



# E.P. Robinson water minimisation feasibility study

## 1. Company profile

E.P. Robinson is a wool scouring and carbonising facility that has been in operation since 1920 and is located in the historic Riversdale Mill in Geelong, Victoria.

E.P. Robinson is currently involved in the Victorian Government's water management action plan (waterMAP) program. As part of the program, businesses using over 10 ML of drinking water per year are required to:

- Assess their current water use
- Identify inefficiencies and opportunities for water savings
- Prepare an action plan to implement water conservation activities
- Annually report on implementation of water conservation activities

## 2. waterMAP Assist

The Australian Industry Group (Ai Group) is committed to working with member companies to encourage continuous improvement, resource efficiency, use of recycled water where possible, and reduced usage of drinking water. Ai Group's waterMAP Assist program has provided resources and funding to member companies to assist them implement initiatives contained in waterMAPs and deliver water savings in industry.

## 3. Project overview

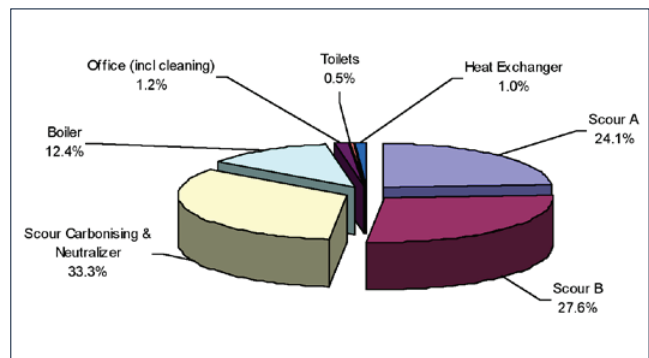
Ai Group's waterMAP Assist program provided funding to enable E.P. Robinson to conduct a feasibility study to identify practical solutions to minimise water use and investigate the potential use of alternative water sources. The key objectives of the feasibility study were to:

- Determine the potential for improving the monitoring and control of process flows and ascertain where improvements could be made to reduce water consumption per kilogram of clean wool at the Geelong site
- Identify the practical feasibility of the potential solutions identified during the feasibility study in terms of cost, design and operation
- Provide assistance in design of potential solutions including a budget breakdown and advice on any operational factors that must be managed

## 4. Water use

E.P. Robinson uses a combination of drinking water and raw river water for its operations. At the time of the study, no river water was being used. Figure 1 displays the major areas of water use at E.P. Robinson, which are the wool scouring (51.7%) and wool carbonising processes (33.3%).

FIGURE 1 ESTIMATED WATER USE BREAKDOWN



**E.P. ROBINSON PTY LIMITED**  
(INCORPORATED IN VICTORIA A.C.N. 004 942 572 A.B.N. 44 004 942 572)  
**Riversdale Mill**  
 Wool Scourers and Carbonisers



The wool scouring process involves immersing wool in a hot water and detergent solution. This process removes most of the contamination (dirt, grease and suint) in the wool to present a clean wool mat for the next stage of processing. The next stage is the wool carbonising process during which vegetable matter (seeds, burrs and grass) is removed from the wool by a chemical process.

The effluent from the wool scouring and wool carbonising processes is then treated by a Sirolan CF (Chemical Flocculation) Plant. The Plant, through the addition of strong acids and polymeric flocculent, separates the sludge (which is disposed to a composting farm) and the wastewater (which is discharged as trade waste to sewer).

### 5. Best practice

A desktop study undertaken as part of the study identified CSIRO's Scour Waste Integrated Management System (SWIMS) and ANDAR's Enviroloop as the best practice wool scouring systems currently available in the wool scouring industry. The SWIMS model would involve the addition of a:

- Flash evaporator
- Sirolan CF-B
- Membrane filtration

It was identified that the installation of a Sirolan CF-B system into E.P. Robinson's existing effluent treatment system would result in substantial water efficiency benefits. This included a reduction in trade waste concentration of approximately 50% and a reduction in trade waste costs of up to 50%.

Opportunities may also exist to re-use a percentage of the cleaner wastewater through implementation of known water recycling systems. Implementation of the ANDAR Enviroloop would generate an enhanced potassium liquid fertiliser through an evaporation process of the cleaner wastewater. However the ANDAR Enviroloop is not currently economically viable.

### 6. Recommendations

The feasibility study identified a number of options for E.P. Robinson to minimise water use (and subsequently reduce trade waste). The key options were:

- The installation of the Sirolan CF-B into E.P. Robinson's existing effluent treatment system to achieve an approximately 50% reduction in trade waste concentration and trade waste costs
- Following the installation of the Sirolan CF-B, an assessment should be undertaken of the potential to reuse a percentage of the cleaner waste water in the scouring processes.
- Installation of additional sub-metering to the scours and heat exchanger line to provide accurate water consumption data across the site and enable E.P. Robinson to compare water efficiency and assess the impacts of process changes across water use areas.

### 7. Project benefits

The benefits of the project to E.P. Robinson included:

- Identification and provision of information on best practice technologies currently available
- Identification of options to reduce trade waste concentration, trade waste charges, and water consumption
- Provision of a platform for further investigation into water efficiency projects through generation of accurate water consumption data from installation of sub metering

The study also found that other potential solutions including rainwater harvesting and the installation of an ANDAR Enviroloop system, were not economically or technically viable, and should not be pursued further at this stage.

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### Further information

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Ai Group's waterMAP Assist program, supported by the Department of Sustainability and Environment (DSE) has enabled Ai Group to work with large industrial water users to identify and implement water savings.