Rous Water

Demand Management Plan

2012 - 2016

Adopted June 2012

Foreword

This Demand Management Plan presents the future direction for Rous Water's demand management initiatives to be implemented over a four year program from 2012-2016. This plan takes into consideration the Regional Water Management Strategy, the development of the Rous Water Future Water Strategy (in prep) and the requirements of the Demand Management Check List (August 2007) of the NSW Department of Water and Energy.

Version No.	Version	Prepared by	Issued Date	Comments Received
1.0	Working Draft	Sally Sturgess	Oct 2011	Technical Services Director Future Water Strategy Manager
1.1	Revised Draft	Emma Hunter	Apr 2012	Technical Services Director
1.2	Draft for Consultation	Emma Hunter	Apr 2012	Rous County Council Future Water Strategy PRG Constituent Councils NRWG DM Group
2.0	Adopted by Council	Emma Hunter	June 2012	

List of Acronyms

DMP	Demand Management Plan
NOROC	Northern Rivers Regional Organisation of Councils
NRAP	Non-Residential Assistance Program
NRWG	Northern Rivers Water Group
OWEP	Outdoor Water Efficiency Program
PWSM	Permanent Water Saving Measures
WEMP	Water Efficiency Management Plan

1 Introduction

Water demand management in the Rous region is about developing and maintaining an effective, flexible and adaptable approach to efficient water use that supports Rous Water's work to ensure a secure water supply. It is about achieving outcomes in water efficiency and conservation, alternative water sources and water loss minimisation over the long term, taking account of economic, social and environmental costs and benefits. The Demand Management Plan 2012-2016 (the Plan), documents the methodology by which Rous Water will continue to achieve these outcomes.

Demand management has been an integral part of Rous Water's approach to planning and management of regional water assets and ongoing supply management. Demand management programs in the Rous region are part of a wider strategy seeking to ensure an adequate and secure water supply that meets the needs of the community. Since 1995 Rous Water has implemented an ongoing and evolving program of demand management.

Demand management will continue as a key activity for Rous Water. One of the strategic objectives of Council's *Integrated Planning and Business Reporting Business Activity Strategic Plan 2012-2032* (in draft), is the "reliable delivery of good quality water from a secure source". To achieve this objective, the Strategic Plan will "manage demand for water through education and water efficiency initiatives", and this is to be achieved through the implementation of a demand management plan.

1.1 Benefits of Demand Management

An effective demand management program has far-reaching economic, social and environmental benefits. A key driver of this Plan is the economic benefit of deferring new water supply works. By reducing total water demand, the costs of building new water supplies, and transferring and treating water are reduced; and the capital investment required to meet the needs of growing communities can be deferred. As new infrastructure is required, an effective demand management strategy also has the potential to achieve reductions in the required capacity of new water supply infrastructure. This Plan will work towards retaining the current efficiencies achieved by past demand management actions which have showed significant results towards reducing water demand and deferring the need for a new water supply source.

These deferrals, and demand management programs have flow on environmental, social and economic benefits. The environment benefits from reducing the need for, or lessening the footprint required for water supply infrastructure and can reduce the need for extraction from rivers and aquifers leading to increased flows and improved river health. Effective demand management can also lower energy consumption and greenhouse gas emissions at individual household level through to reducing the energy needs of water utilities. Demand management also has a strong community engagement focus. As demand management education and awareness activities promote the uptake of water efficiency measures, it also engages the community to be better advocates for water conservation and protection, with the expectation that water is supplied, delivered and used efficiently.

It is these drivers that make this Plan an integral part of Rous Water's broader strategy and planning work, in particular its role in the Future Water Strategy and ongoing work towards supply security in the Rous region. The Rous Water Demand Management Plan (2012-2016), hereafter referred to as the Plan, represents the latest evolution in Rous Water's

demand management initiatives. Utilising the current suite of programs as a foundation, this document outlines the future for demand management for Rous Water, with an implementation plan for 2012 to 2016.

1.2 Purpose of this Document

The purpose of this Plan is to provide a strategic, prioritised set of actions designed to achieve a range of demand management objectives.

This Plan outlines the demand management activities that Rous Water will implement from 2012 to 2016. The Plan must be considered one part of a wider set of strategies being implemented by Rous Water. This document should be read in conjunction with the *Rous Water Regional Water Management Strategy* and the *Future Water Strategy*. It provides an approach that addresses the demand side issues in a holistic and comprehensive manner. The Plan acknowledges the governance framework in which the Plan will operate and works towards achievement of best practice in accordance with the *Best-Practice Management of Water Supply and Sewerage Guidelines* (the Best Practice Guidelines). An excerpt of the guidelines specific to demand management is provided in Appendix A.

The Plan must also be considered a living document. During the period of the Plan it may be reviewed and revised at any time to reflect new or revised understanding of demand management issues in the Rous Region. The plan serves to:

- Present the objectives of Rous Water's demand management programs;
- Build on existing demand management measures as a foundation for future work; and
- Outline the program of work to achieve the desired objectives.

2 Demand Management Drivers

2.1 Continued Success of Demand Management Programs

Water consumption has been trending downwards since the 1990's. Figure 2.1 below shows the estimated per connection consumption from 1990 to 2011. This graph demonstrates the declining trend in per connection consumption. This downward trend in water consumption per connection has occurred despite a population increase over the same period. The trend is attributable to two key factors:

- The reduction in per dwelling occupancy over time (while dwellings grow, population does not grow at the same rate refer to Section 2.3); and
- Ongoing demand management initiatives which include increased community awareness about using water sustainably and resulted in increased uptake of water efficiency measures.

Demand management measures have been implemented by some constituent Councils and Rous Water, from approximately 1990 onward. This has resulted in reduction in per connection water consumption which, despite the growth in population, has tempered the demand on the region's water resources. A significant event which had a major impact on water consumption was the drought in 2002/03. During this time, water restrictions were activated and led to a significant and immediate drop in water use. They also led to a downward trend in water demand per connection and an ongoing reduction in fluctuations in seasonal water demand. Further information on trends relating to peak demand and seasonal trends are provided in Appendix B.

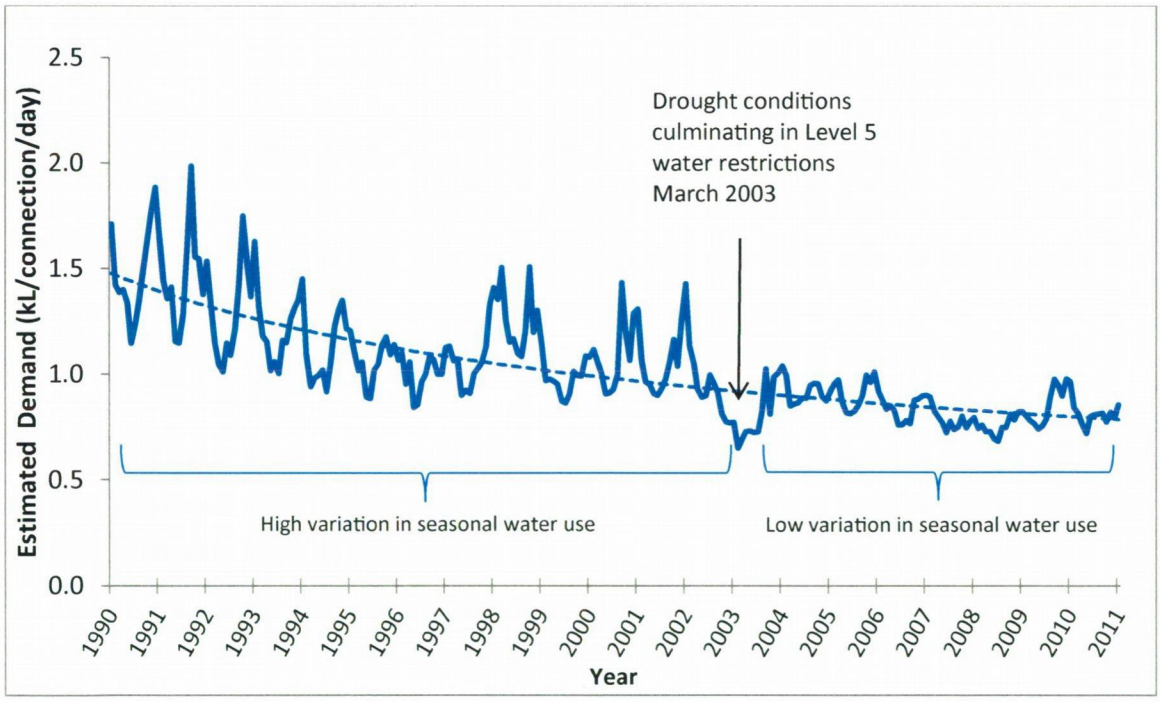

Figure 2.1: Per Connection Water Consumption (1990-2011)

While there have been substantial reductions achieved through the 1990s, the rate of reduction in per connection consumption has slowed through the 2000s. This slowing

indicates a reasonable level of water conservation in the community due to uptake of a range of demand management measures (e.g. water efficient appliances), with less opportunities for further reductions in water consumption.

Figure 2.2 below illustrates that over the past 20 years, the number of connections has increased but that the water use per connection has fallen.

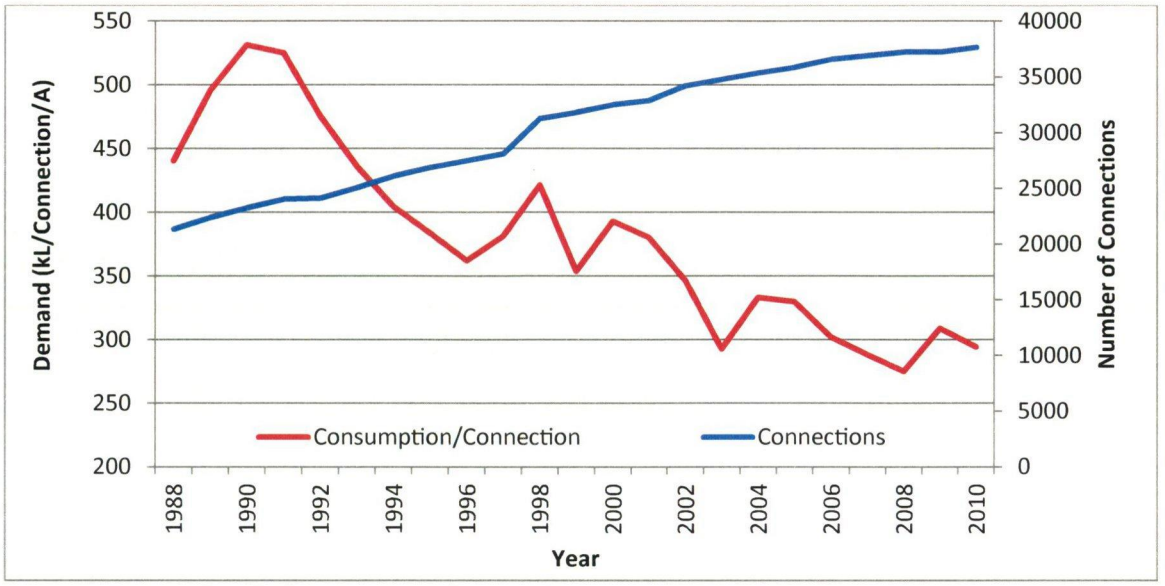

Figure 2.2: Connection Growth with Per Connection Consumption

The combined effect of increasing connection numbers and decreasing per connection consumption has led to no net change in demand from the Rous Water supply system. This is evident from bulk water production. Figure 2.3 below shows bulk water production from 1995 to 2010, with no trend in the data suggesting increased demand.

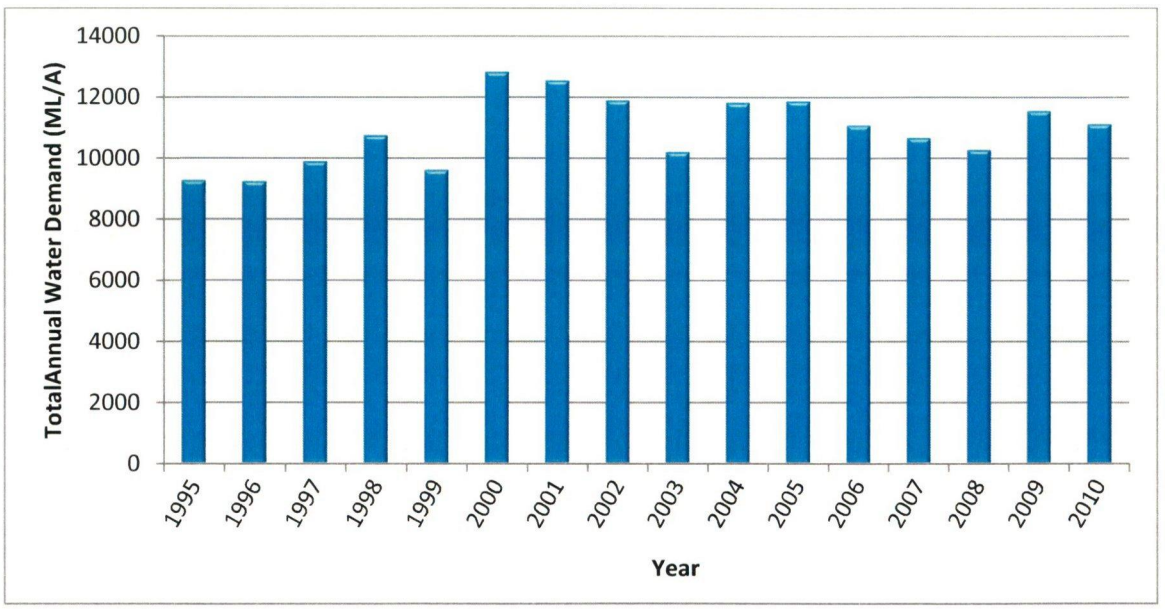

Figure 2.3: Rous Water Bulk Water Production

The information here shows that demand management programs have been successful in reducing demand, and ultimately increasing the longevity of existing bulk water supplies. To continue driving the downward trend, the Plan includes objectives to:

- Increase the use of water efficient products and implementation of water conservation projects;
- Reduce demand on the potable water supply through use of sustainable alternative supplies;
- Continue to further develop the Region's water conservation culture to stimulate the community to take action; and
- Continue to develop more comprehensive understanding of water demand trends to inform demand management planning.

2.2 Responding to the Demand Profile

Rous Water customers can be divided into two broad groups: Residential and Non-Residential.

2.2.1 Residential

Residential water consumption represents the majority of water consumption in the Rous Region. Residential connections are generally made up of single and multiple dwelling residential connections. These can be further broken down into the following categories:

- BASIX connections – new residential properties that have been built under the NSW BASIX building sustainability scheme, where a BASIX certificate is issued, and the property includes water efficient fixtures and fittings designed to meet a target reduction in consumption.
- Non-BASIX Efficient connections – Pre-2005 houses that have water efficient fittings and fixtures. These connections will include properties that have installed water efficient fittings and fixtures. This will include households that have accessed rebates offered by Rous Water.
- Non-BASIX standard connections – Pre-2005 houses which, at the time of building were fitted with inefficient water fixtures and have not undergone any renovation or conversion to efficient fixtures.

2.2.2 Non-Residential

Non-residential water uses supplied by Rous Water include:

- Commercial/retail including shopping centres;
- Service industries including accommodation providers and restaurants;
- Industrial/processing including food production and processing;
- Health care including hospitals and nursing homes; and
- Rural uses including stock watering and irrigation.

The proportion of non-residential consumption in each LGA is provided in Table 2.1. This has been estimated from Council water billing database records.

