

Tamworth Regional Council

Demand Management Plan

Final

25 July 2007

Revision 2

The original Demand Management Plan was adopted at the Council Meeting of 27 February 2007 and subsequently amended at the Council Meeting of 24 July 2007 to incorporate additional demand management measures.



DEMAND MANAGEMENT PLAN - DOCUMENT CONTROL TABLE		
Revision	Revision Date from when Revision Applies	Resolved by Council at Council Meeting
<i>Draft Report (for public exhibition)</i>	<i>13 December 2006</i>	<i>12 December 2006</i>
<i>Final Report</i>	<i>28 February 2007</i>	<i>27 February 2007</i>
<i>Revision 1</i>	<i>24 April 2007</i>	<i>24 April 2007</i>
<i>Revision 2</i>	<i>25 July 2007</i>	<i>24 July 2007</i>

This document has been prepared by Tamworth Regional Council based on information contained in the background technical report entitled "Demand Management Plan – Background Report" prepared by Hunter Water Australia Pty Ltd. The Demand Management Plan was adopted by Council on 28 February 2007, after consideration of comments received during a period of public consultation.

DEMAND MANAGEMENT PLAN

Demand management is an essential component of modern water resource management and planning. In a time where urban water efficiency has become a national agenda item, water authorities can no longer view demand management as merely an alternative to augmenting town water supplies.

Tamworth Regional Council does not currently have a formal demand management / water conservation program in place, although various demand management measures have been employed by Council over recent years, including the introduction of a user-pays pricing tariff in 1994/95 (in the former Tamworth City Council area). With the Tamworth Region and the wider Murray-Darling Basin in the grip of the worst drought on record and dry conditions prevailing since 2002, urban water supply sources in the Tamworth Region are becoming increasingly stressed. Consequently, Council has highlighted the need to prepare and adopt a formal Demand Management Plan.

The fundamental objective of preparing and adopting a Demand Management Plan is to conserve water through the adoption of various demand management measures. This Plan outlines the various water conservation measures that are to be employed by Council in order to ensure that town water demand levels are both efficient and sustainable. By employing effective demand management measures, Council can expect significant reductions in water supply system capital and operating costs, along with the environmental and social benefits associated with maximising urban water efficiencies.

This Demand Management Plan has been developed in association with a Drought Management Plan, which focuses on both the demand and supply side measures that should be employed during drought periods. Consequently, during drought periods there is an overlap between the two plans. The Demand Management Plan and all rebates and offers contained within are only applicable to customers connected to the reticulated town water supply systems operated by Tamworth Regional Council, including Dungowan Dam Pipeline and Connors Creek Dam Pipeline raw water consumers.

Demand management is an essential component of the NSW Government's *Best Practice Management Guidelines* (DEUS, 2004) for local water utilities (LWU). The guidelines were prepared in response to urban water reform commitments made by the NSW Government as part of the National Water Initiative (NWI). Another essential component of the *Best Practice Management Guidelines* is the preparation of an Integrated Water Cycle Management (IWCM) Strategy. Council is in the process of preparing an IWCM Strategy, which will outline a long term plan for the integrated management of the water supply, sewerage and stormwater services within a whole of catchment strategic framework. Demand Management will be a key component of the IWCM Strategy and therefore, the Demand Management Plan must be consistent with the principles of the IWCM Strategy.

HISTORICAL PERSPECTIVE

Historical water consumption is influenced by a variety of factors, including:

- Residential and non-residential development
- Prevailing climatic conditions and climate change
- Demand management measures
- Planning regulations for new developments
- Restriction rules during periods of drought
- Living standards, incomes and lifestyle factors.

With most of the above factors influencing demand at any given time, it is difficult to directly attribute changes in historical demand patterns to any one factor. Consequently, a general assessment has been made of the major influences of demand over the last 15 years.

While population growth in the Tamworth Region over the last 15 years has been relatively static, dwelling numbers have been steadily increasing at a rate of 1.0 to 1.5% pa. However, over the same period, occupancy rates have slowly declined. Consequently, while dwelling growth has directly contributed to growth in town water consumption over the last 15 years, the impact of dwelling growth has been partly offset by the decline in occupancy rates.

Over the last 15 years, Tamworth water supply system consumption has ranged from a low of around 7,000 ML in 1995 (during restrictions) to a high of around 10,600 ML in 2002. Consumption has averaged around 8,800 ML over the 15 years period, with consumption increasing from an average of around 8,500 ML/a in the early 1990's to an average of over 9,300 ML/a over the last 5 years (note that demands over the last 5 years have been impacted by water restrictions that have been in place since August 2002).

By removing the influence of the growth in connections on historical consumptions (ie by considering water consumption per connection over time) and by removing the influence of climate on consumption (ie climate correction of consumption), the change in underlying demand over time can be seen (as shown below on **Figure 1**). Underlying demand is influenced by factors other than climatic conditions and connection growth.

