

# **FORESTRY OPERATIONS – A REVIEW OF BEST PRACTICE GUIDANCE FOR THE PROTECTION OF THE FRESHWATER ENVIRONMENT**

Approximately 10% (2.5 million ha) of the land area of the UK is under woodland or forest cover. More than half of this has been created in the last century and ownership is roughly two thirds private to one third public. It is current government policy to encourage the sustainable management of existing woods and forests; and a steady expansion of tree cover to increase the many diverse benefits that forests can provide.

Trees have a major influence over the hydrological cycle, affecting the quality, quantity and rate at which rainfall reaches ground and surface waters. They influence air quality through the interception of pollutants, and they affect soils through interactions with both organic and mineral components, including contaminants. These processes do not take place in isolation and trees play an important role in the interactions between air, water and soil.

As a consequence of this intimate involvement with environmental processes, well planned and managed woodland can be of enormous benefit to the environment at both local and wider scales. However, adverse environmental changes and impacts on other uses of land and resources can also arise if woodland is poorly managed or planted in unsuitable locations. Poor management practices can be a major threat to the freshwater environment. The key issues being:-

- Increased erosion, turbidity and siltation due to the soil disturbance accompanying cultivation, drainage, road work and harvesting operations.

- Increased phosphate concentrations following aerial applications of fertiliser leading to the eutrophication of standing waters.

- Enhanced capture of acid deposition by forest canopies resulting in further acidification.

- Risk of water pollution from the accidental spillage of chemicals or fuel oils.

The Environment Agency is increasingly being consulted about the adequacy of forest management practices for protecting the freshwater environment. This has led to a recognition that the Agency's environment protection staff often lack a basic knowledge of forest operations and are unaware of the range of options and possible ameliorative measures that are available. They have also been hindered by the plethora of documentation on the subject.

The objective of this project was to critically review the existing documentation on the subject of best forestry management practices for the protection of the freshwater environment and from this review to produce a practical guidance document.

The final report (R & D Technical Report P210) forms the main deliverable from the project. It takes each phase of forest management in turn, in a broadly chronological order: from initial regulation and planning; to site preparation; planting and establishment, including fertiliser and pesticide applications; roads; harvesting; storage and handling of fuels, lubricants and urea; fire fighting; and finally, pollution contingency planning. Most sections start with a brief introduction, followed by a description of the forest operations that are involved. The potential impacts on the freshwater environment are then considered and specific measures given to minimise potential adverse effects. The overall emphasis of the guidance is on prevention rather than cure.

This document will enable the Agency's environment protection staff to provide high quality and consistent advice on pollution prevention aspects of all types of forestry proposals. A summary of the potential environmental risks associated with each type of forest operation will be incorporated into the Environment Agency's Pollution Prevention Manual.

This R & D Technical Summary relates to information from Project P2-026 contained in the following output:

R & D Technical Report P210 – Forestry Operations – A Review of Best Practice Guidance for the Protection of the Freshwater Environment.

Internal Status - Released to regions  
External Status - Restricted

Project Manager: Alan Broughall (Midlands Region)  
Research Contractor: Forestry Commission Research Agency

Copies of R & D Technical Report P210 are available internally from the Regional Libraries/Management Support Officers and Externally from WRc plc (Tel: 01793 865138; Fax 01793 514562)

© Environment Agency  
Rio House  
Waterside Drive  
Aztec West  
Almondsbury  
Bristol  
BS32 4UD

Tel: 01454 624400  
Fax: 01454 624409