development of the UK Woodland Assurance Standard. Protection and enhancement of the water environment is a key principle. Most afforestation and reforestation projects are processed through the Woodland Grant Scheme, which requires conformance with the UK Forestry Standard as a condition of acceptance.



The Forest and Water Guidelines

The Forests and Water guidelines provide guidance to forest managers on how forests should be designed and operations planned to protect and enhance the water environment. They also give clarity to practitioners on how field operations should be carried out. These guidelines apply equally to both state and private forests. The guidelines were substantially revised in 2003 taking account of the latest research and advice from a wide spectrum of water regulatory authorities and conservation agencies. Draft guidelines will be issued for consultation during Autumn 2009 with a publication target of Summer 2010.

UK Woodland Assurance Standard

The Forest Service and some private forestry interests are certified under the UK Woodland Assurance Standard, which is endorsed by the Forest Stewardship Council and assessed by third-party audit. Private woodlands are subject to the requirements of the UK Forestry Standard; about 3,500 ha of private woodland have also been certified under the UK Woodland Assurance Standard, bringing the total of woodland certified in Northern Ireland to 75%.

Guidance Paper - Application of Sewage Sludge to Forestry Land

This paper details the technical, scientific and environmental factors which should be taken into account when considering the application of sewage sludge to forests in Northern Ireland. It has been prepared by DARD, Forest Service and Agri-Food and Biosciences Institute (AFBI). It should be read in conjunction with Forestry Commission Information Note FCIN079, Use of Sewage Sludges and Composts in Forestry. The paper identifies suitable soil types within Northern Ireland for sewage sludge applications that are consistent with those specified by the Forestry Commission Information Note. It also sets out maximum rates of fertilisation that will meet the nutrient demand of trees. These rates are based on current fertilisation practices operational within Northern Ireland.

Woodland Grant Scheme

All proposed Woodland Grant Schemes must comply with the UK Forestry Standard and Guidelines including the Forests and Water Guidelines. Special conditions may apply where planting is proposed within sensitive water catchment areas following consultation with NIEA. Grants are conditional on such conditions being met.

Authorisation of Pesticide Use

The Pesticides Safety Directorate units will continue to review pesticide authorisation based on the current scientific advice. The cycle of pesticide surveys has been harmonised across both Northern Ireland and the Republic of Ireland so that the same crops are surveyed in the same year throughout the island.

What improvements will current measures achieve?

The risk of acidification has been dramatically reduced during the last 10 years due to collective international efforts to reduce air pollution which is considered the source of the problem resulting in acid rain.

The measures already in place are expected to prevent further deterioration in status. Strategically positioned new woodland and well managed existing forests will benefit the aquatic environment by protecting soils from erosion, landslip and by providing a 'buffer' between watercourses and other land uses.

Riparian woodland can be used as an effective measure to reduce runoff, bank erosion and slow flood waters. Riparian zones act as a nutrient buffer, thus reducing diffuse pollution. Leaf litter from forestry also provides a valuable food source for aquatic species and provides the habitat required for macroinvertebrates that are so important for salmonids. Overhanging trees provide dappled shade and regulate water temperature which is critical for providing suitable spawning and nursery grounds for fish.

The existing measures will improve the quality of the water environment supporting a greater diversity of flora and fauna.

What further actions will deliver environmental improvements?

Revised legislation, guidelines and strategy

The existing legislation, binding environmental codes of practice and guidelines play a major role in protecting water quality in forested areas. However, as research increases knowledge of the interaction between forest and water, guidelines may have to be strengthened. Additional guidelines may be required on protection of highly sensitive catchments with species such as the freshwater pearl mussel, trout and salmon.

For forests and associated activities, the actions are:

- Improved guidance based on scientific research for highly sensitive and protected areas (e.g. Pearl Mussel). Environmental protective measures for forestry in sensitive areas can include establishing riparian buffer zones in advance of harvesting, careful planning to reduce the size of felling coupes in order to control the potential release of nutrients, managing drainage systems and establishing sediment control systems such as ponds or diffuse overland flow;
- Where appropriate promote the establishment of new native riparian woodland adjacent to existing waterways using low intensity techniques.
- To ensure that future development is undertaken strictly within statutory regulations, water protection guidelines and codes of practice so that forests will have little or no impact on water quality. That applies especially in environmentally sensitive areas, with a need to limit nutrient and sediment losses and acidification;
- Operations posing a significant threat to water quality should be assessed on a whole catchment basis.