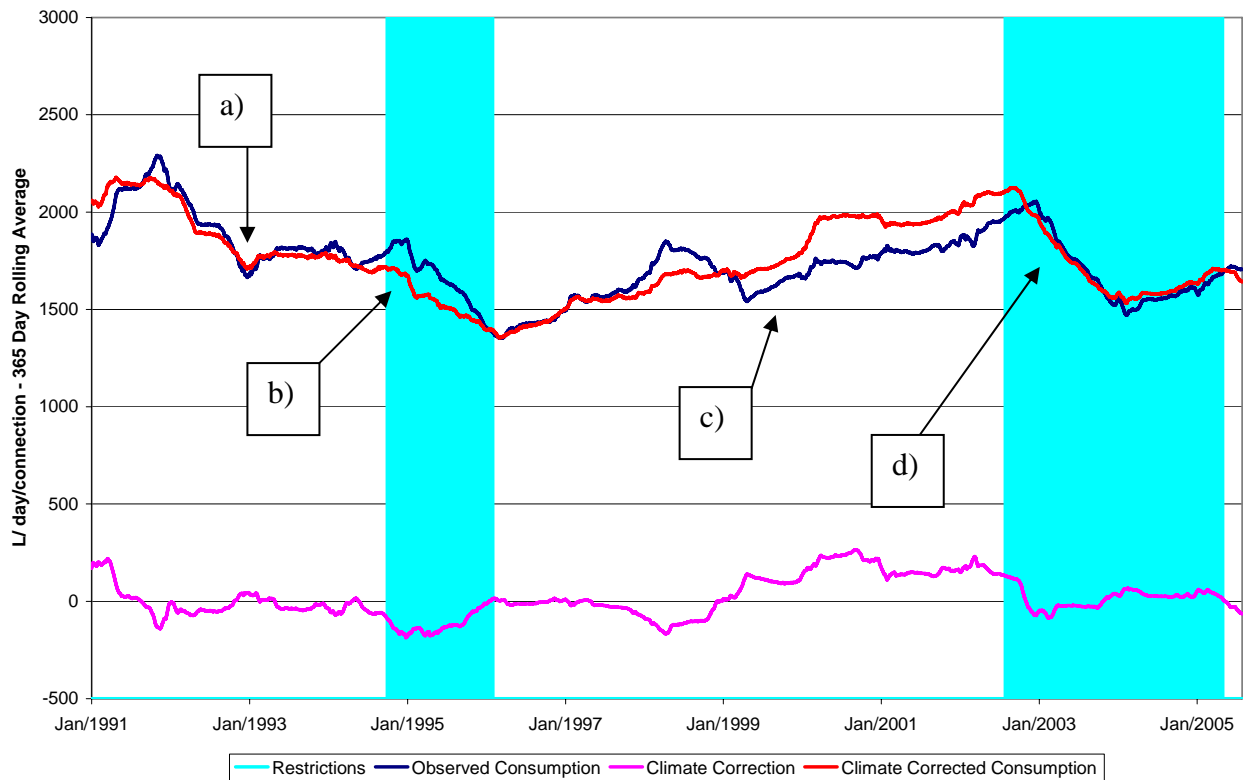


Figure 1 Tamworth Water Supply - Climate Corrected Water Consumption

A number of observations can be made about the above graph. Firstly, the graph clearly shows a decrease in underlying demand in the lead up to the introduction of user pays water pricing in Tamworth [a]. Secondly, during the period of restrictions in 1994/95 [b] the overlap between restrictions and the recently introduced pricing changes makes it difficult to attribute the reduced per capita consumption directly to either measure. Thirdly, while observed consumption in the period between the two periods of restrictions varies significantly, it appears that the underlying demand is gradually increasing after the restrictions period [c]. The climate corrected plot indicates that from approximately January 2000 until the beginning of restrictions, underlying demand in Tamworth was at its highest point in 15 years, and was levelling out. Finally, the effectiveness of recent restrictions is clearly evident [d].

Water treatment plant production data has been used to analyse the changes in underlying demand in Tamworth. This data represents all uses in Tamworth, including residential consumption, industrial, commercial, food processing, and transfers to Moonbi / Kootingal and system losses. As a result, changes in the non-residential consumer base which are not consistent with residential growth may skew the results. It is noted that a number of large food processing facilities have commenced or expanded operations over the last 10 years.

Increases in the underlying demand over the last 10 years could also be partly attributed to growth in green space and landscaped areas associated with new residential, commercial and recreational facilities.

Despite the obvious concerns associated with the gradual increase in underlying demand levels over the late 1990's, it is difficult to estimate what the current underlying demand levels would be due to the influence of ongoing water conservation measures (restrictions) that have been in place since August 2002. However, it would appear that some of the demand management gains associated with the introduction of users pays in 1993/94 were gradually lost over the next 7 or 8 years. A key reason for this is most likely the lack of a formal Demand Management Program during this time to reinforce and maintain a strong water conservation signal.

CURRENT SITUATION

Demand Categories – 2005/06

An analysis of metered water consumption by demand categories for 2005/06 was undertaken for each of the water supply systems and is included below on **Tables 1 and 2**. It should be noted that some demand categories, such as residential, rural and public parks, would have been influenced by water conservation measures (restrictions) that were in force during 2005/06.