Table 2.1: Proportion of Non-Residential Water Consumption and Connections

LGA	Proportion of Consumption	Proportion of Connections
Ballina	23%	11%
Byron Bay	37%	11%
Lismore	28%	9%
Richmond Valley	31%	11%

It is estimated 23% of Rous Water retail customers are residential, and the remaining 77% non-residential.

Non residential customers make up the highest water users in the region, however there are currently no large industrial intensive water users. The top 10 water users in 2010, estimated using data from constituent Council water billing databases, are shown in Table 2.2. The average daily demand for the top ten non-residential customers was approximately 1.38 ML/day in 2010 (see the table below).

Table 2.2: Top 10 Non-Residential Users in 2010

Business	Industry	Demand (ML/yr)	Council Area
Ingham (formerly) Sunnybrand Chickens	Poultry Processing	123	Byron
Norco	Food Processing	114	Lismore
Lismore Base Hospital	Health	74	Lismore
Southern Cross University	Tertiary Education	45	Lismore
St Vincent's Hospital	Health	32	Lismore
Linclean	Commercial Laundry	25	Lismore
Ballina RSL	Club	20	Ballina
Caroona Village	Health (Ageing)	20	Lismore
Arts Factory Lodge	Hostel	20	Byron
Crowley Village	Health (Ageing)	18	Ballina

Rous Water supplies water to a range of customer types. In recognition of this, the Plan includes objectives to:

- Demonstrate sustained savings over time for each customer type over time;
- Increase the level of uptake of water efficient products and projects;
- Develop better understanding of water demand trends, including trends within each customer type.

2.3 Increasing Population

Using Census data, Rous Water has derived estimates of population serviced. The most recent Census data available at the time of writing this Plan was 2006 data. Census 2011

data will be available after June 2012. Based on the 2006 data, it was estimated Rous Water supplied water to:

- A resident population of approximately 85,000; and
- A visitor population of approximately 7,500.

It should be noted that the visitor population represents the number of visitors at the time of the Census and does not represent the total number of visitors to the region each year.

From 2001 to 2006, the following growth rates have estimated:

- An average annual increase in serviced population of 0.63; and
- An average annual increase in residential dwellings of 1.07%.

Further information on existing population and dwellings is provided in Appendix C.

Rous Water is operating in a region that continues to sustain positive growth in housing and population. As the bulk water supplier for the region, Rous Water must prepare for the increasing pressure that population growth places on existing water supplies, and the need to augment existing bulk supplies. The financial, environmental and social impacts of providing additional supplies can be mitigated through effective demand management programs. Objectives of this Plan include:

- Understanding water demand trends including the changing profile of retail customers over time;
- Increased uptake of water efficient fittings, fixtures and other water conservation projects; and
- Reducing potable water demand, particularly for area of future development, through adoption of sustainable alternative water supplies.

2.4 Water Loss & Leakage

Through the Future Water Strategy process, Rous Water has identified that unaccounted water losses and leakage throughout the supply area may be greater than optimum and therefore, reducing water losses may provide an opportunity to increase the security of existing water supplies.

Rous Water has previously estimated losses by calculating the difference between the bulk water provided to the reticulators and water sold by reticulators to users. This analysis indicated an average loss of approximately 15%. Further work required to verify this estimation is currently being undertaken and the findings will be incorporated into this Plan.

A key objective of this Plan is to minimise water demand attributed to water loss and leakage.

2.5 Governance Arrangements

Water is delivered to retail customers by five different authorities in the region:

- Rous Water
- Ballina Shire Council
- Byron Shire Council

- Lismore City Council
- Richmond Valley Council.

Rous Water supplies bulk water to each Council and retails water to a small portion of direct customers. This structure presents some challenges to Rous Water in the effective delivery of demand management programs and the ability of Rous Water to directly influence all aspects of demand management policy. As a bulk supplier Rous Water is limited in its ability to:

- Shape state and local government planning and policy;
- Interact directly with retail customers; and
- Deliver a consistent demand management program across differing political and bureaucratic environments.

Under the current water delivery and retailing arrangements in the region, Rous Water will be reliant on a cooperative and positive working relationship with each Council to achieve outstanding results in demand management. This Plan, therefore, includes an objective to continue fostering these governance relationships.

2.6 Consistency in Monitoring and Evaluation

Rous Water will continue to implement demand management programs in an adaptive management style. That is, ongoing monitoring and evaluation will be used to shape the future of demand management programs. A fundamental issue is the current differences between Councils in defining connections and meter reading. These differences make calculation and comparisons of water consumption difficult, and ultimately prevents the development of regionally consistent and meaningful water demand data.

An objective of this Plan is to, therefore, improve monitoring, evaluation and reporting processes. This will result in improvements to, and a higher level of confidence in, the trend information that is used to inform demand management planning.

3 Objectives for Demand Management

The aim of the Plan is to identify and deliver programs that fulfil the June 2011 resolution of Council to "reduce per capita demand from residential consumption each year".

Within this target, Rous Water will be seeking to achieve a number of objectives including:

- ongoing development and understanding of water demand trends and behaviours;
- demonstrate sustained water savings by customer types over time demonstrated through continued uptake of effective water conservation projects and behaviours;
- continue to embed a water conservation culture by fostering an engaged, educated and water-aware community;
- increased levels of uptake of water efficient products and projects;
- minimise losses in the distribution network;
- reduce demand through adoption of sustainable alternative water supplies;
- improve monitoring, evaluation and reporting mechanisms; and
- continue to foster effective governance partnerships.

The strategies and action plan are presented in a balanced view giving consideration to the 5 E's of demand management:

- Engineering - having effective technology to assist with water saving efficiency. For example, products such as dual flush toilets, smart metering, more water efficient whitegoods and recycling technologies fall into this category.
- Enforcement – the application of legislation, guidelines or other requiring achievement of water conservation targets or installation of water efficient fixtures or fittings.
- Encouragement - providing incentives and rewards for water efficiency or water conservation actions or projects.
- Education/Engagement - providing people with the right information to make informed choices. Rous Water has a Community Education Officer who assists in educating the community about why we need to be water efficient and how to be water efficient.
- Economics - the price and cost signals related to water and the financial consequences associated with high water demand.

4 Demand Management Strategies

This section sets out to address the future demand management challenges in the Rous Water region. There has been a consistent ongoing effort by Rous Water over two decades to conserve water and optimise water supplies. This section includes actions to maintain these achievements, and build on them with a range of new actions. Actions are captured under 8 strategies:

1. Undertake a program of work to develop greater understanding of the water demand profile;
2. Implement programs to achieve sustained water savings by residential customers;
3. Implement programs to achieve sustained water savings by non-residential customers;
4. Undertake education and awareness programs to embed a water conservation culture in the Rous community;
5. Implement programs to reduce and monitor water losses;
6. Investigate opportunities for sustainable alternative water supplies;
7. Develop improved monitoring, evaluation and reporting mechanisms; and
8. Invest in effective governance partnerships.

The combination of strategies outlined above has been designed to achieve the objectives set out in Section 3 (refer to Table 4.1)

Table 4.1: Strategy Alignment with Objectives

Objective	Strategy Number							
	1	2	3	4	5	6	7	8
Ongoing development and understanding of water demand trends and behaviours	✓						✓	
Demonstrate sustained water savings by customer types over time demonstrated through continued improvement in water-efficient behaviour		✓	✓					
Continue to embed a water conservation culture by fostering an engaged, educated and water-aware community		✓	✓	✓				
Increased levels of uptake of water efficient products and projects		✓	✓	✓				
Minimise losses in the distribution network					✓			
Reduce demand through adoption of sustainable alternative water supplies						✓		
Improve monitoring, evaluation and reporting mechanisms	✓						✓	
Continue to foster effective governance partnerships								✓

4.1 Strategy 1: Undertake a program of work to develop greater understanding of the water demand profile

4.1.1 Existing Programs

Rous Water has undertaken work to establish number of connections, consumption per connection and some growth scenarios associated with broad categories such as residential, non residential and water loss.

Given recent work which has suggested the current number of connections reported by Rous Water is underestimated, it can be inferred that current estimates of per connection consumption are somewhat inaccurate.

Further work is required to develop a more comprehensive understanding of the demand profile, taking into account a finer level of division by customer types. Rous Water has an interest in establishing information on a range of customer types to better inform demand management planning and the *Future Water Strategy*.

4.1.2 Future Programs

This Plan proposes to undertake work that will specifically aim to deliver the following information:

- A current demand profile that includes water demand for an identified set of customer types;
- Anticipated growth rates for those identified customer types;
- Specific demand trends within each of the identified customer types (e.g. rate of conversion of existing housing stock to water-efficient housing);
- An agreed set of assumptions for each customer type that would provide a reasonable forecast of future total demand;
- An estimate of future water demand.

This work will also seek to establish long range forecasts for each customer sector including projections for number of connections and consumption per connection. This information will be a direct input to work undertaken in the *Future Water Strategy*.

4.2 Strategy 2: Implement programs to achieve sustained water savings by residential customers

4.2.1 Existing Programs

Rebates

Rous Water has achieved water savings in the residential sector primarily through rebate programs which encourage the uptake of water efficient fittings and fixtures. These rebates encourage residential water consumers, particularly those in pre-BASIX non-efficient houses, to become water efficient houses. Several rebate programs are currently available to residential customers. An outline of these programs is provided in Table 4.2 with further detail provided in Appendix F.

Table 4.2: Existing Residential Rebate Programs

Rebate Program	Description	Notes
Residential Rainwater Tank Rebate	Rainwater tank rebates have been offered since 2003. Rainwater tank rebates of up to $1,500 are provided by Rous Water. Rebates were increased by Rous Water following cessation of state and federal government rebates to continue high level of uptake. Rebates are not available where the tank is required as part of BASIX.	Rous Water has calculated that the installation of tanks has reduced average household water use by 50kL/connection/A. Cost to Rous Water is estimated at $9.41/kL/A saved. The number of rainwater tank rebates have increased over time, with over 300 paid in the 2010-11 financial year.
Dual Flush Toilet Rebate	A rebate of $50 is offered to Rous Water customers who replace an existing single flush toilet with a dual flush toilet.	An estimated water saving of 30kL/installation/year. Cost to Rous Water is estimated to be $2.14/kL/A.
Water Efficient Showerheads Rebate	A rebate of 50% of the cost of purchase and installation (with a cap of $50) of a 3-star WELS rated showerhead where it replaces an existing unrated, 1 or 2 star rated showerhead.	An estimated saving of 20kl/installation/A. Cost to Rous Water is estimated to be $2.24/kL/A
Water Efficient Products Rebate	Rebates ranging from $50 to $125 are offered for households to install specific water-saving products including: • Every Drop Shower Saver • Cisternlink Aquasaver • Outdoor swimming pool and spa covers • Aquadivert • Redwater Diverter	An estimated saving of: • 49kl/installation/A for an Every Drop Shower Saver • 11kL/A for a swimming pool cover • 15.7kL/A for a Cisternlink Aquasaver.

Outdoor Water Efficiency Program

The Outdoor Water Efficiency Program (OWEP) has traditionally been comprised of:

- Water saving garden packs provided to residents at a reduced cost;
- Mulch rebate where participants could purchase mulch of their choice and were provided with a rebate of $20 for every $50 spent, with a cap of $100 per household.
- Sponsorship of water-efficient garden competitions.

The OWEP is generally undertaken on an as-needs basis and is often undertaken when water restrictions are in place, or prolonged periods of dry weather. Given these programs have not been as cost-effective as other demand management programs, the garden packs and mulch rebate were discontinued in 2008.

Permanent Water Saving Measures

A community consultation process was conducted in 2008 to gauge attitudes towards 'Permanent Water Saving Measures'. The survey found "a strong commitment towards permanent and mandatory water conservation measures – regardless of dam levels." This was despite healthy rainfall in the Rous Water catchment area over much of the preceding seven months. The strong support for Permanent Water Saving Measures found in the survey opened the way for introducing such measures. The survey included a list of likely measures and the majority were well supported.

Currently Rous Water and the constituent Councils have endorsed a list of permanent water saving measures as shown in Appendix G. These measures are currently voluntary. The NSW government is currently considering legislation that would permit Councils to enforce water saving measures.

4.2.2 Future Programs

The strategies included in this Plan aim to broaden the range of programs designed to reduce per connection consumption by residential customers. The strategies set out in this section therefore aim to continue the current rebate programs, with the addition of specific targeted programs that will complement the rebate programs by targeting high water users or other water consumer groups.

Based on current understanding of savings achieved for each program, and under current funding rates, it is estimated a saving of 22 ML/A could be achieved (refer to Table 4.3). It should be noted this may change over time as rebate programs are reviewed.

Table 4.3: Residential Rebate Programs Potential Water Savings

Rebate Program	Estimated Annual Water Saving	Comments
Residential Rainwater Tank Rebate	8.0	Based on achieving full expenditure on budget with an average of $750 per installation and 50kL/installation/A savings.
Dual Flush Toilet Rebate	12.0	Based on achieving full expenditure on budget with an average of $750 per installation and 50kL/installation/A savings.
Water Efficient Showerheads Rebate	2.0	Based on achieving full expenditure on budget with an average of $750 per installation and 50kL/installation/A savings.
TOTAL	**22.0**	

Rebates for water efficient products have been very successful from two aspects; their ability to deliver quantifiable water savings; and their ability to raise awareness of home water efficiency. It is proposed to continue residential rebates to encourage uptake of water efficient fittings and fixtures.

To further support the rebate programs this Plan includes the following components.

Ongoing Review of Rebate Programs

All rebate programs will be reviewed on an ongoing basis to ensure rebates are effective in achieving water efficiency outcomes. Reviews will include assessment of each rebate program in relation to:

- Value for money in relation to water savings;
- Level of uptake within the community;
- Value in achieving water efficient behaviour change; and
- Appropriateness of technical advice Rous Water offers in conjunction with rebates.

High Water User Program

A High Water User Program will be initiated to focus Rous Water's communication and education efforts on households where consumption is considered high. This program will include actions to:

- Establish a threshold by which a household would be considered a high water user;
- Identify high water users through meter records;
- Develop and implement an engagement strategy which will provide households with information on their water consumption and methods to reduce water consumption;
- Promotion of rebates to these households;
- Continued engagement and follow-up with these households.

The outcomes of this program will ensure high residential water users are aware of their high use, and are encouraged to adopt more water-efficient behaviour, and have the opportunity to install water-efficient fixtures and fittings in their property.

Target Groups Program

To further increase uptake of residential rebates and deliver ongoing reductions in residential consumption, Rous Water will also seek to promote residential rebates to target groups including:

- Owners and tenants of residential rental properties as well as real estate agents (further information is provided below);
- New and existing swimming pool owners as well as swimming pool retailers;
- Rainwater tank retailers;
- Retailers of water efficient fixtures;
- Plumbing contractors; and
- Others as identified.

This program of work will assist in widening awareness of the rebate program and assist in greater level of uptake of water efficient fixtures and fittings in existing residential homes. NSW tenancy legislation requires landlords to ensure the property is "water efficient" if they are to pass on water usage charges. Table 4.4 shows what being water efficient in this context means.

Table 4.4: Water Efficiency Requirements for Landlords to Pass On Water Charges

Water efficient devices	Minimum water efficiency standard required
Internal cold water taps and single mixer taps for kitchen sinks and bathroom hand basins	A maximum flow rate of nine litres per minute
Showerheads	A maximum flow rate of nine litres per minute
No leaking taps	No leaking taps anywhere on the premises at the start of the tenancy or when the other water efficiency measures are installed

Improved Consumption Information on Water Bills

This Plan proposes to progress towards standardised billing across the region to be consistent with the National Water Initiative's Guidelines(9) for standardised billing. There is strong evidence that standardised billing with comparative data will reduce household water use. This information provides each household with insight into their water consumption over time and provides a comparison to community averages.

