

Wastewater treatment through the introduction of wetlands to wholesale nurseries

Location:	Tasmania: - Scottsdale and Hobart
NRM Region:	NRM North and NRM South
Industry:	Horticulture
Group:	Nursery and Garden Industry Tasmania Inc
Issue:	Wastewater treatment via the establishment of wetlands
Key Outcomes:	<ul style="list-style-type: none">• Reuse of wastewater leading to improved water quality• Establishment of wetlands at three production nurseries• Increase in awareness among production nurseries about water quality issues (e.g. discharge of sediment and nutrients)• Increased awareness of value of wetlands to nursery industry

Background

One of the roles of the Nursery and Garden Industry Tasmania (NGIT) is to foster increasing professionalism in the industry. Water usage and contamination have become serious industry issues for production nurseries across Australia. Many states are introducing legislation to ensure that there is a continual flow of water through river and creek systems. This project was seen as a major step to assist the industry to be proactive in addressing water management issues and developing best practice examples for Tasmania.

In developing the project concept, partnerships were formed between the NGIT, private nurseries, TAFE Tasmania, Nursery and Garden Industry of Australia (NGIA), Department of Primary Industry Water and Environment Tasmania (DPIWE) and the NSW Department of Agriculture. These partnerships were seen as crucial to gaining support for the project from the major nursery industry stakeholders and so ensuring its successful implementation.

During the initial planning phase, Jeremy Badgery-Parker (from NSW Agriculture) was invited to Tasmania to tour several of the interested nurseries to help assess their potential for utilizing a wetland and having the resources to carry out the building and maintenance of the wetland itself. Jeremy has produced a number of publications dealing with the module structure of artificial wetlands to include sediment traps, grassland filters, reed beds and storage ponds.

Besides the on-ground aspects of the project, it's development was driven by the imperative to extend awareness of water quality management issues far and wide, not only in the nursery industry (through such things as the nursery association's state conference), but to other industries, such as the dairy industry which is now addressing similar water management issues.

The Project

The major aim of the project was to establish wetlands at three production nurseries as a way to improve water quality management associated with the nurseries. The nurseries gained access to the project by being either accredited or undertaking accreditation under national best practice for wholesale nurseries administered by the NGIA.

The wetlands were designed to receive and improve the quality of waste water draining from intensive production nurseries; this was to be achieved through such things as: establishment and restoration of wetlands and waterways; constructing sediment traps and dams to slow the velocity of the water to prevent the sediment from moving further down into storage dams and the creeks; willow and other invasive weed eradication in wetlands and waterway; replanting native species to re-establish and improve native habitats; and soil conservation works.

A key activity was to also demonstrate to the wider nursery industry the benefits of reusing waste water and improving irrigation efficiencies. Establishing the three wetland sites as demonstration areas of best practice for waste water management was also an important component of the project.

Outcomes

The nurseries involved in the project were on different sites and had very different problems with water management. As a consequence, the wetlands established were also very different in form and function and as demonstration sites capture the individual nature of wetlands well.

After the wetland projects were completed they immediately began improving the water quality at the nurseries, thus also improving the water quality for down-stream users.

The project has increased awareness among production nurseries about the critical nature of water quality issues, the effect of their own business practices on other industries (e.g. primary producers) and overall environmental management of catchments.

The industry's state conference has significantly increased the nursery industry's awareness of the value of wetlands and the impact of poor water quality on the environment by garden centres and allied industries.

Focus on Woodlea Nursery

Woodlea nursery is on a gently sloping site and, due to the nature of the business, uses high-volume boom irrigation. The nursery is a very large supplier of eucalypt and trees for forestry, landcare, Greening Australia and farm forestry as well as vines to the wine grape industry. Water for nursery use has been drawn from spring-fed dams on the property. The excess water from irrigation was drained to a paddock planted out with cricket bat willows. Due to the large area of glasshouses, and the amount of space under benches within the nursery, the storm water run off is very high.

The wetland project began with the construction of sediment traps and centralizing drains from the nursery area in to one area. The water from the nursery was then captured in a storage tank where it could be either diverted to the wetland phase or treated and reused in the nursery. The wetland was constructed in an adjoining paddock with a rotary drain former. The channel has a slope of 5 degrees and is planted out with reeds, native shrubs, and eucalypts. Allowance has been made to extend the channel system up to 2.4 km within the same paddock (around 1 hectare in size) in the future.

The construction of the wetland has reduced the nursery's demand on water by 60%.



Woodlea Nursery (Photos: Jeremy Badgery-Parker)

The Future

Several garden centres are now examining ways in which they can remove sediment and nutrients from the water that they discharge from their businesses and increase customer awareness of water quality and management.

Several other industries are becoming involved in the project through meetings and field days. Web based resources are being constructed and the case histories of each of the wetlands will be produced and made available to individuals and industries that may require the information.

The project has raised several avenues for the development of other innovative projects – a water management project collaborating with the dairy industry is planned.

The project revealed widespread lack of knowledge of irrigation techniques among some of the members of the nursery and garden industry in Tasmania. Often technology and infrastructure being used is inadequate and out of date for current industry and catchment requirements; there are nurseries in Tasmania that have not changed their irrigation management in over 30 years. Sometimes the nursery managers are aware of their shortfalls in irrigation technology but perceive that they are too busy in other areas of their businesses to make the required changes.

There is potential for a number of wetland projects to be carried out at several of the larger retail garden centres. At the garden centres the projects could be aimed at public education as well as addressing the problem of water high in nutrients and sediments entering storm water drainage systems.