Table 1 Tamworth Water Supply System – Metered Consumption by Category

Demand Category	2005/06 Consumption (ML/a)	% of Total Consumption	Connections	Consumption per Connection (kL/a/property)
Residential	4,705	56%	15,544	303
Commercial	879	10%	1,204	730
Industrial (& food processing)	1,670	20%	8	208,743
Institutions	318	4%	32	9,925
Public Parks	474	6%	164	2,893
Rural (& Dungowan pipeline)	290	3%	140	2,070
Bulk Sales (& backwash)	83	1%	17	4,864
TOTALS	8,419	100%	17,109	492

Table 2 Small Town Water Supply Systems – Metered Consumption Summary

System	2005/06 Total Consumption (ML/a)	Proportion Residential	Residential Consumption per Connection (kL/a/dwelling)	Total Consumption per Connection (kL/a/property)
Kootingal / Moonbi*	279	84%	273	304
Manilla	267	89%	228	227
Barraba	126	83%	157	163
Nundle	34	79%	135	146
Attunga	45	69%	219	300
Bendemeer	26	64%	117	165
Combined Small Towns	777	84%	213	228

Notes: * 204 ML was transferred from Tamworth water supply system

Average Unrestricted Residential Consumption

In order to estimate the average unrestricted residential consumption, customer metering data for the Tamworth water supply system was examined for the last two years with no restrictions (ie 2000/01 and 2001/02). Based on the average residential category consumption for those two years (5,040 ML/a) and the estimated number of dwellings at the time (14,390), the average residential consumption was around 350 kL/a per dwelling. This has been adopted as the estimated unrestricted average residential consumption for TRC.

Residential End-Use Consumption

In the absence of local end-use metering data to provide an estimate of end-use consumptions, internal end-use consumptions were adopted from typical values determined in a range of end-use studies across Australia. Consequently, an internal or non-seasonal usage, excluding evaporative coolers, of 175 kL/a (50% of total usage) was adopted. Based on an assessment of potential evaporative cooler consumptions using local climate averages, an average evaporative cooler consumption per dwelling of 50kL/a was adopted, with individual unit consumptions of up to 70 kL/a considered likely. The remaining end-use consumption of 125 kL/a was adopted as outdoor usage (see **Figure 2** below).