It is proposed to develop a program to include the following information on the region's residential water bills:

- previous billing period
- same time last year
- water efficient household of same size
- water efficient use by same household and garden size
- local area urban average.

Associated with the provision of information to water users is the need to inform those people who use water but are not directly billed for that use. Tenants are often unaware of their level of water use, and therefore have no incentive to reduce their use. There is a need to investigate opportunities to provide water use information to tenants that do not pay their own water bills. This information would include current water use, previous water use and water use compared to similar users.

Pricing

Reductions in water consumption may be achieved through the application of water pricing that provides a financial incentive to achieve greater water efficiency. As part of ongoing regional demand management planning Rous Water will:

- Review current bulk water pricing and investigate opportunities to utilise bulk water price to drive more water efficient behaviour; and
- Work towards a review of current tariffs and tariff structures for residential customers with constituent Councils considering requirements of the Best Practice Guidelines and other demand management outcomes.

This strategy will be pursued as part of the Demand Management Group of the Northern Rivers Water Group (NRWG). Further information about the NRWG is provided in 4.8.

Public Housing Accommodation Program

While considerable effort has been expended on residential water saving programs, there has been no dedicated program to ensure that government housing is also implementing best practice.

Rous Water will investigate the number of connections attributable to public housing and Indigenous housing to determine whether a dedicated program should be developed in consultation with the NSW Department of Housing and NSW Health. Where required this program of work will also identify education and awareness activities to support the program.

Outdoor Water Efficiency Program

For the 2012-16 plan period, activities under the OWEP program will be developed and implemented when Level 1 water restrictions are in place. It is expected during these periods the following programs will be undertaken:

- Landscape and Garden Water Use Efficiency Awards to showcase water efficient gardens will commence. The award will be well advertised with entrants from all Rous Water supplied areas. Alternatively, existing local garden competitions will be provided with prize money for a water efficient garden section in their competitions and Rous Water will showcase these gardens in the media and on its website.
- Rebates for products that encourage efficient outdoor water use will be considered.
- Communication activities and products focussed on water efficient gardening and other outdoor uses.

Other outdoor rebates will be introduced if deemed viable and effective. Activities to support this strategy will be to design the award and rebate programs in readiness for restrictions.

Permanent Water Saving Measures

As part of the 2012-16 Plan, Rous Water will review the Permanent Water Saving Measures (PWSM) from a regional perspective. In consultation with each constituent Council, and other partnering Councils in the Northern Rivers Water Group the project will aim to review the the PWSM program and identify potential for developing regional consistency.

Any further work on the promotion and adoption of PWSM across the region will be progressed through the NRWG.

4.3 Strategy 3: Implement programs to achieve sustained water savings by non-residential customers

4.3.1 Existing Programs

Blue and Green Business Program

The Blue and Green Business Program is a further development of the Non-Residential Assistance Program (NRAP) identified in the Regional Demand Management Strategy 2004-2009 and the Non-Potable Reuse Program.

Following a mixed response to the NRAP, Rous Water utilised funding from the NSW Government under the NSW Climate Change Fund to renew and refocus its non-residential programs. A social research project was undertaken revealing non-residential programs would be most successful by focussing on the top water users and the accommodation sector. Under the project, the Rous Water Blue and Green Business Program was branded and rolled out to the identified target water consumers. A summary of the program is at Appendix F. This program offers businesses a rebate based on the annual water saving estimated to result from the project. The rebate is provided at the lesser of $3,500 per ML/A saved or 50% of the total project cost, with some additional limits applied to particular project types.

To date a total of approximately $160,000 in rebates has been paid to participating businesses under the program with a total water savings of 55.77ML/A. The investment by Rous Water (and NSW Climate Change funding) has been $2,860.83 /ML/A. The total investment, including the investment by participating businesses has been $9,507.56/ML/A.

Community (Not-for-Profit) Program

The Community (Not-for-Profit) rebate was initiated in 2011-12 financial year to provide community groups (e.g. sporting clubs) access to water efficiency rebates. This program has not been widely patronised, and with only a small number of applicants it is difficult to provide a real assessment of the program's effectiveness. This program does not currently specify water savings that must be achieved under the program.

4.3.2 Future Programs

The existing Blue and Green Business program achieves cost-effective water savings. The focus for 2012-16 is to continue the existing non-residential rebate programs. Rous Water will enhance these programs through further refinement of the existing programs and through further exploration of policy and planning strategies.

Blue and Green Business Program

It is proposed to continue this program in its current format and maintain the current budget allocation for on ground works. It is proposed to realign the program with its original focus on top water users and accommodation premises. For the 2012-16 plan period, the following strategies will be adopted:

- Top Water Users - the top water users will be reviewed and a target list of top water users developed. The aim will be to engage with these businesses and encourage them to reduce water consumption through water efficiency projects with support from Rous Water rebates. The information also provides an insight into the business types that are the highest water users, and these too, can be targeted for assistance.
- Accommodation Premises - Significant savings have been achieved in the accommodation sector, particularly through replacing inefficient fixtures and fittings, fixing leaks and installing metering on permanent caravan sites. Through 2012-13, Rous Water will develop a list of all accommodation premises on the Rous Water supply and approach those who have not already participated in the Blue and Green Business Program. This program will also target the highest water users in this category.

- Public Building Program – The number, type and owners/tenants of public buildings will be identified and approached to participate in the Blue and Green Business program. This would include building such as government offices, training facilities or depots.

This program will continue to be made available to other businesses that undertake water efficiency projects. As progress is made on the top water users and accommodation premises, consideration will be given to expanding the program to other target groups in the non-residential sector.

Further actions for the Blue and Green Business Program include:

- Review the rebate program to ensure administration of the program is more efficient by implementing a more streamlined rebate system where standard fixed rebate is applied to some products; and
- Explore the feasibility of an accreditation program where business are given recognition for their participation in the program, likely through the development of a rating for the level of savings achieved along with undertaking other behaviour-related and awareness-raising activities.

Community (Not-for-Profit) Rebate Scheme

This Plan intends to continue this rebate scheme, however will undertake specific activities to:

- Review the efficacy of the program; and
- Establish a more specific set of eligibility and funding rules.

Water Efficiency Management Plans

Water efficiency management plans (WEMPs) identify water consumption by a non-residential water user and actions that will be taken by that water user to improve efficiency of water use. A WEMP can deliver significant benefits to business through reduced operational costs (using less water, chemicals & energy), staff engagement activities; and enhanced community profile.

Through this planning period Rous Water will work with its constituent Councils to explore options to require large water users (to be defined by a water consumption threshold) to prepare and implement a WEMP. This process will establish:

- Current policies and legislation regarding water efficiency for large non-residential water consumers;
- Opportunities and barriers for implementation of a WEMP program;
- The criteria by which a business would be required to develop and implement a WEMP;
- Pricing incentives for business engaged in WEMP implementation; and
- Links to the Blue and Green Business Program.

New Commercial/Industrial Buildings to follow BASIX Style Development

All new residential development are required to implement water conservation measures designed to achieve water saving targets. Similar measures may be implemented to achieve water efficiency for new non-residential development.

In order to pursue this, the Plan includes a project to review current development control policy and legislation in relation to water efficiency for non-residential development. It will seek to identify appropriate ways in which planning/development control legislation could be applied and the potential for common acceptable solutions to be developed.

Pricing

Promoting water use efficiency in businesses can be improved by the application of price signals. As part of ongoing regional demand management planning, and in the interests of the region achieving best practice under the Best Practice Guidelines future actions will include:

- Work towards a review of current non-residential tariffs and tariff structures for with constituent Councils considering requirements of the Best Practice Guidelines and other demand management outcomes; and
- The outcome of this review to be used to establish a program of work to meet the Best Practice Guidelines.

This strategy will be pursued as part of the Demand Management Group of the NRWG.

4.4 Strategy 4: Undertake education and awareness programs to embed a water conservation culture in the Rous community

The aim of this strategy is to drive the development of a water-aware community through education and engagement programs. Rous Water has recognised education as an important part of demand management and has a fulltime Community Education Officer to plan, deliver, promote and evaluate water education programs and resources. Through education programs and teaching resources Rous Water provides opportunities for learners of all ages to increase their awareness about the value of water. The desired outcome across all programs is behavioural change, which will result in a reduction in water consumption. Over time these programs will continue to

- Foster a relationship between the community and Rous Water;
- Educate the community about their source of water and their water use; and
- Engage the community to be accountable for their personal water use and take action to reduce their water use.

4.4.1 Existing Programs

Education Programs

Rous Water has an extensive school-based education program with elements covering early childhood, primary, secondary and tertiary education programs. A detailed description of these existing programs is provided in Appendix H. In addition to these formal programs, Rous Water also partners with constituent Councils and other organisations where other opportunities arise.

Media and Advertising

Rous Water undertakes a range of media activities. Current media programs are generally focussed on the promotion of rebate schemes. Promotion of rebate schemes has been undertaken through:

- newspaper/print
- television
- radio
- internet-website
- attending events (face to face).

Constituent Council Education Initiatives

The Rous Water Constituent Councils also have a range of education and awareness programs and resources in addition to the programs run by Rous Water. These are listed in Table 4.5.

Table 4.5: Constituent Council Education Initiatives

Council	Programs/Resources
Lismore	• Let's Make Every Drop Count Education Program • Lismore City Council School Water Challenge • "Wilson the Water Drop" • One Education Officer (approximately half time devoted to water education) • Website – water saving tips
Ballina	• M.A.D home water team project • One Education Officer (approximately 1/3 devoted to water demand management) • Website – water saving tips
Byron	• Website – water saving tips
Richmond Valley	• Website – water saving tips

The allocation of resources to water conservation education and engagement increases the ability of Rous Water and constituent Councils to reach all sectors of the community. Some care must be taken to ensure that there is consistency in branding of water conservation measures across the region.

4.4.2 Future Programs

To date there has been a strong emphasis by Rous Water on school-based education programs, with few formal programs focussed on broader community education. There is opportunity for Rous Water to review school-based education programs and explore alternative delivery methods that will reduce the need for Rous Water's Community Education Officer to provide face-to-face education sessions. This will allow for a greater level of effort to be directed towards broader community engagement.

The strategies presented here are designed to continue the implementation of Rous Water's successful school education programs, and invest in the development of programs designed to engage the broader community. The 2012-13 year will be used as a review year, focussed on exploring alternative delivery methods for the school-based education programs

with a view to incorporating planned programs for broader community engagement. This Plan therefore includes actions to:

- Develop engagement programs and supporting information for specific target groups to support the residential rebate programs, including swimming pool owners, rental property owners and others as identified;
- Review all education programs given ongoing changes to school curriculum and resources now available through Savewater Alliance;
- Continue to deliver the current range of school education programs, updating content as reviews are undertaken;
- Work with Constituent Councils and others in the NRWG to review education messages and look for opportunities to establish regionally consistent education materials;
- Develop a community engagement plan that will facilitate:
  - Identification target audiences;
  - Links between demand management programs and education/engagement activities that can support these programs;
  - Technical information products/services required to support the community to install water efficient fittings and fixtures;
  - Efficiencies to be gained through Rous Water's membership of the Savewater Alliance;
  - The opportunities presented by social media (e.g. blogs, Facebook, Twitter)
  - Existing events, publications and partnerships that provide an opportunity for Rous Water to incorporate water conservation messages;
  - Current and effective approaches to engagement and education that leads to behavioural change in the community resulting in more efficient water use; and
  - Alignment of water conservation messages across the region.

Savewater Alliance

As a member of the Savewater Alliance, Rous Water and the constituent Councils have the opportunity to:

- Provide a higher level of information to the community on water efficiency;
- Develop consistent water conservation measures including consistent branding;
- Achieve economies of scale in printing, as well as purchasing water efficient fixtures;
- Access low-cost or free design services for development of education and awareness materials.

This Plan will continue to look for opportunities to integrate Savewater products into all elements of Rous Water's demand management education and awareness activities. Rous Water will also continue to monitor the effectiveness of Rous Water's Savewater membership.

4.5 Strategy 5: Implement programs to reduce and monitor water losses

4.5.1 Existing Programs

All Rous Water constituent Councils have undertaken some level of planning and implementation of water loss programs including:

- Identification and implementation of pressure management zones;
- Leakage reduction programs;
- Regular ongoing maintenance and leak repair; and
- Identification of unmetered water consumption.

Rous Water and its constituent Councils are currently working through the Water Loss Group of the NRWG to undertake a project that will estimate current water loss and benchmark this rate of loss against acceptable loss rates as defined by industry standards and best practice. This work will provide foundation information to support the development of a regional water loss strategy.

4.5.2 Future Programs

Rous Water will continue the current body of work being undertaken through the NRWG. A key outcome expected of this work is to develop a water loss strategy. The strategy will outline the actions that the Councils and Rous Water will undertake to address losses. Using the outcomes of the NRWG water loss project, Rous Water will develop a proactive water loss management program that enables proactive monitoring of the Rous Water distribution system to identify leaks and identifies and addresses the operational resources required to implement a proactive leak detection and repair program.

4.6 Strategy 6: Reduce demand through adoption of sustainable alternative water supplies

Reductions in demand on Rous Water supplies can be achieved through use of alternative water supplies. Rous Water supplies potable water for all water uses and water users connected to the Rous Water network. A reduction in demand can be achieved by providing fit-for-purpose alternative sources for non-potable uses.

4.6.1 Existing Programs

A range of reuse schemes are in place across the Rous Water supply region including:

- Byron Shire Council Urban Reuse Schemes where water is supplied to a range of water users. Non-potable water is provided from the Byron Sewage Treatment Plant to a number of users for irrigation. Up to 300 ML/A is available from the Byron STP for reuse. Currently, 188 ML/annum of recycled water from Byron Bay's STP is used. Byron Shire also has reuse activities at Bangalow and Brunswick Valley.
- Ballina Shire Council has incorporated dual reticulation into future development areas at Ballina Heights and Lennox Head. Recycled water will be used for outdoor use (e.g. garden watering). Infrastructure is now in place with recycled water expected to be delivered through the system in 2012-13.

The Future Water Strategy process has identified a range of alternative water supplies. Through a coarse-screening exercise the preferred alternative supplies have been developed.

4.6.2 Future Programs

As part of this Plan, Rous Water will:

- Continue to promote use of fit-for-purpose alternative water supplies at customer level; and
- As part of the Future Water Strategy, undertake further assessment of short-listed alternative supply options including development of concepts and analysis of costs and benefits associated with each supply alternative.

4.7 Strategy 7: Improve monitoring, evaluation and reporting mechanisms

To implement an effective adaptive management process, it is essential that this Plan be supported with a monitoring and evaluation program that provides meaningful information on the results achieved. An effective monitoring and evaluation program will also enable Rous Water to refine demand management over time.

4.7.1 Existing Programs

Monitoring and evaluation of demand management is primarily undertaken as part of business management reporting. A quarterly report is provided to Council providing information on achievement of performance indicators, and these reports include information gathered from the following monitoring activities:

- Recording uptake, expenditure and estimated savings from each residential rebate program;
- Recording uptake, expenditure and estimated or actual savings for the Blue and Green Business program;
- Estimating the cost per kilolitre saved to deliver each rebate program so that cost benefit comparisons can be made;
- Recording number of participants in school-based education programs;
- Teacher (and sometimes parent) surveys to assess educational programs; and
- Recording the occurrences of advertising and media activities.

Outside of this process, there is no formal program of monitoring and evaluation of demand management programs.

