

Water loss management programme

New South Wales Regional Water Utilities, Australia

water scarcity impact

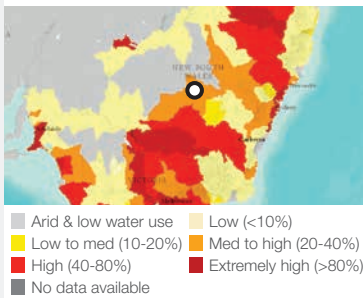
Reduced withdrawal	●
Reduced consumption	●
Improved water quality	
Increased productivity	●
Net basin benefit	●

volumetric impact
5 518 000m³/yr

capital cost
\$9 200 000

estimated unit cost of water
10¢/m³

Water Stress New South Wales, Australia



Water Stress Map:
Gassert, F., M. Landis, M. Luck, P. Reig, and T. Shiao. 2013. "Aqueduct Global Maps 2.0."

Confidence level
● Low ● Medium ● High

Water Scarcity Impact Key
● Main ● Minor

Credits
We wish to acknowledge the input of Gary Mitchell of the Water Directorate in the preparation of this case study.

Project Overview

Between 2000 and 2010 Australia experienced extended periods of drought that increased the strain on water resources. In response to this, the Water Loss Management Programme (WLMP) was jointly initiated between the Local Government Association of New South Wales (NSW) and the Shires Association of NSW, the Water Directorate and the Australian Government through the Water Smart Australia programme. The aim of the WLMP was to support smaller Local Water Utilities (LWUs) in their efforts to reduce leakage from their drinking water distribution systems. The batching of projects under WLMP also allowed eligibility with federal government funding criteria. Specialist knowledge and equipment were provided to LWUs in order to help identify, develop and implement leakage reduction projects. The original programme design and budget was based upon a four year term from 2006-2010 and planned to engage with 33 LWUs across NSW. Eventually, the programme was extended to a five year term (2006-2011) and engaged with 75 LWUs. The WLMP achieved ongoing water savings of 5 518 000m³/year.

Key Elements

- Production of training material and provision of expertise in leakage reduction to guide small water utilities without in-house technical expertise.
- Leakage detection and repair.
- Installation of flow meters, establishment of distribution zones and installation of Pressure Reducing Valves.
- Batching of projects to access Australian Federal Government funding.
- The \$9.2m cost (2013 prices) was funded through the Government, LWUs and in-kind contributions from other partners.

Key Outcomes

- 80 investigation projects were undertaken with 75 LWUs.
- 61 projects received a funding agreement to undertake a water loss management project.
- The programme achieved on-going water savings of 5 518 000m³/year.
- 1 million kWh in energy savings and 1.2 million Kg CO₂e reduction in emissions were achieved due to reduced abstraction, pumping and treatment requirements.
- Technical capability in water loss management techniques was established within LWUs.
- Infrastructure enhancements were instigated to enable sustainability of water savings.



New South Wales, Australia

Intervention Features

- Municipal leakage detection and repair
- Pressure management in municipalities
- Flow monitoring in municipalities
- Education, technical training and capacity building
- Stakeholder engagement

Project Levers

The WLMP was a \$8.7m programme (2011 prices) that comprised \$4.21m in funding from the Australian Government through the Water for the Future initiative, \$4.16m from the participating LWUs and \$350 090 of in-kind contributions from other partners. The funding covered investigations, construction, initial operational and equipment costs. Components of the scheme are listed below:

(1) Local Water Utilities engagement plan:

Technical workshops were held around New South Wales to encourage LWUs to seek a free consultation service and apply for funds to assist with their water loss management programmes.

(2) Metering and water loss calculations:

Water balance calculations and analysis of minimum night flows were the two main methods used to measure water losses within the water supply network. The WLMP investigated over 180 metered zones with funded projects reducing water loss in almost 100 zones.

(3) Investment in technology:

Historically, water leaks have been fixed when they appeared at the surface, however with the installation of bulk flow metering, insidious leakage was identified. If significant, it was located and pinpointed using active leak detection technology. In areas of substantial water loss, physical network improvements were carried out to enable improved pressure management such as the installation of pressure reducing valves.

(4) Capacity building:

LWUs were provided with specialist expertise and offered guidance in methodologies to detect and prevent leaks. The publication of the Water Loss Management Awareness and Education Guidelines by the Water Directorate also offered support and knowledge to LWUs that would not have otherwise had the expertise to manage water loss through leakage.

Outcomes and Challenges

By the end of WLMP, 75 LWUs had participated and a total of 61 projects were funded. Two of the projects did not proceed due to timing and resource issues. Prior to the programme, the use of analysis software identified a potential saving of 5 200 000m³/yr, however the programme surpassed this achieving a saving of 5 518 000m³ per annum.

The energy savings from reduced abstraction, pumping and treatment have been estimated to be in the region of 1 million KWh and 1.2 million kg CO₂e.

The WLMP's aim of achieving sustainable water savings has led to the investment in permanent water flow metering and monitoring technology. The majority of LWUs that completed a funded project installed permanent metering and monitoring to ensure that leakage can continue to be monitored.

The majority of participating LWUs have also significantly improved their ability to undertake water loss management work within their water distribution network. The provision of the Water Loss Management Awareness and Education Guidelines, along with the 'hands on' engineering consultancy provided by programme staff, has led to a major improvement in the capacity of LWU staff to measure and mitigate against future water loss.



Above: Upgrades to domestic water supply pipe work
(© Pupunkkop | Dreamstime.com)