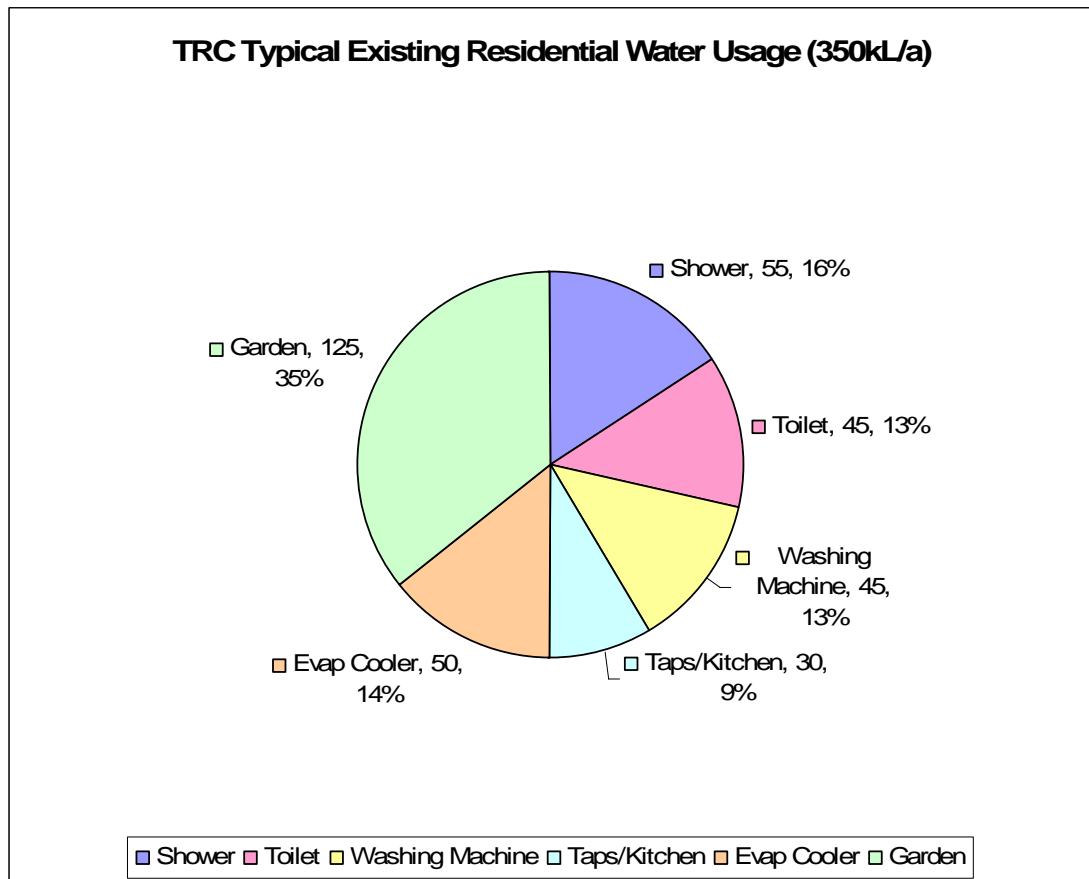


Figure 2 End-Use Consumptions for Existing TRC Residential Properties

Benchmarking of Residential Consumption

Benchmarking of residential consumption was undertaken using performance data from 2004/05 from across the state (DEUS, 2006). Tamworth’s estimated average residential consumption for 2004/05 was 317 kL/a per property, based on DEUS performance reporting. This compares favourably with a sample of other inland Councils, as shown below in **Figure 3**, but is around 60% higher than the state average of 200 kL/a. This is due to the relatively dry climate conditions experienced in the Tamworth Region and the resulting increase in irrigation requirements and high use of evaporative coolers. The average of the selected inland Councils (305 kL/a) is considered to be a more realistic benchmark for TRC. TRC was less than 5% higher than this ‘Inland Council’ benchmark.

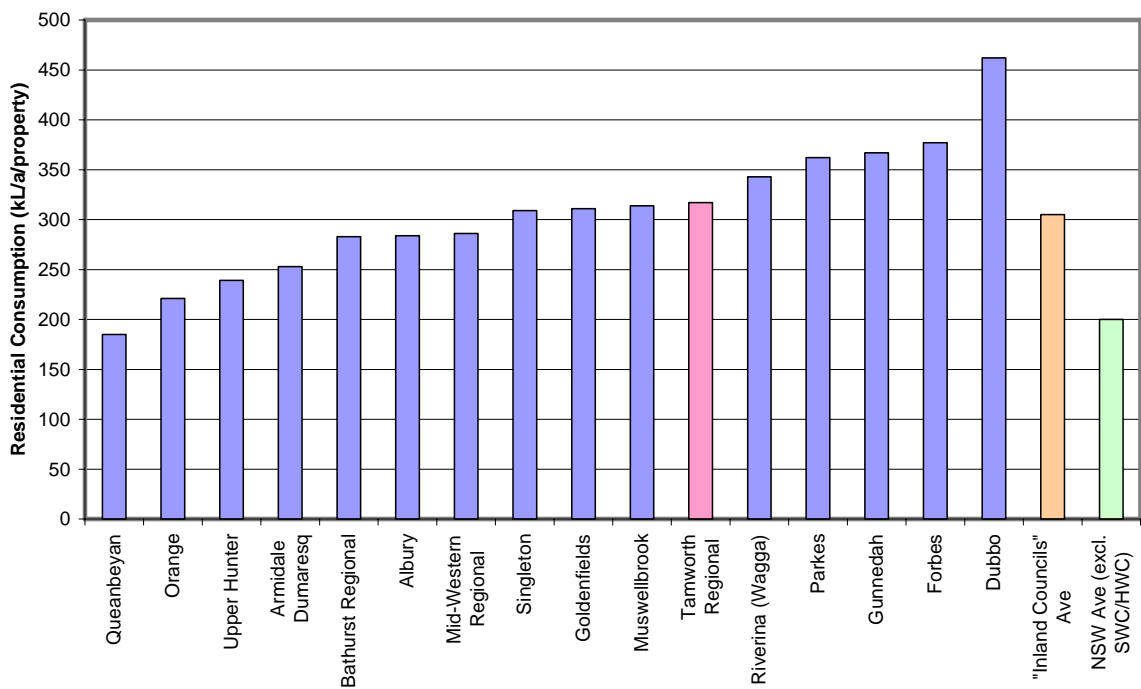


Figure 3 Comparison of Average Residential Consumption for 2004/05 (DEUS, 2006)

Water Loss

The total water loss for Tamworth water supply system of around 11% is close to the benchmark of 10%, typically adopted as the target water loss for larger water utilities. However, the total water loss for the small town water supply systems averages around 23%, over twice the accepted benchmark. A large contributor to this high total water loss is likely to be unbilled authorised consumption due to a significant number of un-metered properties (primarily parks & gardens). A more accurate estimate of water losses in the small town systems cannot be made until all properties connected to the water supply systems are metered.

Current Demand Management Initiatives

Prior to amalgamation in 2004, Tamworth City Council had an informal demand management program in place. The program included measures such as pricing, community awareness and water loss management. Since amalgamation, Council has been working on formalising a demand management program. A draft program was displayed for public comment in late 2004 and in March 2005, Council adopted an *Interim Strategy for Urban Water Efficiency*. The interim strategy outlines a range of proposed / interim demand management measures to be adopted by Council. While the interim strategy was adopted by Council in early 2005, there has been limited action taken to put in place the proposed measures.