While there has been some effort to undertake monitoring to respond to Council's business management requirements, it has been focussed on activity-based reporting. Further development of monitoring and evaluation programs is required to develop greater understanding of outcomes of demand management programs, in particular the effects of Rous Water programs on:

- Residential and non-residential demand over time, considering the dynamics of the demand profile and other factors influencing demand trends;

- Community attitude and water conservation behaviours; and
- The level of water efficiency adopted within the community.

A number of other limitations of current reporting systems across the constituent Councils have been identified including:

- Inaccurate reporting of connections;
- Lack of detail on connection/customer types including the defining customer types;
- Differing metering and billing systems across Councils; and
- Informal reporting systems.

4.7.2 Future Programs

Evaluation of program activities will allow Rous Water to further evolve demand management strategies to respond to information and knowledge obtained through monitoring. The success of future demand management will, in part, come about from responding to the results of monitoring and evaluation activities. It is therefore an action of this Plan that a monitoring and evaluation plan be developed to:

- Identify an appropriate monitoring and evaluation program to be implemented as part of this demand management plan;
- Provide alignment with the demand management objectives set out in this Plan, and in the *Strategic Plan 2012-2032;*
- Give consideration to the information, resources and skills required to undertake monitoring activities;
- Identify types of monitoring activities:
  - Activity based records – these include activities such as attendance at education and community awareness events;
  - Content based records – this includes evidence of information developed (e.g. website content, fact sheets);
  - Uptake rates of rebates and the cost of water saved (e.g. $/kL); and
  - Outcome based evaluation – assess real ongoing changes to water consumption over time.
- Identify appropriate monitoring and evaluation cycles (e.g. monthly, quarterly, annual).

As part of this program, Rous Water will work with each constituent Council to, over time, improve the consistency, quality and timeliness of water demand reporting. The following activities will be pursued as part of this Plan.

Develop Consistency in Connection Definition

Water consumption data and number of connections from each constituent Council is required to enable per connection consumption-based reporting of water use within the Rous Water supply area. Current differences between Councils in defining connections and meter reading make calculation and comparisons of water consumption difficult. A consistent definition of connection types across all constituent councils, and consistent reporting of

water consumption within these types, is required to provide comparable and useful consumption based water use data to Rous Water.

Standardised Demand Reporting

This Plan also proposes to work with the constituent Councils to develop and implement a standardised reporting program to incorporate consumption-based reports that include:

- Bulk water production;
- Bulk metered water consumption;
- Number of connections by customer/connection type;
- Total consumption by connection type;
- Total volume of metered water use by connection type.

This program will also look to identify a reporting frequency (e.g. quarterly).

Meter Reading Program

The time period over which each of the Council's quarterly consumption is measured differs between Councils, however it is unclear of the impact of this on calculation of regional consumption trends. Standardisation of meter reading schedules may enable direct comparisons of quarterly metered water use between councils; however the current systems do not allow this. The aggregation of councils quarterly water consumption values into annual totals will provide a method for making direct comparisons of water use between all constituent Rous Water reticulation networks.

Rous Water will investigate the impact of different meter reading programs on the development of regional demand information, and develop recommendations for meter reading for the Rous region.

4.8 Strategy 8: Invest in effective governance partnerships

The success of Rous Water's demand management programs will depend largely on continuing to foster positive governance relationships with its constituent Councils. While Rous Water can effectively delivery the education and incentive-based elements of a demand management strategy, other demand management programs that rely on policy, planning and engineering solutions will require cooperation with the constituent Councils.

4.8.1 Northern Rivers Water Group

The Northern Rivers Water Group (NRWG) is a collective of water authorities across the Northern Rivers region of New South Wales (member Councils of the Northern Rivers Regional Organisation of Councils (NOROC). Rous Water, Ballina, Lismore and Richmond Valley Councils are signatories to the Memorandum of Understanding, with Byron participating in projects of interest. The NRWG also includes water supply authorities outside of the Rous Water area including Tweed, Kyogle, Clarence Valley and Coffs Harbour.

The NRWG provides a foundation for development of co-operative partnerships to deliver best practice water supply and sewerage services to the Northern Rivers region of New South Wales and to optimise the sharing of resources in the delivery of services.

This group is further divided into more specific interest groups, and includes a group nominated to work on regional demand management projects. This Plan includes a number

of actions focussed on progression of a range of demand management initiatives that will require regional cooperation. The NRWG will be the primary mechanism through which these are progressed with the Rous Water constituent Councils and other regional partners as appropriate. This group will be instrumental in working through policy and legislation related demand management issues including:

- Water pricing;
- Development planning and assessment;
- Customer billing and billing information;
- Monitoring and evaluation, including regional consistency; and
- Community engagement.

4.8.2 Future Programs

Through the Northern Rivers Water Group, the governance and other regional partnership relationships will be further developed. Through the Demand Management Group of the NRWG, Rous Water will continue to foster these partnerships with a focus on developing and delivering a regional demand management program that will assist all participant Councils comply with the Best Practice Guidelines. A number of strategies have been identified throughout this document to be progressed through the NRWG including:

- Pricing policies for residential and non-residential customers;
- Development control policy and legislation to support implementation of water efficiency in the non-residential sector;
- Efficiency in water conservation education and awareness activities and products; and
- Standardisation of connection definition and water consumption reporting.

5 Implementation Plan

The implementation plan presented in this section outlines actions to be undertaken by Rous Water in the delivery of the demand management strategies presented in this Plan. In this regard, Rous Water will be considered the lead agent for implementation of actions, however the plan also identifies relevant stakeholders. Where appropriate, Rous Water will work collaboratively with these stakeholders.

The following pages present all programs to be implemented as part of this Plan. This program shows:

- Each action or program underpinning each strategy;
- Which programs are existing and those that are new programs; and
- An indicative timeline for implementation.

Table 5.1: Implementation Plan

	Action	Existing Program	New Program	Identified Stakeholders	Step	2012-13 Q1	2012-13 Q2	2012-13 Q3	2012-13 Q4	2013-16
Strategy 1: Undertake a program of work to develop greater understanding of the water demand profile										
1.1	Project to establish current demand and long-range future demand projections.		✓	Constituent Councils FWS PRG	Engage consultant to review existing connection and consumption data to develop current demand profile and develop long-range forecast demand projections.	✓				
Strategy 2: Implement projects to achieve sustained water savings by residential customers										
2.1	Provide rebates for installation of water efficient fittings and fixtures in residential properties.	✓	✓	Constituent Councils	Continue to implement existing rebate programs.	✓	✓	✓	✓	✓
2.2	Review rebate programs.	✓		Constituent Councils	Review rebate programs for the water savings, cost effectiveness and rate of uptake. Where appropriate, revise rebate programs.	✓	✓	✓	✓	✓
2.3	Develop and implement a high water user program.		✓	Constituent Councils	Identify and document high water users and document threshold to be considered high water user.	✓				
					Develop engagement plan and associated education materials.		✓			
					Implement engagement plan.			✓	✓	✓
					Ongoing monitoring.					✓
2.4	Develop and implement target groups program to promote rebates to specific		✓	Constituent Councils	Identify target groups for residential rebate programs.	✓				

	Action	Existing Program	New Program	Identified Stakeholders	Step	2012-13 Q1	2012-13 Q2	2012-13 Q3	2012-13 Q4	2013-16
	groups.				Develop engagement program and information packs		✓			
					Implement engagement program			✓	✓	✓
2.5	Improve water consumption information on water bills.			Constituent Councils NRWG	Work with constituent Councils to assess current information provided on water bills against NWI standardised billing guidelines. Refer to Action 8.1.		✓	✓		
					Work with constituent Councils to develop methods and process for establishing information to be included on standardised bills. Refer to Action 8.1.				✓	✓
					Implement standardised bills in an ongoing manner. Refer to Action 8.1.					✓
2.6	Review residential pricing in accordance with NSW Best Practice Guidelines.		✓	Constituent Councils NRWG	Work with constituent Councils through the NRWG to review current residential pricing. Refer to Action 8.1.					
2.7	Develop and implement a public housing accommodation program.		✓	NSW Health NSW Department of Housing Constituent Councils	Identify number of connections for public housing.			✓		
					Review average water consumption of public housing.			✓	✓	

	Action	Existing Program	New Program	Identified Stakeholders	Step	2012-13 Q1	2012-13 Q2	2012-13 Q3	2012-13 Q4	2013-16
					Work with NSW Health and NSW Department of Housing to audit housing and develop program of works.				✓	✓
					Provide rebates through residential rebate schemes.					✓
2.8	Implement an outdoor water efficiency program for implementation when Level 1 water restrictions are in place.	✓		Constituent Councils	Develop components of the OWEP.	✓				
					Prepare engagement program ready for implementation in the event that Level 1 restrictions are in place.		✓			
					Implementation in accordance with plan.			✓	✓	✓
2.9	Continue to implement the Permanent Water Saving Measures.	✓		Constituent Councils	Promote permanent water saving measures through website and other material as part of ongoing communication and education programs.	✓	✓	✓	✓	✓
2.10	Review the permanent water saving measures for regional application.		✓	Constituent Councils	Work with constituent Councils to review the current PWSM. Refer to Action 8.1					
Strategy 3: Implement programs to achieve sustained water savings by non-residential customers										
3.1	Provide rebates for businesses undertaking water saving projects through the Blue and Green Business Program.	✓		Constituent Councils	Continue to implement existing rebate program.	✓	✓	✓	✓	✓

	Action	Existing Program	New Program	Identified Stakeholders	Step	2012-13 Q1	2012-13 Q2	2012-13 Q3	2012-13 Q4	2013-16
3.2	Incorporate Top Water Users into Blue and Green Business Program.	✓	✓	Constituent Councils	Identify top water users in each constituent Council and review existing engagement with, or projects undertaken by each business.	✓				
					Develop engagement plan and education materials.		✓			
					Implement engagement plan promoting Blue and Green Business Program.			✓	✓	✓
3.3	Target Accommodation providers as part of Blue and Green Business Program.	✓	✓	Constituent Councils	Identify accommodation premises in each constituent Council and prioritise based on water consumption or previous involvement in Blue and Green Business Program.	✓				
					Develop engagement plan and education materials.		✓			
					Implement engagement plan promoting Blue and Green Business Program.			✓	✓	✓
3.4	Investigate development of a Public Buildings Program as part of Blue and Green Business Program.			Constituent Councils	Identify number and type of public buildings and building owners.			✓	✓	
				State Government	Develop engagement plan and education materials.					✓

	Action	Existing Program	New Program	Identified Stakeholders	Step	2012-13 Q1	2012-13 Q2	2012-13 Q3	2012-13 Q4	2013-16
				Federal Government	Implement engagement plan promoting Blue and Green Business Program.					✓
3.5	Review administration of Blue and Green Business Program.	✓			Review costs and rebate levels provided for specific activities/project types in the Blue and Green Business Program and recommend ways to achieve administrative efficiencies through standardised rebate amounts.	✓				
3.6	Develop accreditation program for the Blue and Green Business Program.	✓	✓	Constituent Councils	Review current participation in program and identify opportunities for accreditation program.	✓				
					Consult with Blue and Green Business program participants and survey interest in an accreditation program.		✓			
					Develop further details of accreditation program.			✓		
					Implement as on ongoing part of Blue and Green Business Program.				✓	✓
3.7	Provide rebates for community groups undertaking water saving projects	✓		Constituent Councils	Continue to provide rebate program.	✓	✓	✓	✓	✓

	Action	Existing Program	New Program	Identified Stakeholders	Step	2012-13 Q1	Q2	Q3	Q4	2013-16
3.8	Review the Community (Not-for-Profit) program and establish more defined funding eligibility and criteria.	✓			Review and establish detailed funding eligibility and criteria for this program.	✓				
					Revise advertising and application materials to incorporate changes.	✓				
3.9	Investigate potential for implementation Water Efficiency Management Plan requirements for high water use non-residential customers.		✓	Constituent Councils State Government	Work with constituent Councils through the NRWG to identify potential for WEMP requirements for high water users. Refer also to Action 8.1.					
3.10	Investigate potential for BASIX-style development controls for non-residential developments.		✓	Constituent Councils State Government	Work with constituent Councils through the NRWG to identify potential for BASIX-Style development controls for non-residential development. Refer also to Action 8.1.					
3.11	Review non-residential pricing in accordance with NSW Best Practice Guidelines.		✓	Constituent Councils	Work with constituent Councils through the NRWG to review current non-residential pricing. Refer to Action 8.1.					
Strategy 4: Implement programs to embed a water conservation culture in the Rous Region										
4.1	Continue to deliver education programs	✓		Constituent Councils Childcare Centres Schools NSW Education	Continue to implement existing education programs.	✓	✓	✓	✓	✓

	Action	Existing Program	New Program	Identified Stakeholders	Step	2012-13 Q1	2012-13 Q2	2012-13 Q3	2012-13 Q4	2013-16
				Uni/TAFE						
4.2	Review current school-based education programs and explore alternative delivery methods		✓	Constituent Councils Schools NSW Education	Review early childhood program	✓				
					Review primary program		✓			
					Review secondary program			✓		
4.3	Ongoing review of education programs to update content as curriculum changes and other resources become available (including incorporation of Savewater resources).	✓		Constituent Councils	Review programs in an ongoing basis as curriculum changes or other Savewater resources become available.	✓	✓	✓	✓	✓
4.4	Undertake review of education and awareness activities and identify opportunities for regional collaboration.		✓	Constituent Councils NRWG	Work with constituent Councils through the NRWG to identify and implement regional communication and awareness activities. Refer to Action 8.1					
4.5	Develop and implement community engagement plan that supports implementation of other demand management programs and identifies priorities for implementation.		✓	Constituent Councils NRWG	Develop community engagement plan	✓				
					Develop program of events, publications and other activities for 2012-13 financial year	✓				
					Implement program for 2012-13 financial year		✓	✓	✓	
					Develop ongoing programs for future years					✓

	Action	Existing Program	New Program	Identified Stakeholders	Step	2012-13 Q1	2012-13 Q2	2012-13 Q3	2012-13 Q4	2013-16
Strategy 5: Implement programs to reduce and monitor water losses										
5.1	Complete the water loss benchmarking study being undertaken through the NRWG.	✓		Constituent Councils NRWG	Complete benchmarking study	✓				
5.2	Implement recommendations from the benchmarking study.	✓		Constituent Councils NRWG	Implement recommendations		✓	✓	✓	✓
5.3	Develop program for management of loss and leakage on bulk water distribution system.		✓		Develop and implement Rous Water leakage detection and management program.			✓	✓	✓
Strategy 6: Investigate opportunities for sustainable alternative water supplies										
6.1	Continue to promote use of fit-for-purpose alternative water supplies at customer level	✓		Constituent Councils	Continue to identify potential opportunities for reuse as part of Blue and Green Business Program	✓	✓	✓	✓	✓
6.2	Continue to encourage use of dual reticulation in greenfield development	✓		Constituent Councils	Continue to support Council water supply planning activities	✓	✓	✓	✓	✓
Strategy 7: Develop improved monitoring, evaluation and reporting mechanisms										
7.1	Develop a monitoring and evaluation plan.		✓	Constituent Councils	Develop a monitoring and evaluation program.				✓	
					Implement monitoring and evaluation program					✓
7.2	Develop a consistent definition of connections and connection types,		✓	Constituent Councils NRWG	Work with constituent Councils through the NRWG to develop					

	Action	Existing Program	New Program	Identified Stakeholders	Step	2012-13 Q1	2012-13 Q2	2012-13 Q3	2012-13 Q4	2013-16
	standardized reporting program and consistent meter reading.				consistency in meter reading, definition of connections and associated consumption reporting. Refer to Action 8.1.					
Strategy 8: Invest in effective governance partnerships										
8.1	Work through the Demand Management Group of the NRWG to develop and deliver a regional demand management program and progress regional demand management initiatives.	✓		NRWG	Establish scope and objectives for NRWG Demand Management Group.	✓				
					Develop program of future projects to support development of regional demand management program.		✓	✓	✓	
					Implement program of projects.					✓

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Natural Resource Management Ministerial Council (2006) National Guidelines for Residential Customers' Water Accounts.

