



## Robert Bosch fire sprinkler study

### 1. Company profile

Robert Bosch (Australia) is a part of the international company, The Bosch Group and is a leading global supplier of automotive and industrial technology, consumer goods and building technology and services. The Bosch Group has more than 300 subsidiaries and regional companies in approximately 50 countries. The regional headquarters are located in Clayton, Victoria.

Robert Bosch (Australia) primarily focuses on the engineering, manufacture and distribution of automotive and consumer goods. The Clayton-site operates a recycling plant which reuses 11,000 kL of water per year for use in the manufacturing operations. Wastewater from the operation of de-ionised plant is also re-used in cooling towers, toilets and other non-potable processes, which is estimated to save over 5,000 kL of water annually.

Robert Bosch is currently involved in the Victorian Government's water management action plan (waterMAP) program. As part of the program users of > 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 summary

Each year, mandatory testing of the fire sprinkler system consumes approximately 77kL of water at the Clayton-site. In addition, approximately 380 kL is lost each year during the repeated system drain downs associated with expansion work occurring at the site.

Ai Group's waterMAP Assist program provided funding to Robert Bosch to undertake a detailed investigation of the potential for collecting waste water from the testing of fire systems and sending it back to the on-site fire water tank for re-use by utilising existing decommissioned mains water piping systems. This investigation involved:

- Estimating the total testing water potentially recoverable per year from
  - Weekly sprinkler testing
  - Sprinkler drain-downs
  - Water supply proving tests
- Testing of the quality of the recovered sprinkler water to determine any necessary treatment required
- Creating concept designs for a system to capture and return the test sprinkler system water to the fire water tank
- Completing a feasibility assessment of the costs and practicality of employing the proposed concept for recycling fire sprinkler testing water through existing drains



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The potential water savings from returning the weekly test water was estimated to be 520 L/year with the potential to collect another 77 kL/year from the annual flow test process. The most significant change required to facilitate the return of this water involves modifications to the return mains to render the decommissioned line fit for use as a return line. Potential water saving from returning the sprinkler drain down water was estimated to be 380 kL/year. The investigation identified that an electric pump was required to be installed at each of the three valve stations to transfer water from the drain down pipe to the mains line.

The sprinkler water quality was found to be similar to that of Melbourne potable water and as such, no issues were predicted with recycling water from system drain downs or testing.

## 4. Water savings and other environmental benefits

Three key areas of opportunity to reduce water consumption were identified through the study. In total, these options could:

- Decrease water consumption by up to 458 kL per year
- Decrease disposal cost of pipes that are to be decommissioned

## 5. Key initiatives

The study looked at how each of the types of fire test water could be collected and re-used and the water savings that could be achieved. The ability to use redundant piping to enable the reuse of the fire water will result in the costs associated with collecting and re-using water being greatly reduced.

Investigation area	Water Savings (kL/year)
Return weekly test water	0.5
Return sprinkler drain down water:	308
Building C103	
Building C116	72
Return annual flow test water	77

## 6. Project costs and payback periods

The cost to collect the various fire water sources was estimated as follows:

- Cost to modify disused return mains water lines ~\$13,000
- Cost to install pipe work and fittings to return weekly test water ~\$2,500
- Cost to install pipe work, fittings and pumps to return drain down water ~ \$6,000
- Cost to install pipe work to return annual flow test water ~\$1,500

There is no specific cost saving associated with reducing fire water consumption as this water is supplied separately to mains water and charged as an annual fee rather than on consumption. A pay back period could therefore not be calculated for this project.

## 7. Additional business benefits

Other benefits gained by Robert Bosch (Australia) include the opportunity to:

- Increase staff awareness of water efficiency issues and enhance staff engagement in these issues
- Increase water efficiency and best practice uses of water resources
- Improve the sustainability of the Bosch company

## 8. Project barriers

A primary concern of the project is to ensure that there is sufficient capacity in the fire water tank to collect the recycled water from fire system drain-downs and fire water supply testing. The fire water storage tank is directly connected to the main fire water supply and controlled via a float valve. The overflow point of the tank is located at a height close to this float valve.

Two solutions were identified to solve this problem as part of the project. These involved either modifying the tank design or modifying the control process for filling the tank. Robert Bosch (Australia) is currently further investigating these options to determine the best solution for the site.

## 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.