The proposed measures included in the Interim Strategy have been reassessed in this report and the majority of measures have been refined and included in the proposed Demand Management Program (DMP). The *Interim Strategy for Water Efficiency* will be superseded by this Demand Management Plan, once it has been adopted by Council.

To assist in the community awareness and education campaign, Council has recently become a member of the *savewater! Alliance* (www.savewater.com.au). The savewater! Alliance offers a combination of web resources and practical programs. Savewater! newsletters, which included an introduction to the savewater! Alliance and tips for saving water around the home, were included with TRC's customer water accounts in mid 2006. Council expects to draw more upon the resources of the savewater! Alliance in the future.

The Namoi CMA recently received a grant from the Federal Government to undertake a project to motivate and assist rural urban communities to improve water use efficiency and thus contribute to improved water quality within the Namoi catchment.

The Namoi CMA, along with the Namoi Local Government Group, have developed an interim water use efficiency strategy. The strategy involves working with local councils on promoting a variety of measures, including raising community awareness, water loss management, water conservation management, targeted residential indoor and outdoor programs and effluent reuse / stormwater harvesting.

The Namoi CMA and Naomi Local Government Group have joined up with *WaterWise NSW* for their community awareness and education campaigns. Recent actions include setting up the WaterWise website (www.makeeverydropcount.com.au), handing out free 'water saver kits' (including a garden timer and a copy of the *Making Every Drop Count* guide to saving water in the home) and the distribution of 'WaterWise School Kits' to schools across the region.

Projects undertaken in the Tamworth Region by the Namoi CMA are partly funded by TRC (approximately 50/50 cost share).

DEMAND FORECASTS

Demand forecasts for the Tamworth water supply system were determined by assessing historical populations, dwellings and water usage as a basis for projecting demands into the future. Adopted growth rates were based on projected historical dwellings numbers, which forecast an average dwelling growth rate of around 1% pa for Tamworth City and 1.6% pa for the nearby rural areas. Low growth (50% of average) and high growth scenarios (150% of average) were also considered. Based on an average growth scenario, an additional 6,992 residential dwellings are expected to be constructed and connected to the Tamworth water supply system over the next 30 years (around 233 dwellings per year).

Base demands use a residential consumption of 350 kL/a per dwelling, while water efficient demand forecasts allow for a reduction in residential consumption to 300 kL/a and a 10% reduction in non-residential usage by 2015.

Allowances were also made for the potential future expansion of the existing Tamworth water supply system to service other existing residential areas like Kootingal / Moonbi and Attunga by 2015 and expansion in the number of large industrial users (additional 2500 ML/a by 2035).

Demand forecasts for Tamworth water supply system are included below on **Figure 4**.