Jetty Research Pty Ltd (2008) Focus groups of Rous Water customers regarding water usage and conservation

Jetty Research Pty Ltd (2008) Community survey regarding attitudes towards Permanent Water Conservation Measures

Department of Natural Resources, License under Section 12 of the Water Act, 1912, License No: 30SL066818, Section 9

Naturally Resourceful Pty Ltd (2009) Engaging Business to Save Potable Water in the Rous Water Region, Stage 1

Appendix A Best Practice Demand Management

Excerpts from the NSW Best Practice Management of Water Supply and Sewerage Guidelines 2007.

A.1 Water Conservation

Appropriate water conservation and demand management are essential for ensuring efficient use of our valuable water resources and to improve environmental outcomes as required by the Water Management Act 2000 and the National Water Initiative. Cost-effective demand management delivers significant environmental and social benefits and reduces capital and operating costs.

Demand management is a key component of the strategic planning process. LWUs should identify and implement appropriate demand management measures to achieve cost and energy savings, protect the environment and reduce wastewater flows.

A key part of managing demand is understanding how and when water is used. A demand management program therefore requires metering of all customers supplied, together with demand analysis.

Demand management measures that should be examined as part of a demand management program include:

- The implementation of permanent water saving measures to minimise wastage, in accordance with Item 91 (iii) of the National Water Initiative12.
- Active intervention – appropriate retrofit programs, rebates for water efficient appliances, rebates for rainwater tanks, effluent and stormwater re-use programs, building code programs (including the impact of the BASIX planning tool) and the requirement that large non-residential water users prepare and implement water savings action plans
- Water pricing reform
- Community education
- Water loss and leakage reduction programs.

Each LWU should review its demand management measures every 2 years to ensure that it has an appropriate balance between demand and supply-side investment.

Table A.1: Best Practice Criteria

Required Outcomes for Best Practice Criteria			
Criterion	Required Outcome	Indicators to Demonstrate Achievement of Outcome	COAG/NCP/NWI/ Statutory Requirements
Water Conservation	Sound water conservation and demand management in place.	Sound water conservation and demand management implemented. Identification of most cost-effective demand management initiatives. Subsidisation and promotion of at least two of the identified demand	COAG, NCP and NWI Page 52 of Ref 14 Water Management Act 2000.

		management initiatives. Include demand monitoring, leakage measurement and reduction and community education.	

A.2 Check List – August 2007

Best-practice water conservation and demand management are essential for efficient management of a Local Water Utility's (LWU's) water supply business and for efficient use of water resources. Cost-effective demand management measures deliver significant environmental and social benefits and help minimise customer water supply bills through lower capital and operating costs.

A permanent reduction in demand achieved through demand management serves the same purpose as an increase in supply capacity – such as building new treatment or storage facilities. LWUs have often found many demand management actions to be more cost-effective than increasing supply capacity. When demand is reduced, benefits accrue through deferral and downsizing of the capacity of new capital works and lower treatment and transfer costs.

A key part of managing demand is understanding how and when water is used. A demand management program therefore requires metering of all customers supplied, together with demand analysis.

Demand management measures that should be examined as part of a demand management program include:

- Implementation of permanent water saving measures to minimise wastage, in accordance with Item 91 (iii) of the National Water Initiative[1]
- Active intervention – appropriate retrofit, rebate and building code programs
- Water pricing reform
- Community education
- Effluent and stormwater re-use.

LWUs should also pursue active programs to identify and reduce system water loss through leakage reduction.

This check list is essentially a road map to assist LWUs to quickly implement sound demand management measures. Each LWU should also review its demand management measures every 2 years to ensure that it has an appropriate balance between demand and supply-side investment.

[1] Review the effectiveness of temporary water restrictions and associated public education strategies, and assess the scope for extending low level restrictions as standard practice.

Table A.2: Water Conservation and Demand Management – Check List

Topic	Outcome Achieved
1. Demand Monitoring	A. Bulk water production metered and recorded on a daily basis.
	B. All new free standing and multi-unit residential developments (both strata and non-strata) approved after 1 July 2004 must be separately metered.
	C. All free standing residential premises must be separately metered by 1 July 2007.
	D. LWUs should encourage separate metering of existing multi-unit residential developments, where cost-effective.
	E. Customer water consumption billed at least three times a year (and preferably quarterly).
	F. Customers classified in accordance with the categories defined in the latest NSW Water Supply and Sewerage Performance Monitoring Report and consumptions reported annually.
	G. If facing augmentation of the peak day capacity of your system, monitor and record service reservoir levels on a daily basis in high demand periods.
2. Demand Forecasting	A. Historical records corrected for influence of climate.
	B. Data records screened for errors.
	C. Demand forecasts prepared for each customer category as well as for leakage and unaccounted for water (UFW).
3. Demand Management Planning	A. Examined a range of long-term demand management measures including: retrofit programs rebates for water efficient appliances rebates for rainwater tanks rebates for garden mulch effluent and stormwater re-use programs.
	B. Completed benefit/cost analysis of demand management measures that includes benefits from reduced capital works and lower operating costs.
	C. Completed investment schedule/plan for implementing cost-effective demand management measures.
4. Implementation	A. Subsidised and promoted at least two of the identified demand management initiatives, referred to in 3. above.
	B. Examined the implementation of permanent water saving measures to minimise wastage, in accordance with Item 91 (iii) of the National Water Initiative.
	C. Implemented a cost-effective leakage reduction program to reduce system water losses.
	D. Ongoing customer education campaign focussing on the importance of conserving our valuable water resources.
	E. If average residential water use per property exceeds that for the median NSW utility (290 kL/a in 2002/03) by over 20%, the LWU must show progress towards achieving a reduction in average residential use by 1 July 2007.
	F. Monitoring program for reviewing the effectiveness of the implemented demand management measures.

Appendix B Current and Historical Demand Trends

B.1 Daily Demand

The daily demand (demonstrated through bulk supply records) is shown below in Figure B.1. It indicates declining trends in both average daily demand (average for each month) and peak daily demand (peak within each month). It also shows that despite an ongoing average decline, demand is still highly variable.

The peak (maximum) daily demand reached 57 ML/d in 2001, it reduced to 45ML/d in 2007. In 2010, the average daily demand was approximately 30ML/day and the peak daily demand was just below 45ML/day.

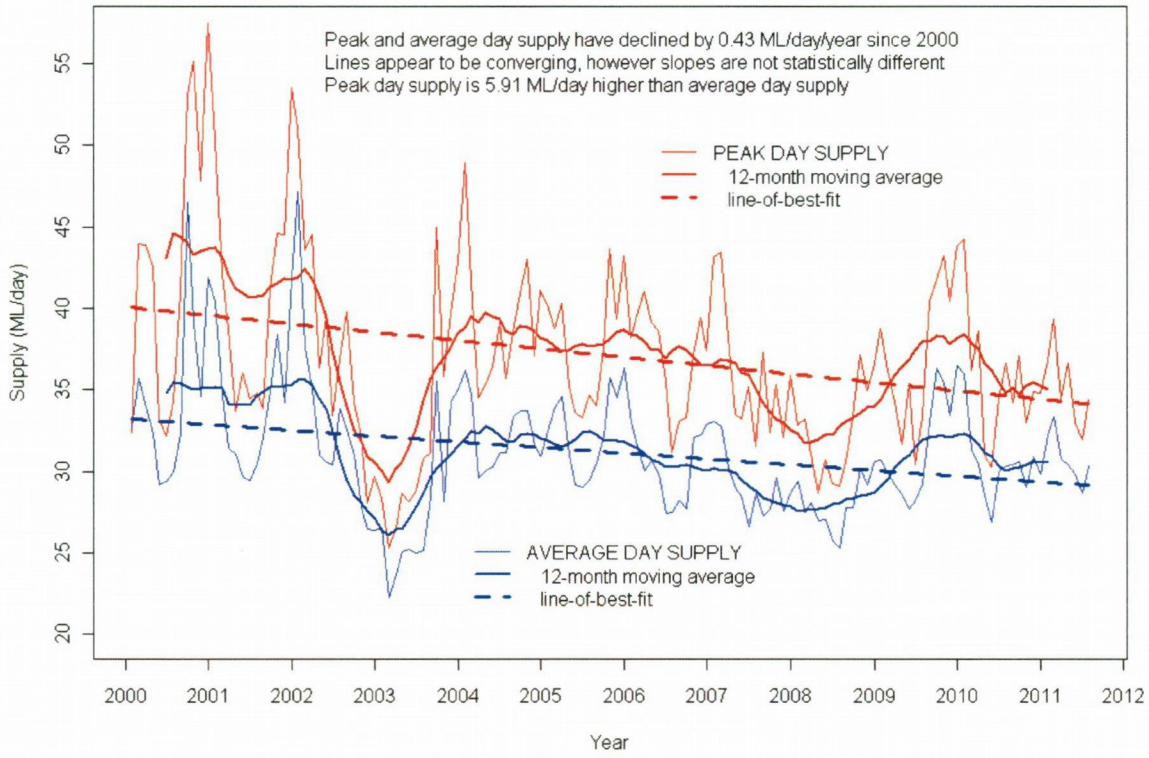

Figure B.1: Average daily demand vs. peak day demand 2001 to 2001

B.2 Seasonal Demand

Demand has a high seasonal component and fluctuates throughout the year, though the level of variation in seasonal water use has reduced over time. Figure B.2 below shows the average bulk water consumption for each month of the year. This shows a higher demand in the summer season and can be attributed to:

- increased domestic outdoor usage during the hot summer months; and
- increased rural demand during hotter times.

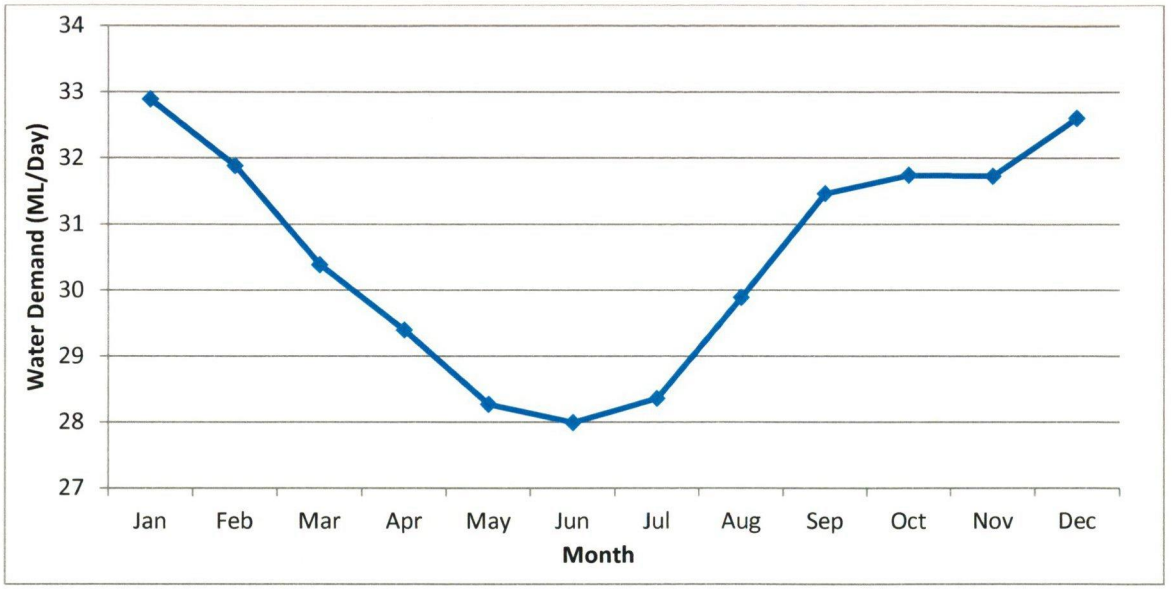

Figure B.2: Average Bulk Water Consumption by Month (May 2003-July 2011)

These figures below also demonstrate the relationship that water demand has to the weather. Specifically:

- When rainfall and rain-days are higher, then demand is lower (refer to Figure B.3 and Figure B.4). This seasonal trend is apparent even though demand management measures are in place.
- When temperature increases, demand increases (refer Figure B.5).

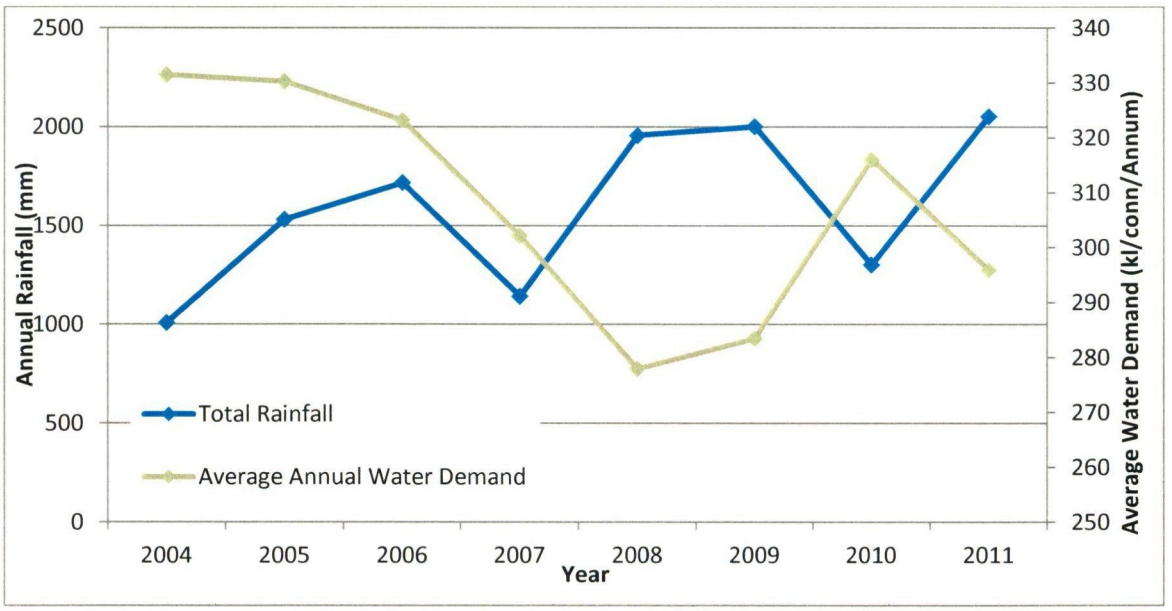

Figure B.3: Average Annual Water Demand with Annual Rainfall (2004-2011)

