



Water and Landscape

Forests are an important part of our biological wealth. Humans harvest resources such as wood from forests but just as important are the habitat they provide and the role they play in improving the quality of our air and water.

Forests help protect soil from erosion and filter rainwater that flows off the land into creeks, rivers and lakes. The tree canopies break the fall of rain and the undergrowth and litter on the soil surface slow the surface run-off after rain. The risk of soil erosion and siltation of streams is reduced if water soaks gently into the soil and is gradually released into creeks. Foresters are able to protect water catchments by the way in which they manage their forests and plantations.

What is a Catchment?

A catchment is an area of land that drains runoff water into the gullies, creeks and rivers that take it to the sea or an inland lake. Catchments can vary in size from small areas which drain into a local creek, to the huge Murray-Darling Basin catchment which includes many smaller subcatchments.

Many different environments and land uses are found within a catchment. All these are linked by the water that drains through them. Catchment management aims to protect the quality of water resources by balancing environmental values with human activities.

For catchment management to be successful, it needs to involve landowners, government, community groups and Natural Resource Management Boards. Catchment management programs need medium to long-term planning that looks ahead for at least five to ten years.

Forest Landcare

Good land and water management mean that forest plantations can be maintained in an environmentally-sustainable manner.

Sound management of forested land is an important part of catchment management, particularly in improving the quality of water run-off and allowing recharging of groundwater reserves.

Good land management should ensure that plantation forestry is sustainable, and will take into account erosion control, water quality, soil fertility and structure, native flora and fauna, pests and diseases, and landscape and heritage values.

A forest management plan is developed which involves mapping and assessing soil types, mapping watercourses and documenting natural, social and recreational values. This process identifies land capability - the suitability and sustainability of sites for particular uses. The plan defines how the land is to be managed to cause minimal



This catchment shows a river running through a forest alongside agricultural activities.



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environmental damage. It also includes plantation design, including firebreaks, tracks and roads, and planning for harvesting operations.

Plantation sites are assessed for factors such as:

- 🌳 potential risk of soil erosion (*by wind and water*)
- 🌳 soil drainage, texture and depth
- 🌳 degree of rockiness
- 🌳 soil fertility
- 🌳 slope

A growing forest, whether native or planted, will reduce the risk of soil erosion. Most plantation forests have retained native forest in environmentally-sensitive areas, such as steep hillsides, along watercourses and around swamps.

Plantation planning takes into account site preparation (*e.g. soil cultivation methods and weed control*), access tracks, harvesting and other activities which could result in increased risk of soil erosion or water pollution.

Planting and harvesting are the stages which pose the greatest risk to water quality in the catchment. Areas to be planted are cultivated only along the planting lines (*rather than cleared completely*) to leave as many plants as possible to stabilise the soil. Wind and water erosion are usually only a problem until the trees grow and protect the site.

The use of chemicals - herbicides, pesticides and fertilisers - is kept to a minimum in forest plantations to limit the risk of soil and water pollution, and to reduce costs. Chemicals are used only for appropriate purposes and at recommended rates.

Harvesting operations - extraction, loading and

haulage of logs are planned to have minimum soil disturbance and impact on water run-off. Some of the factors that are taken into account include the weight of the loaded vehicle, movement of machinery, and planning of tracks through the plantation to minimise the risk of environmental impact, in particular soil compaction and water run-off. Operations are halted when the soil is waterlogged or if water is running along forest tracks. Tracks are kept in good repair and are restored to their original condition when harvesting is finished.

Plantations and Groundwater

Recent CSIRO research has analysed the competing claims of forest plantations, irrigators and householders for groundwater. Groundwater is the source of domestic water supplies for many areas of South Australia and is also vital for irrigated agriculture.

Although not an irrigated crop, researchers found that plantations were efficient users of water and prevented nearly all rainwater from reaching the groundwater. Rain falling on shallow-rooted annual crops and pastures is much more likely to leak past the root zone and enter the groundwater. If the water table is less than about five metres from the surface and is accessible to the tree roots, plantations may actually use groundwater. In most cases, actively growing plantations utilise more rainfall than native forests or grasslands.

The forest industry is working with the Department of Water, Land and Biodiversity Conservation and CSIRO to monitor the water use of plantations.

The forest industry has a long term view of sustainability and seeks to balance its water needs with those of irrigation, domestic water supply and the environment.

Find Out More

www.csiro.au (Search for water, forests, plantations, etc)

SA Department of Water, Land and Biodiversity Conservation - www.dwlbc.sa.gov.au