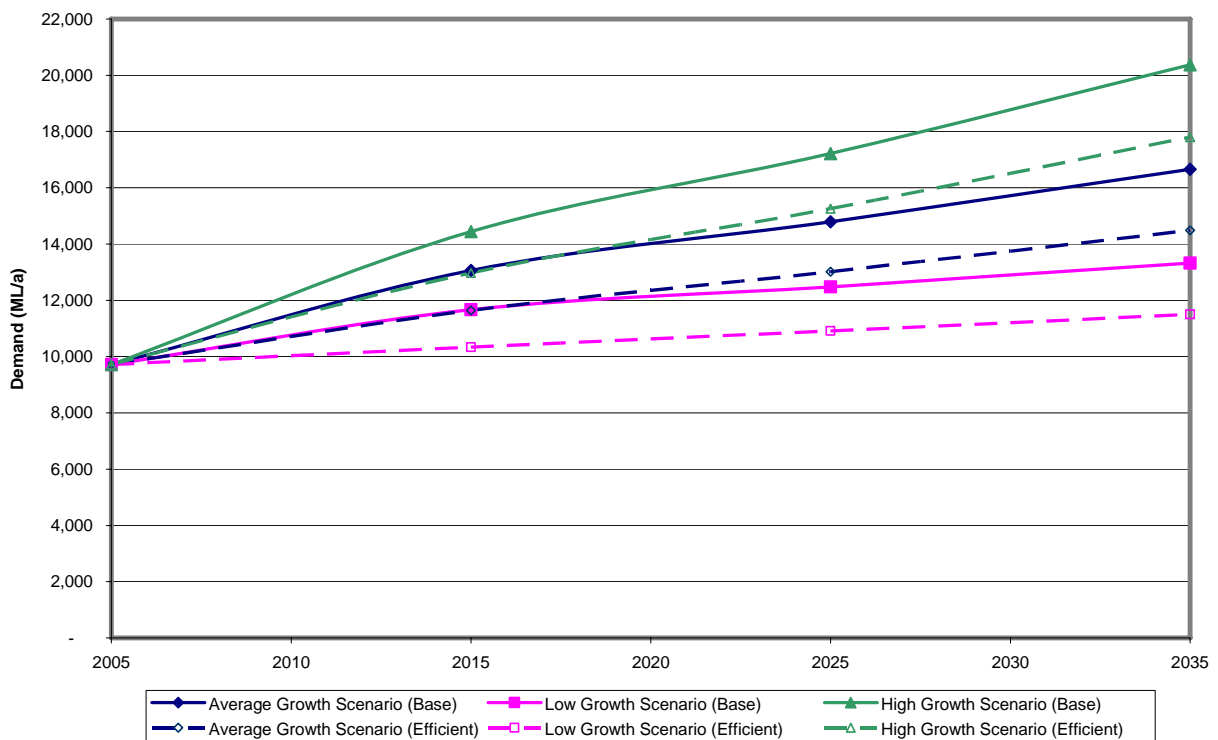


Figure 4 Adopted Demand Forecasts – Tamworth Water Supply System

Demand forecasts to 2035 for the remaining water supply systems were determined using the following adopted dwelling growth rates:

- Kootingal / Moonbi: 1.6% pa (+450 dwellings)
- Manilla: 0.4% pa (+120 dwellings)
- Barraba: 0.1% pa (+20 dwellings)
- Nundle: 0.6% pa (+30 dwellings)
- Attunga: 0.7% pa (+30 dwellings)
- Bendemeer: 0.1% (+7 dwellings)

Demand forecasts were determined using an assumed future residential consumption rate of 300 kL/a per dwelling. Non-residential demands were assumed to remain constant, while water losses were assumed to be 15%.

Demand forecasts for the small town water supply systems are included below on **Figure 5**.

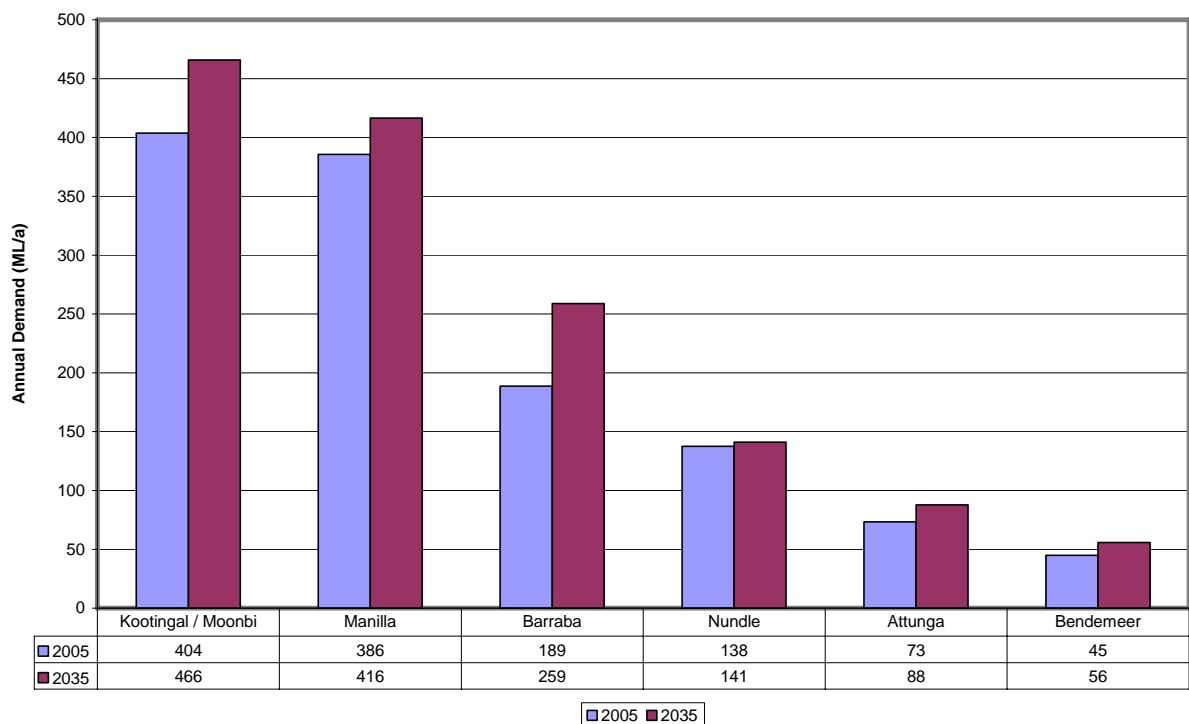


Figure 5 Adopted Demand Forecasts – Small Towns Water Supply Systems

DEMAND MANAGEMENT PROGRAM

The following Demand Management Program (DMP) for the three year period 2007/08 to 2009/10 was initially adopted by Council on 28 February 2007 and amended on 24 April 2007.