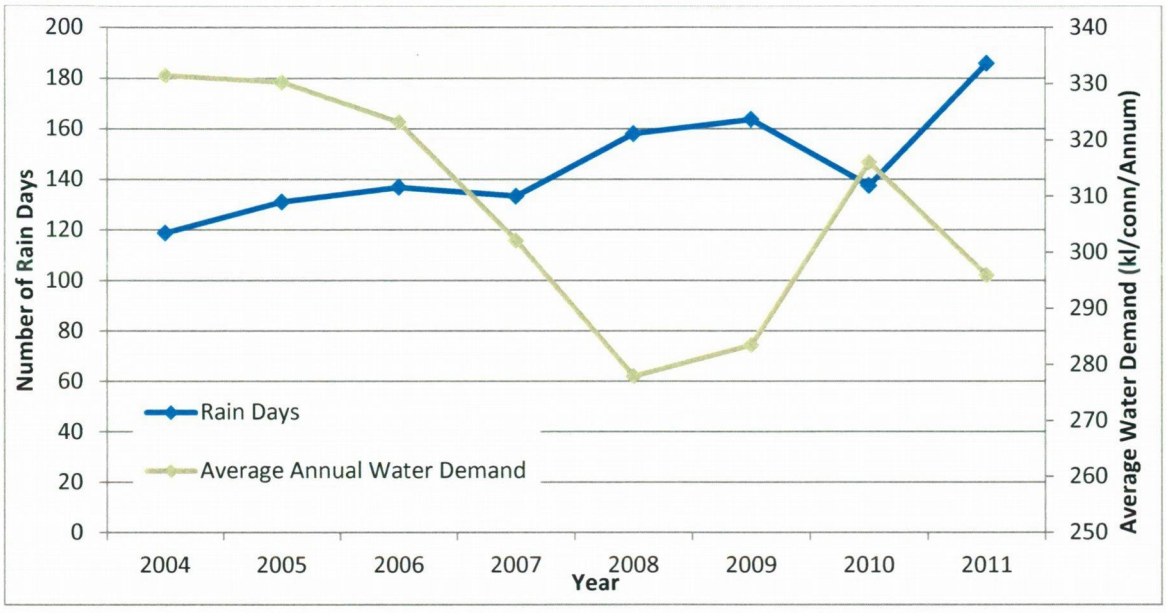

Figure B.4: Average Annual Water Demand with Number of Rain Days (2004-2011)

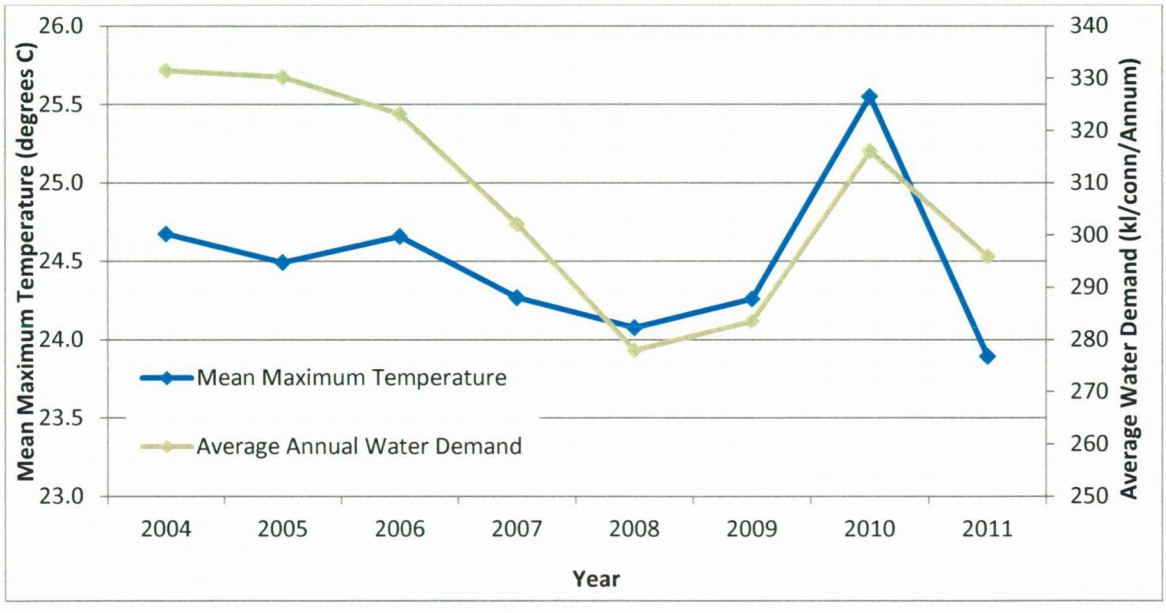

Figure B.5: Average Annual Water Demand with Mean Maximum Temperature (2004-2011)

Appendix C Population for Rous Water Area

Population is estimated using Census data. The most recent Census data available at the time of writing this Plan was 2006 data. Census 2011 data will be available after June 2012.

Using the 2001 and 2006 Census data as well as data from each LGA to refine the properties to be included or excluded from calculations, Rous Water has derived estimates of population serviced. These are shown in Table C.1. The total number of persons present on Census night who are supplied by Rous Water is estimated at 85,863 persons in 2001 and 88,558 persons in 2006. This shows an average annual increase in serviced population of 0.63%.

Census data also provides information on private dwellings within an area and indicates that there were 37,151 dwellings in the Rous Water supply area in 2001 and 39,140 dwellings in 2006. Private dwellings may be used as a surrogate for residential connections. This represents an average annual increase in residential dwellings of 1.07%. Estimates of the total private dwellings on Census night that were supplied by Rous Water, within each water reticulation network, are also shown in Table C.1.

Table C.1: Population Data 2001 and 2006 Census

LGA	Residents	Total Persons Present	Residents Present	Visitors Present	Total Private Dwellings	Occupied Private Dwellings	Occupancy Rate	Vacancy
2001 Census								
Ballina	28,297	29,174	27,144	2,030	13,052	12,035	2.17	8%
Byron Bay	16,249	18,394	15,400	2,994	8,079	7,145	2.01	12%
Lismore	28,754	29,292	27,588	1,704	11,885	11,143	2.42	6%
Richmond Valley	4,329	4,694	4,131	563	2,272	1,950	1.91	14%
Rous Rural	4,099	4,309	3,921	388	1863	1,704	2.20	9%
TOTAL	81,728	85,863	78,184	7,679	37,151	33,977	2.20	9%
2006 Census								
Ballina	29,955	30,559	28,337	2,222	13,842	12,770	2.16	8%
Byron Bay	16,792	18,335	15,677	2,658	8,410	7,225	2.00	14%
Lismore	29,642	30,119	28,350	1,769	12,390	11,649	2.39	6%
Richmond Valley	4,725	5,126	4,492	634	2,546	2,173	1.86	15%
Rous Rural	4,255	4,419	4,030	389	1,952	1,775	2.18	9%
TOTAL	85,369	88,558	80,886	7,672	39,140	35,592	2.18	9%

Appendix D Connections to Rous Water Supply

The number of water connections supplied by Rous Water are reported in the Rous Water monthly reports and are shown in Figure D.1 Data for the monthly reports are provided monthly to Rous Water from each constituent Council. The number of new connections are reported to Rous Water each month and are added on to the total number of connections. At the end of June 2010, there were approximately 37,438 connections reported to be supplied by Rous Water.

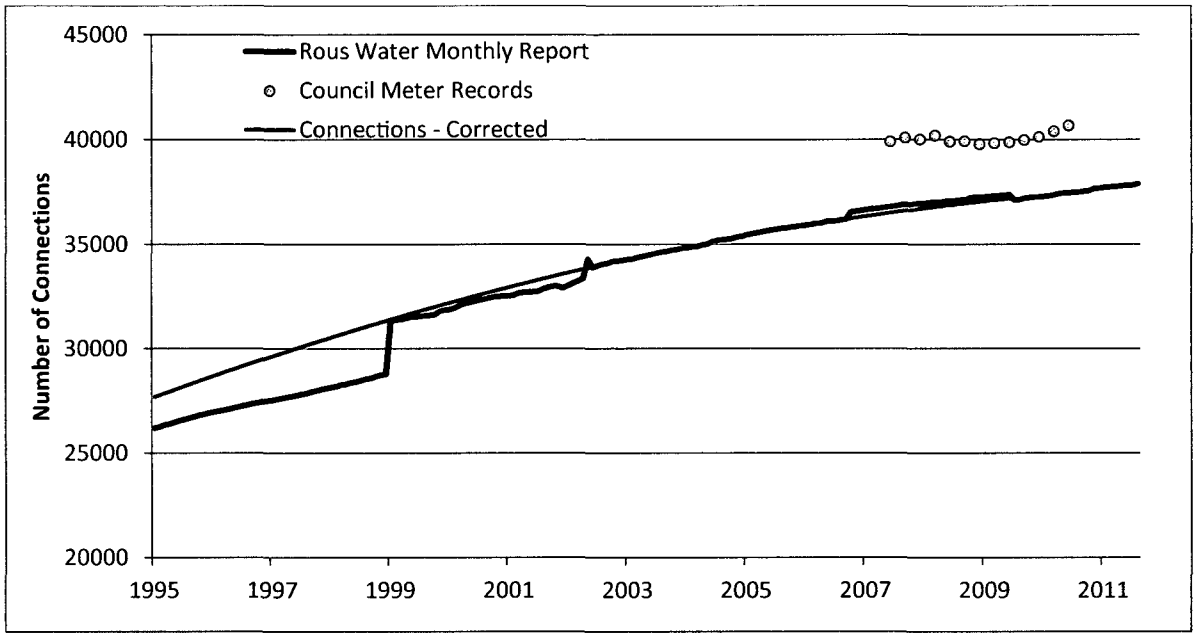

Figure D.1: Number of Connections

Connections can also be estimated from direct interpretation of constituent Council water billing databases. The total number of Rous Water supplied connections from Council databases from June 2008 to June 2010 are also shown in Table D.1. In June 2010, there were estimated to be 41, 652 connections supplied by Rous Water.

Table D.1: Estimated Number of Rous Water Connections

Local Government	Connection Type	Estimated Connections (June 2010)		Difference
		Constituent Council Records	Rous Water Monthly Records	
Ballina Shire Council	Residential	13,077		
	Non Residential	1,591		
	Total	14,621	11,516	3,105
Byron Shire Council	Residential	7,931		
	Non Residential	966		
	Total	8,897	8,877	20
Lismore City Council	Residential	12,242		
	Non	1,186		

Local Government	Connection Type	Estimated Connections (June 2010)		Difference
		Constituent Council Records	Rous Water Monthly Records	
	Residential			
	Total	13,428	12,843	585
Richmond Valley Council	Residential	2,405		
	Non Residential	311		
	Total	2,716	2,212	504
Rous Water	Total	1,990	1,990	0
ROUS REGIONAL		**41,652**	**37,438**	**4,214**

A number of observations can be made from this data:

- There are "jumps" in the Rous Water monthly reported connections in 1998, 2002, 2007 and 2009. These are likely due to ongoing corrections and revisions to estimated connections resulting from changes to constituent Council water metering systems and billing databases.
- The estimate of connection numbers from the Rous Water monthly reports may underestimate actual connection numbers by at least 10%. This is likely a result of an underestimate of baseline number of connections being used as a starting point for Rous Water monthly reports.
- The number of connections reported by Rous Water in June 2010 was lower than the number of dwellings from the 2006 Census data, again indicating the current number of connections reported by Rous Water is low.

A key issue for Rous Water in estimating the number of connections and the type of connections is the current differences between Councils in defining connections and meter reading. These differences make calculation and comparisons of water consumption difficult.

Appendix E Climate Characteristics

The climate characteristics provided in this section are taken from the Alstonville Tropical Fruit Research Station. This station is located between Lismore and Ballina, and can be considered representative of the region's climatic conditions.

The area supplied by Rous Water is characterised by:

- A sub-tropical climate, with mild to warm temperatures throughout the year;
- Relatively high rainfall when compared with other parts of New South Wales with mean annual rainfall of approximately 1800 mm per year;
- Seasonal rainfall with the wettest months are in late summer/early autumn, and the driest periods generally occurring in late winter/early spring; and
- Seasonal evaporation , with highest evaporation during summer months where temperatures are higher.

E.1 Temperature

The area supplied by Rous Water has a sub-tropical climate, with mild to warm temperatures throughout the year. Figure E.1 shows the mean maximum and minimum temperatures for the Rous region.

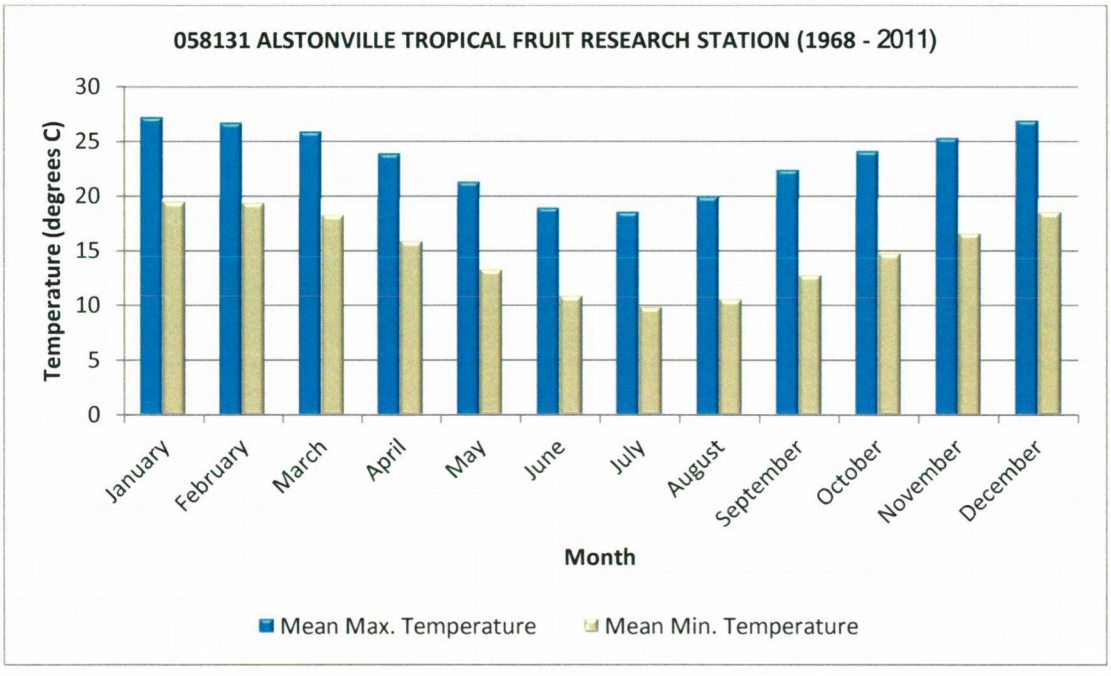

Figure E.1: Mean Maximum and Minimum Temperatures

E.2 Rainfall

Rainfall in the Rous region is relatively high when compared with other parts of New South Wales. The mean annual rainfall at Alstonville is approximately 1800mm per year. Figure E.2 shows the mean monthly rainfall. The wettest months are in late summer and early autumn (February to April), with the driest periods months generally occurring in late winter and early spring (July to September).