Guidelines must be applied rigorously to ensure compliance with water quality standards; modified or additional codes may be required. These actions will therefore affect the forestry sector: both publicly and privately owned plantations as well as the associated saw-milling and processing industries.

A new Forestry Bill has been introduced to the Northern Ireland Assembly in June 2009. The Bill reflects recent developments in Northern Ireland forestry policy and strategy and is anchored in the UK Government's international commitments on sustainable forest management, biodiversity and climate change.

Any planned increase in forest cover will consider WFD commitments. New measures could be explored to promote the establishment of native riparian woodland, adjacent to existing waterways, using low intensity establishment techniques, which would bring about water quality improvement. The multiple benefits of riparian woodland are recognised and the creation of more wet woodland is a specific target under the Northern Ireland Biodiversity Strategy. Forests and Water Guidelines, best practice states that a buffer area is required in both existing forests and new planting to protect the riparian and aquatic zones from disturbance. Key aspects of the design of a buffer area are management, width, choice of species, structure and landscaping. The aim is to provide a riparian zone with a structure which includes a mosaic of 5 vegetation habitat types; open ground, occasional large trees, trees with open glade, scrub thicket and closed canopy woodland. Together, these provide the structural diversity that is attractive to woodland fauna and to the plants that flourish in semi-natural woodland. Species mix is important and the buffer areas are managed to protect both water quality and freshwater habitats. The vegetation within the riparian zone should be native to the location and soils. Natural regeneration is the favoured means of establishing native tree and shrub species where an appropriate seed source exists. Opportunities for re-designing and enhancing buffer areas will arise, particularly after clearfelling. In addition to grants to establish woodland available from DARD's Forest Service, additional support measures should be considered by other agencies with policy responsibility for water quality and quantity to encourage landowners to establish woodland in specific zones.

The following tables summarise the existing/ planned measures and supplementary measures for Forestry.

Key Sector: Forestry**Pressure Type:** Diffuse and point source pollution**Summary of existing and planned measures**

Improvement Required	Actions	Delivery mechanism	Lead Department / Agency	Support Provider	Deadline for delivery of mechanism (year end)
Reduce Sedimentation and Nutrient Input	Catchment management planning	UK Forestry Standard	Forest Service		In place
	Site planning and forest operations	Forest and water guidelines (2003)	Forest Service		In place
		Alternative energy grants	Forest Service		In place
		UK Woodland Assurance Standard	Forest Service		In place
		Woodland Grant Scheme	Forest Service		In place
		Environmental Impact Assessment (Forestry)	Forest Service		In place
		Northern Ireland Forestry – A strategy for sustainability and growth	Forest Service		In place
		Guidance Paper - Application of Sewage Sludge to Forestry Land	Forest Service	AFBI	In place
		Environmental Guidelines for Timber Harvesting	Forest Service		In place
		Groundwater Regulations (Northern Ireland) 2009	NIEA		In place
		The Water (Northern Ireland) Order 1999	NIEA		In place
Reduce Pesticide Inputs	Comply with restrictions on pesticide marketing	Food and Environment Protection Act 1985 (FEPA) – Part III	NIEA/HSENI		In place
	Ensure standardised sale and supply of approved pesticides	The Control of Pesticides (Amendment) Regulations (Northern Ireland) 1997	DARD/HSENI		In place
	Ensure safe transport of pesticides				
	Control pesticide spraying	Plant Protection Products Regulations (Northern Ireland) 2005	DARD		In place
	Ensure appropriate disposal of dilute pesticides and washings				
	Implement crop protection management plans				
Certify competence of operators					

Key Sector: Forestry**Pressure Type:** Diffuse and point source pollution**Summary of supplementary measures**

Improvement Required	Actions	Delivery mechanism	Lead Department / Agency	Support Provider	Deadline for delivery of action (year end)
Reduce nutrient loading in sensitive areas	Introduce more stringent controls for the most sensitive areas, when scientific evaluation establishes a need e.g. phased felling of smaller harvesting coup rather than felling a large forest block all at once	Statutory Regulations Forest & Water Guidelines Codes of practice	Forest Service	NIEA	2012
Ensure appropriate future development and reduce impacts on water quality	Promote the establishment of new native riparian woodland adjacent to existing waterways using low intensity techniques	UK Forestry Standard	Forest Service	NIEA	2012
	Improve maps indicating where forests should be developed taking account of sensitive and protected areas		Forest Service	NIEA	2012
	Assess operations on a catchment basis		Forest Service	NIEA	2012