Demand Management Measure	Details / Timing	Customers Targeted	Council Costs Over 3yrs (\$)	Potential Water Savings (ML/a)
Community Awareness Program / Pricing	<ul style="list-style-type: none"> • Develop & implement a Community Awareness Program, including: <ol style="list-style-type: none"> 1. Media advertising campaign (with specific attention given to evaporative coolers) 2. Water efficiency resources (eg internet / booklets) 3. Education stands at shopping centres and shows / events 4. School Education Program, including resource kits 5. Revised customer water accounts to include comparisons to benchmark usage & water efficiency tips. • Create and fill a new position responsible for water education • Develop a 3 year Best Practice Pricing path, with strong water conservation signals 	All	<p>\$150k (50% cost of new position)</p> <p>\$120k (advertising & resources)</p>	500 (5% reduction by 2010)
Residential Rebates	<ul style="list-style-type: none"> • Up to 50% rebate offered on: <ol style="list-style-type: none"> 1. 3 Stars / AAA Showerheads (up to \$20) 2. 3 Stars / AAA Dual Flush Toilets – cistern & pan (up to \$150) 3. 4 Stars / AAAAA Washing Machines (up to \$100) 4. Swimming Pool Covers (up to \$100) 5. Greywater Reuse Systems (up to \$150 for diversion system and up to \$500 for treatment system) 6. Rainwater Tanks (or combination of interconnected tanks) connected to garden and toilet and/ or laundry: <ul style="list-style-type: none"> ➤ Up to \$250 for tanks of 2kL to less than 5kL ➤ Up to \$500 for tanks of 5kL or more 	Existing Residential	<p>900 x \$20</p> <p>300 x \$150</p> <p>300 x \$100</p> <p>150 x \$100</p> <p>120 x \$150</p> <p>60 x \$500</p> <p>30 x \$250</p> <p>120 x \$500</p> <p>\$225k</p>	55

Demand Management Measure	Details / Timing	Customers Targeted	Council Costs Over 3yrs (\$)	Potential Water Savings (ML/a)
Residential Audits & Retrofits	<ul style="list-style-type: none"> Indoor Audit & Retrofit (\$60 based on 50% cost share) Outdoor Audit & Retrofit (\$50 based on 50% cost share) 	Existing Residential	900 x \$60 360 x \$50 \$75k	25
Non-Residential Large User Audits	<ul style="list-style-type: none"> Council Water Savings Action Plan Large User Water Savings Action Plans (60 largest water users), up to 50% subsidy or maximum of \$3,000 per site. 	Non-residential large water users	\$35k <i>(15% cost of new position responsible for water education)</i> \$120k <i>(\$40k pa subsidies)</i>	200 <i>(10% reduction in usage of targeted customers)</i>
Permanent Water Conservation Measures	<ul style="list-style-type: none"> From July 2007: <ol style="list-style-type: none"> Sprinklers / fixed hoses are not to be used for watering of gardens & lawns between 9am to 4pm. No hosing down of hard surfaces. When washing vehicles with a hose, a trigger nozzle must be fitted. 	All	\$15k <i>(advertising / publicity)</i>	250 <i>(5% reduction in residential usage)</i>
Regulation & Planning Controls	<ul style="list-style-type: none"> BASIX WELS Rating Scheme Smart Approved WaterMark Program 	New Residential + New Fittings / Appliances	<i>(Costs included in Community Awareness Program)</i>	100 <i>(estimated impact of BASIX over 3 years – around 700 houses)</i>
Water Loss Management	<ul style="list-style-type: none"> Metering of all properties / connections Periodic inspection of key assets for leaks Annual water loss assessment Investigate options for active leak detection, including a trial program by end of 2009 	All water supply systems	\$95k <i>(\$15k pa plus \$50k for leak detection trial)</i>	185 <i>(assumed 2% of metered usage)</i>

Demand Management Measure	Details / Timing	Customers Targeted	Council Costs Over 3yrs (\$)	Potential Water Savings (ML/a)
Water Recycling	<ul style="list-style-type: none"> • Lot scale water recycling opportunities such as rainwater tanks and greywater reuse are covered by BASIX for new developments and the residential rebate scheme. • Water recycling opportunities will be considered in detail in Council's Integrated Water Cycle Management (IWCM) strategy study, to be undertaken in 2007 and 2008. [Potential sources of recycled water include effluent reuse, sewer mining, water treatment plant backwash recycling and stormwater harvesting. Recycled water could potentially be used for applications such as irrigation of public parks and gardens, various industry uses, civil construction & maintenance, dust suppression and dual water supply to new residential developments.] 			
TOTALS			\$835k	1,315

* Assuming total savings of 2630 ML can be achieved over 3 years (1/3 of 1315ML in 1st year, 2/3 of 1315ML in 2nd year and full the annual 1315ML saving in 3rd year of program) - the base benefit is \$2.1M based on 80c/kL water supply costs. Allowing for additional community costs of around \$420k, b/c ratio is around 1.7. Benefits associated with deferred capital works, reduced energy costs and reduced costs for wastewater treatment have not been included.

Community Awareness Program / Pricing

A comprehensive Community Awareness Program should be developed and implemented by late 2007, prior to summer. The awareness program will need to be multi-faceted and include media advertising / promotion, marketing / publicity, publications, internet resources and community and school education. The awareness program will also need to compliment and work in with initiatives run by other government organisations such as the Namoi Catchment Management Authority and the Namoi Local Government Group.