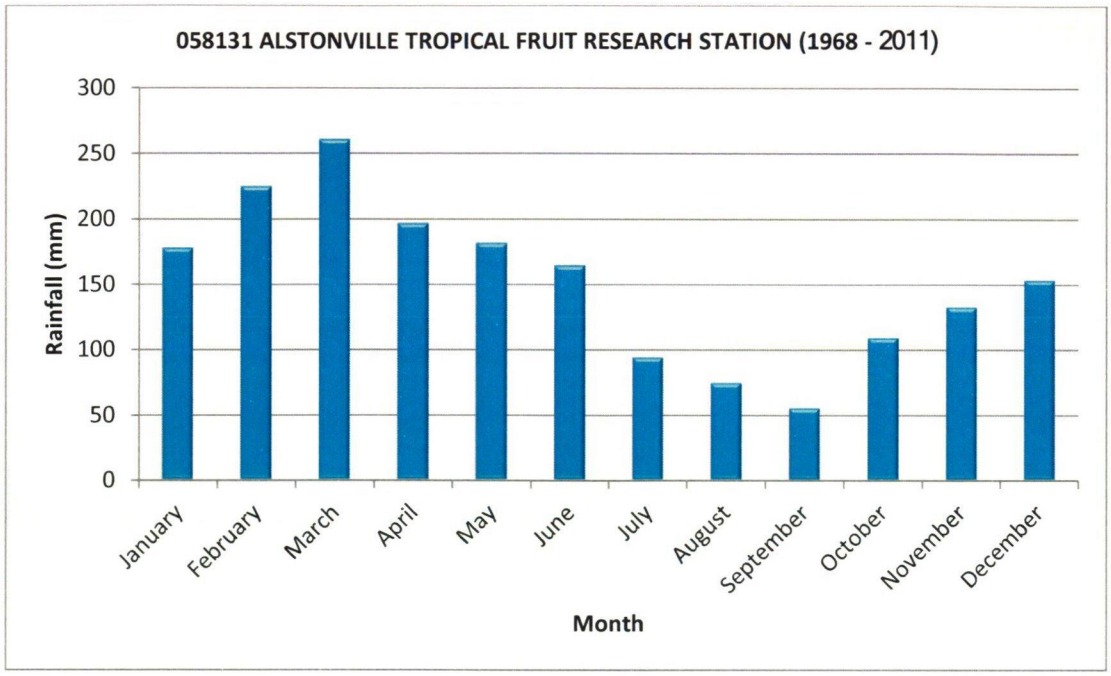

Figure E.2: Mean Monthly Rainfall

E.3 Evaporation

The region has a mean daily evaporation rate of 4.2 mm/day, or 1.5 m/annum. Figure E.3 shows mean daily evaporation data. Evaporation is seasonal, with highest evaporation during summer months where temperatures are higher.

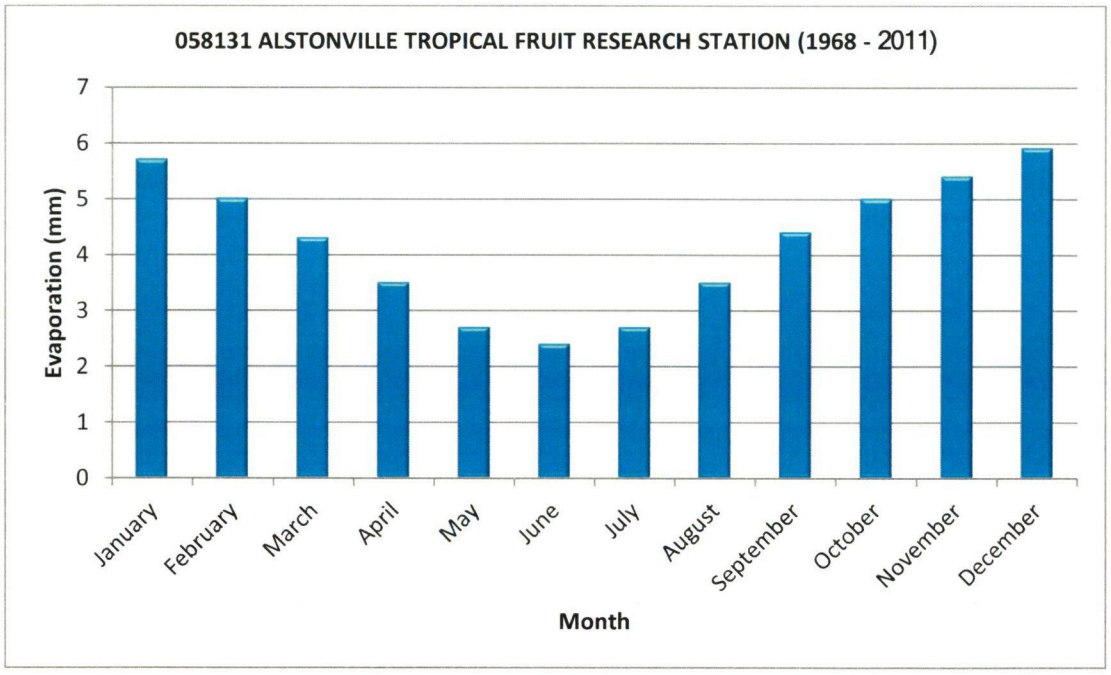

Figure E.3: Mean Daily Evaporation

Appendix F Summary of Current Programs

F.1 Rainwater Tank Rebate Program

Background

Rebates for rainwater tanks have been offered to residential water customers since February 2003. The rebates were based on modelling carried out by the Institute for Sustainable Futures using a Department of Public Works model in 2002.

Combined with the New South Wales Government and Federal Government rebates, almost all the cost of purchasing and installing an average sized tank was covered. However, with both the State and Federal programs finished, Rous Water adjusted its rebates to maintain the high levels of tank uptake at least during 2011-12. This utilises the momentum around rainwater tanks that currently exists and therefore reduces the level of expenditure on promotion and advertising. The 2011-12 rebates are shown in Table F.1.

Table F.1: 2011-12 Table of Rebates – Rous Water

Rebate Level	Tank Volume (litres)	Rebate
1	2,000 – 4,499	$100
2	4,500 – 8,999	$400
3	9,000 or more	$500
Optional 1	Plus $500 if all toilets connected	
Optional 2	Plus $500 if washing machine connected	

Rebates are spread across the 3 levels with the average rebate amount being $458 during the life of the program. The uptake of the rainwater tank rebate program has grown substantially with a key driver being the combined Federal, State, local and Rous Water rebates. Figure F.1 below shows uptake since 2005.

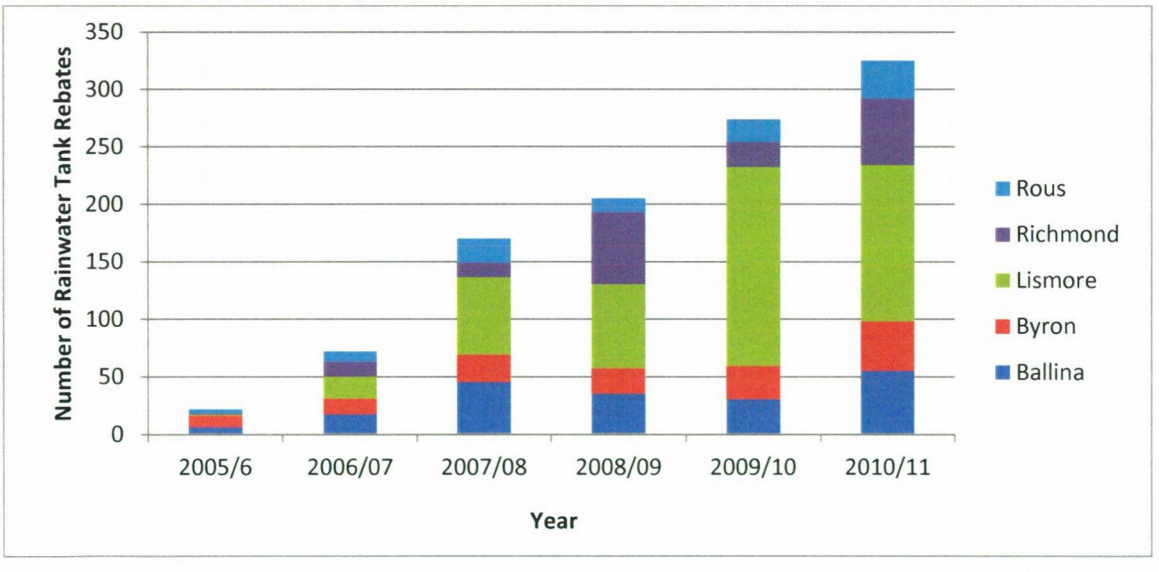

Figure F.1: Number of rainwater tank rebates applications to Rous Water

Based on analysis carried out by Rous Water, the estimated water saving per average tank installed under the Rous Water rebate is 50kL/a. The estimated total water saving achieved from the installation of tanks for 2010-11 is 16.45ML/A.

Based on 2010-11 figures, the estimated cost of the tank rebate program was about $9.41/kL/A saved. This is higher than other programs, but much lower than the revised unit capacity cost of $17,600/ML/A. The rainwater tank rebate program appears to be cost effective, given the likely cost of future water sources.

F.2 Dual Flush Toilet Rebate

Background

Following a trial conducted in North Woodburn in early 2004, a rebate on dual flush toilets and cisterns was introduced in July 2004.

Based on the estimated water saving, the rebate is $50 for replacing a single flush toilet or cistern with a dual flush unit. There is a maximum of 2 rebates per residence. Take-up of the rebate is shown in the Figure F.2 below.

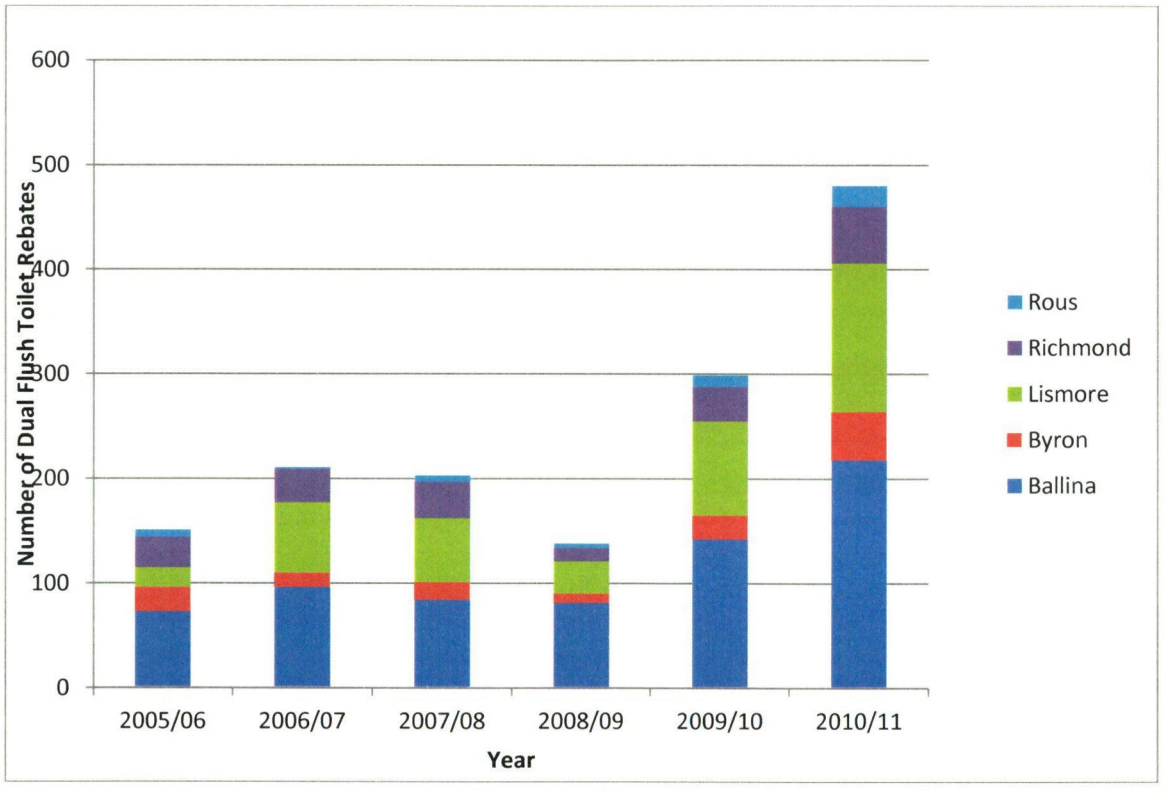

Figure F.2: Number of Dual Flush Toilet Rebates

Take-up of the rebate varies from year to year depending on the level of promotion. There are currently no other Council or Government rebates on dual flush toilets.

Costs and Benefits

The annual budget for dual flush toilet rebates is $20,000. This allows for about 400 rebates per year. Associated costs include the answering of inquiries, preparing application forms and processing applications. The unit cost of administration is about $10.

The water saving per dual flush toilet installation is estimated to be 30kL/A, giving a total water saving of about 14.4ML/A. Uptake was again high, potentially due to the NSW Government rebate which ended on 30 June 2011.

The estimated cost of the dual flush toilet rebate was $2.14/kL saved in 2010-11.

F.3 Residential Showerhead Rebate

Background

A budget of $30,000 was allocated for the 2010/11 financial year for a showerhead replacement program for residential homes. This new rebate began in August 2010 and is backdated to 1 July 2010. Table F.2 below outlines the uptake of the rebate program in 2010-11.

Table F.2: Showerhead Rebate Applications 2010-11

Water Customer of	Number of Applications in 2010-11
Ballina	32
Byron	10
Lismore	30
Richmond Valley	5
Rous Water	5
TOTAL	**82**

Costs and Benefits

The estimated water saving from each installation is 20kL/A so the total water saving resulting from this rebate is about 1.64ML/A for 2010-11. The cost to Rous Water was $3,483. Therefore the cost to deliver was $2,123.78/ML/A.

F.4 Water Saving Products Rebate

Background

In recent years various inventors and manufacturers have developed products that assist water saving inside and outside the home. Rous Water has been considering the introduction of a rebate for specific products, to further encourage their use and household water conservation. The products that are currently eligible for such a rebate are:

- The **Every Drop Shower Saver** - a paddle-like device, which is fixed to a valve at the base of the shower stem. The design invites anyone taking a shower to switch the water on and off more easily and with less effort than ever before.
- The **Cisternlink Aquasaver** is a hand basin that can be retrofitted to sit on top of most existing toilet cisterns. The Cisternlink enables the water that is used to wash your hands to also go into filling the toilet cistern, ultimately saving water.

- **Outdoor swimming pool and spa covers** also reduce the necessity for cleaning and backwashing resulting in lower water use. The covers also reduce the evaporation rate of water (up to 98% reduction in evaporation can be achieved) resulting in less frequent top ups.
- **Aquadivert** is a small unit which diverts cold water from the hot water lines into a separate tank for later use. Cold water sits between the hot water supply and the outlet whilst waiting for warm-hot water to reach the tap. Up to 16 litres of water is wasted every time the hot water tap is used depending on the distance of the outlet from the hot water supply.

Costs and Benefits

This rebate provides a high water saving per dollar spent, however, uptake is low (refer Table F.3). It will take time for the community to feel comfortable with some of these products given they have not had the promotion of products such as rainwater tanks or showerheads.

Table F.3: Water Saving Products Rebates 2010-11

Product	Number of Applications in 2010-11	Estimated Water Saving per Installation (kL/A)	Total Water Savings this Financial Year (ML/A)
Every Drop Shower Saver	20	49	0.980
Swimming Pool Cover	11	11	0.121
Cisternlink Aquasaver	2	15.7	0.031
TOTAL	**33**	**-**	**1.132**

F.5 Mulch Rebate

Background

To further promote water saving in the garden, a rebate on garden mulch was first introduced in October 2007. The rebate ran until January 2008 with 458 customers participating. The mulch rebate was very popular and so was again offered in December 2008. On the second occasion the rebate proved so popular that the budget was spent by mid January 2009 with 375 customers taking advantage of the limited offer.

The rebate offered was $20 rebate for each full $50 spent on mulch, up to $100 rebate per household. Participants could purchase any type of mulch from any supplier.

Costs and Benefits

As with the water saving packs, estimating the water savings achieved through the mulch rebate is difficult.

Assuming a water saving of 3kL/A per household, the combined water saving for 400 participating households would be about 1.2ML/a. The typical budget for the mulch rebate is

about $25,000. This results in a total net cost of about $20,833/ML/A. Compared to other rebate programs, the mulch rebate is not cost effective from a water conservation perspecitve. However one benefit of the mulch rebate is its extreme public popularity and further promotion of Rous Water as 'a good citizen'.

The set up costs and administration costs for this rebate are relatively low.

F.6 Permanent Water Saving Measures

Background

Research has shown that mandatory irrigation days and times are one of the most cost effective demand management measures with an annualised cost less than all other demand management measures except for inclining block tariff.

Costs and Benefits

Introducing mandatory permanent water saving measures program would only attract advertising and potentially, enforcement costs. Introduction of mandatory permanent water saving measures has been shown to be supported by the community. Because such a program has not been implemented in the region previously, the volume of savings is unknown.

F.7 Blue and Green Business Program

Background

In order to progress the non-residential assistance program, a community based social marketing strategy was undertaken. In late 2007 the NSW Government announced funding opportunities in the first round of its $30 million Green Business Program under the NSW Climate Change Fund. Applications were accepted for projects that would demonstrate energy and water savings and improve energy and water efficiencies.

Rous Water received funding for its project: "Engaging business to save potable water in the Rous Water region of North East NSW". The project had two stages designed to develop partnerships with non-residential water users and result in on-ground works to reduce potable water demand. The project built on Rous Water's existing funding program for non-residential water customers.

Stage 1, carried out by Naturally Resourceful Pty Ltd, involved a series of in-depth interviews to engage businesses to identify their specific needs, the barriers and opportunities for water saving actions and works. The results indentified the need to focus on the top water users and the accommodation sector. Stage 2 has involved the implementation of on-ground works to save water.

Costs and Benefits

The Blue and Green Business Program has cost Rous Water and the NSW Climate Change Fund $150,451 to provide savings of 5.77 ML/A. Due to this program a number of businesses now have a running program of water efficiency works and are much more aware of their water use. The program is therefore quite effective at $2,899.40/ML/A saved.

F.8 Summary of Water Saving Rebate Programs in 2010-11

Table F.4 shows the estimated water savings from each rebate program and the rebate cost to provide that saving (excluding administration and advertising costs). Figure F.3 shows a comparison of cost per kL/A saved against volume of savings for each rebate program.

Table F.4: Relative Cost/Benefit of Rous Water Rebate Programs

Rebate Program	Estimated Water Saving 2010-11 (ML/A)	Approximate Cost per Kilolitre of Water Saved ($ per kL/A saved)
Rainwater Tanks	16.45	$9.41
Showerheads	1.640	$2.24
Water Saving Products	1.132	$2.08
Dual Flush Toilets/Cisterns	14.400	$2.14
Blue & Green Business Program	22.470	$2.35
TOTAL	**56.092**	

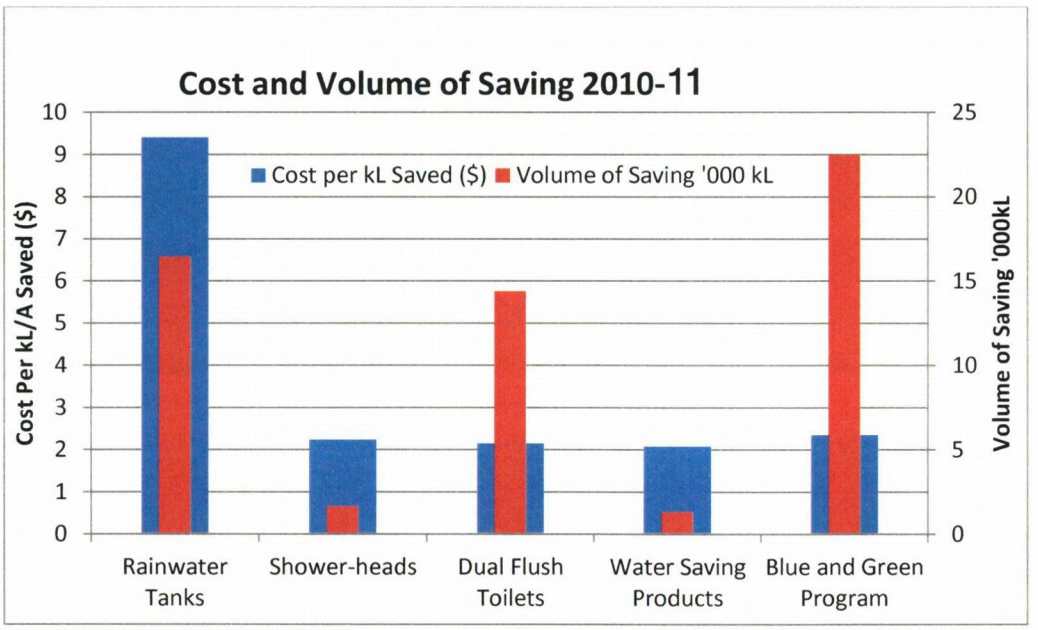

Figure F.3: Cost of program per kL saved vs total volume saved

While the rainwater tank rebate program does poorly in comparison to other programs with respect to water savings per dollar spent, it is a very popular program which raises community awareness and education which is impossible to measure. In addition, those programs that have proven high savings for the cost are not necessarily popular for consumers and so total savings are small (for example, the water saving products are very cost efficient, but the savings are low due to low uptake / acceptance by the community).

The Blue and Green Business Program has provided significant water savings. Key contributors were projects which eliminated leaks. In addition, feedback is indicating that installation of meters at permanent sites in resorts and caravan parks is leading to a significant reduction compared to previous water use (up to half).

It is important to achieve both efficient programs (i.e. a low cost per ML saved) plus providing adequate total volume of savings to make a difference. Current information suggests that while rainwater tanks provide a high volume of savings, it is the least cost effective measure and while water saving products are very cost effective, they are not, at least currently, being taken up in high enough numbers to provide significant savings.

Appendix G Permanent Water Saving Measures

G.1 Measures

OUTDOOR WATERING	
Applies to all homes, private and public gardens and sports grounds. Does not apply to commercial market gardens and nurseries.	WATERING TIMES AND DAYS
	This applies to the use of all types of sprinklers, watering systems, hand-held hoses, watering cans and buckets, topping up swimming pools and outdoor spas. Outdoor watering and water use is permitted between 6am and 10am and between 3pm and 10pm.
	NEW TURF WATERING
	Watering of new turf or the beginning of a new lawn is permitted every day for the first fourteen (14) days during the watering times above.
	HAND-HELD HOSES
	All hand-held hoses should be fitted with a trigger nozzle.
	USE LESS WATER
	When watering lawns or gardens, use the least amount of water necessary. Evidence of puddling or runoff is an indication that too much water has been used. All outdoor watering should be carried out in such a way that no hard surfaces are included in the watered area.
CLEANING VEHICLES & BOATS	
Applies to all private and commercial use.	Vehicles and boats may be washed on any day. Where possible, vehicles and boats should be washed on the lawn or where the water will run off onto the lawn or garden. Hoses should be fitted with a trigger nozzle.
DRIVEWAYS, PATHS & PAVED AREAS	
Applies to all private and commercial premises. Applies to all impervious surfaces such as driveways, paths and paved areas.	Water should not be used to clean driveways, paths, paved areas and other impervious surfaces unless it is necessary as a result of an accident, fire, hazard to health or the environment, or other emergency. High pressure water cleaners may be used.
CONSTRUCTION & GENERAL CLEANING	
Applies to all private and commercial building, renovation and construction activities, including roof and house cleaning. Applies to all private and commercial cleaning activities.	Cleaning may be carried out on any day. Hoses should be fitted with a trigger nozzle. High pressure water cleaners may be used.
	USE LESS WATER
	When using high pressure water cleaners, use the least amount of water necessary to do the job. Avoid puddling or runoff to hard surfaces such as driveways, paved areas and the street. Use only high pressure water cleaners that use no more than ten (10) litres of water per minute.

G.2 Communication Strategy

Key Messages

To support the release and promotion of the permanent water saving measures, the following activities will be undertaken. They will outline the benefits of permanent water saving measures including:

- Outdoor watering uses up to 25% of our potable residential water supply
- We do not need to use highly treated, potable water for these uses and so want to be careful with this use
- Employing the measures will assist in delaying the need to increase water prices due to construction of a new water supply
- The measures allow for the continuation of healthy, green gardens, topping up swimming pools and washing cars, boats, driveways, paths and paved areas
- The measures accommodate outdoor activities such as washing cars and boats and washing driveways, paths and paved areas
- Residents can still water new turf every day
- Measures do not apply to commercial nurseries or market gardens
- Rainwater tanks can provide water every day if there is a preference to water every day (and Rous provides a rebate for the tank)

The permanent water saving measures may include an odds and evens approach where peak daily demand causes an issue because introducing an odds and evens approach:

- means all water users aren't all watering gardens at the same time (and this type of use can reduce water pressure in the mains)
- reduces overall water use as people think more carefully about the timing and planning of garden watering
- would encourage the installation of non-potable water sources including water from a free standing rainwater tank or grey water from the washing machine can still be used on the garden at any time
- allows for better management of peak daily demand, especially in the middle of summer
- maintains effective fire fighting pressure in the pipes for emergencies.

Actions

The key messages will be relayed to residents through the following actions:

- Prepare information sheets (utilise assistance from *savewater!*® for design and printing of information sheets)
- Placement of information sheets into all resident's water bills, on website and make available at public events, council offices
- Outline the benefits on radio

- Place newspaper adds outlining the measures and the benefits
- Promote that Rous provides a rebate for a rainwater tank to water outside the times stipulated in the measures
- Outline other relevant information (eg that provided by *savewater!*®)

In addition, *savewater!*®

- Will be engaged to provide a package of goods to assist in the promotion of the measures
- Will be asked to gather information on permanent water saving measures from around Australia

Appendix H Existing Education Programs

Rous Water has a range of education and engagement programs that are described in Table H.1.

Table H.1: Rous Water Existing Education Programs

Program	Description
Early Childhood	Since the Program's inception in 2006, the average annual participation rate has been 25 centres with 1478 students plus staff. The Centres participating in this Program continue to show a high level of interest and commitment to water conservation and education. Actions have been achieved in policies and practices and with Government funding many Centres have installed rainwater tanks or upgraded their fixtures. The Tank prize (part of the Program) also means 10 Centres now have small tanks for outdoor use.
Water Aware Centre Program	The Water Aware Centre Program aims to capture the interest and enthusiasm of the children and turn it towards an advocacy role in their families. The Program includes: • A water audit and preparation of an action plan with Centre Staff. • Delivery of an education session to the children. • Teaching resources for Staff. • A display and "take-home" activity and information for Parents. The 5 Star Water Aware Centre Project was delivered in 2010/2011 - $63 000 NSW Climate Change Funding. It built on the success of the existing Water Aware Centre Program working with eight Community Preschools to reduce their water consumption by grading their toilets and taps to water efficient models, installing tanks and demonstrating water conservation to their wider communities. The water saving from this Project is 1,245kL per annum. The education outcome is a comprehensive section on the Rous Water website to inform, guide and provide support for other Centres to achieve water saving.
Cool Cubbies Project	This Project was delivered 2011/2012 to raise awareness about sustainable living with young children, their teachers, parents and their community. By adding sustainability components (ie rainwater tank, solar panel, veggie garden, native plants, worm farm & weather station) to cubby houses of Community Preschools they become 'Cool Cubbies' and demonstrate wise management and use of our key resources eg water, energy, waste & biodiversity. Cool Cubbies were created in seven Early Childhood Centres in the Rous Water Region. Sponsorship funded the works and education materials were provided to support the learning outcomes. It was a partnership project with Richmond Landcare.
Primary	Since 2006 the Programs average annual participation rate has been 39 Schools with 4200 students plus staff. This is the same number of Schools as the previous five years (prior to 2006) but spread across several Programs not just the original Every Drop Counts Program. With Government funding Schools have installed rainwater tanks. Also the

Program	Description
	Programs have met many of their curriculum outcomes. The m.a.d. Water Team activity started in 2007 with 64 teams to date. The teams achieve simple communication or behaviour actions and each year one team wins a small rainwater tank.
Every Drop Counts	The 'Every Drop Counts' Program is an interactive classroom session delivering water conservation education through discussion, child led quizzes, games and songs. It focuses on where their water comes from, why water is important, how to reduce consumption and the importance of individual action. Participating Schools are provided with water education resources including student worksheets, teacher curriculum notes, posters and stickers.
m.a.d. School Water Team	'The m.a.d. School Water Team' is group activity where students conduct a basic water audit to review their School water use and identify a list of possible water conservation actions that will "make a difference" (m.a.d.) for school water use. Their report is published on the Rous Water website to promote the schools water conservation actions.
Rocky Creek Dam excursions	Excursions to Rocky Creek Dam are offered for Primary School. These provide fun outdoors water conservation and catchment management activities to meet the school curriculum outcomes. They utilise the excellent facilities and teaching tools (signs, mural and walks) at the Dam picnic areas.
Richmond & Brunswick Catchment Model	The catchment model is a portable 3D model of a working catchment. It includes Rocky Creek Dam, a water treatment plant and reservoir. Demonstrations can illustrate integrated water management and poor or best catchment management practices. It is a partnership project of Rous Water, Richmond River County Council and Kyogle and the 4 constituent councils. The model meets Primary and Secondary curriculum outcomes and is very popular at Community events.
Secondary	Since the Program's inception in 2005, the average annual participation rate has been 15 Schools with 575 students plus staff. There is a range of Programs offered to Secondary Schools to meet their curriculum and student abilities. The participation rate has increased over the last 3 years because of more partnership activities or Projects with environmental educators from local government or environmental focused organisations.
Catchment to Tap tours	This Program includes a guided excursion to Rocky Creek Dam, Nightcap Water Treatment Plant and Richmond Water Laboratories, exploring our local water catchment and focussing on the topics of water supply and catchment management. Worksheets and information flyers are provided to the students and teacher. This Program meets the curriculum outcomes for geography and science subjects. A bus subsidy is provided to the School.
SUSS Program	SUSS stands for 'Students Using Sustainable Strategies' and aims to empower and skill students and teachers to take actions to increase sustainable practices in their schools. Action-based workshops focus on water and energy conservation, resource recovery and biodiversity protection. Sessions also allow the students and teachers time to work on actions for their School Environmental Management Plan. This is a partnership project with educators from North East Waste Forum,

Program	Description
	National Parks, Dorroughby Environmental Education Centre, Richmond Landcare, Southern Cross University and the constituent Councils Education Officers. To continue support for the students and teachers the same partnership of agencies visit two schools a term as the AAA Team (Audits, Actions & Achievements). This is a day of auditing and action writing with the Year 7 students. The School Environment Team and the student who attended SUSS work alongside the Environmental Educators.
H2O Action Grants	These are $500 grants available for projects by students, teachers or school management committees that involve water conservation education, water wise skills, curriculum development or school efficiency works. Examples include sponsorship of the Catholic School Debating Competition (with a future water supply statement) and the Regional Southern Cross University Science Challenge.
Tertiary	
	There is no formal program in place for tertiary education. Projects are developed in a case-by-case basis to support: • specific course requirements or curriculum outcomes; and • Rous Water demand management programs.
General Community Education	
Community Groups	There are no formal programs in place for broader community education. Traditionally broader community education has been undertaken where opportunities have existed to support groups or organisations with their activities or projects that have a strong water conservation or protection message. Regular community engagement activities have included events such as the Lismore Show & Primex, NAIDOC Day and Big Scrub Environment Day.
Website	Rous Water's website includes information on: • Demand management (general information) • Rebate programs • Water conservation tips The "Learn about water" section on the website provides information and educational resources under 'Water School', 'H2O Info' and Life Long Learning. This aims to reach learners of all ages and with different learning styles or needs eg Water Walk information flyers, booking forms, photograph galleries, students work, school reports, links to website tools, units of work, picnic, walks & drives, learning from Aboriginal Culture etc.
Fact Sheets and Information Brochures	Rous Water has a range of printed education material including: • Water Walk Information Sheets – "Being Wise with Water" and "Make a Difference" • Booklet – "Saving Water in Your Home and Garden" • Posters & stickers