Five specific initiatives to be set-up are:

1. A media advertising campaign that focuses on water efficiency around the home, including both indoor and outdoor usage. Specific attention will need to be given to awareness and education on the water consumption associated with evaporative cooling systems.
2. Setting up avenues for the community to access resources on water efficiency, including brochures / publications (eg *Making Every Drop Count* booklet by *WaterWise*) and internet sites (eg *WaterWise* website & *savewater!* website).
3. Setting up education stands periodically in shopping centres and at major local shows and events, including during National Water Week.
4. A School Education Program, including a water efficiency resource kit to encourage schools to integrate water conservation into their curriculum and reduce water consumption throughout the school.
5. Revised customer water accounts to include water efficiency tips and to provide information on customer's water usage relative to water efficient benchmarks, based on household / business size.

In order to set up and implement most of the above initiatives, as well as some of the other demand management measures outlined below, Council will need to create a new position. The employee who fills this position will primarily be responsible for water education and administration of the Demand Management Program. It may also be possible for Council to utilise resources including the local TAFE College and other vocational training organisations to assist in the development and implementation of marketing and educational programs.

A strong water conservation signal should also be maintained through the use of Best Practice Pricing. Water use charges will need to continue increasing, with significant increases needed in the 2nd and 3rd tier rates and possible reductions in the 2nd and 3rd tier thresholds. During early 2007, Council should review and establish a preferred water pricing path for the three years beginning 2007/08.

Residential Rebates

A residential rebate scheme for the purchase of a variety of water efficient products should be adopted as a financial incentive for residential customers to become more water efficient. The rebate scheme (along with the residential audit & retrofit scheme) would complement the federal government's Water Efficiency Labelling Scheme (WELS) and the NSW government's BASIX planning controls, by targeting older residential properties with inefficient fixtures. Rebates of 50% of purchase cost of the product, up to a certain limit, would generally be offered. As the rebates will be funded from TRC's water budget, only customers connected to the reticulated water supply systems will be eligible.

It is anticipated that the number of rebates offered will be increased over time. The following five 50% rebates are proposed for the next 3 years:

- 3 Stars / AAA Showerhead Rebate (up to \$20): The estimated water savings for each showerhead is around 15kL/a, with additional energy saving benefits from reduced hot water usage.
- 3 Stars / AAA Dual Flush Toilet Rebate (up to \$150): The estimated water savings for a water efficient dual flush toilet is around 45kL/a.
- 4 Stars / AAAAA Washing Machine Rebate (up to \$100): The estimated water savings for a water efficient washing machine is around 20 kL/a.
- Swimming Pool Covers (up to \$100): Pool covers must be endorsed under the Smart Approved Watermark Scheme. The estimated water savings for a pool cover is around 45 kL/a.
- Greywater Reuse Systems (up to \$500 for a treatment system and up to \$150 for a diversion system): Greywater reuse systems (diversion or treatment types) must be installed by a licensed plumber and accredited by NSW Health. In addition, greywater treatment systems must also be approved by Council. The estimated water savings are around 30 kL/a for a diversion system and around 60kL/a for a treatment system.
- Rainwater Tank Rebate (up to \$250 for a tank between 2kL and less than 5kL and up to \$500 for a tank of 5kL or more): Rainwater tanks must be connected to both an external garden watering tap and at least one internal application, such as a toilet or washing machine and can be a combination of interconnected tanks. The estimated savings are around 55kL/a for a 5kL rainwater tank.

Rebates would generally be limited to one rebate of each type per property and would be available to both existing and new dwellings, as long as the water efficient product was not required to be installed as part of the conditions of development (including BASIX requirements).

The rebate scheme would be integrated into the Community Awareness Program.

Residential Audits & Retrofits

A residential audit & retrofit scheme should be adopted to further encourage existing residential customers to improve their water efficiency, with separate programs for indoors and outdoors. Audits and retrofits are undertaken by trained technicians, which ensures that the water efficient products are actually installed and fitted properly. The scheme would be subject to a nominal 50/50 cost sharing arrangement, with Council funding 50% of the cost of the audit and retrofit and the customer funding the remaining 50%. As for rebates, residential audit and retrofit subsidies will be only be offered to customers connected to the reticulated water supply system.

Indoor audits cost around \$120 and are undertaken by approved plumbers, who assess the efficiency of various existing appliances and fixtures around the home. A targeted indoor retrofit is then undertaken by the licensed plumber, including the installation (if required) of a 3 Stars / AAA showerhead, tap-flow regulators, toilet cistern flush arrestors and the repair of minor leaks (washer replacement). The plumber can also provide advice on how to best deal with local water pressure and quality issues, such as water hardness. The estimated water savings for an indoor audit is around 20 kL/a, with additional energy savings due to reduced hot water usage.

Outdoor audits cost around \$100 and would be undertaken by a suitably qualified council staff member and/or a horticulturist. An assessment would be made on the water efficiency of the customer's existing garden and irrigation practices. The assessor would then discuss with the customer options for saving water in their garden and provide them with a Garden Water Savings Kit, which could include items such as education material, trigger hose nozzle, manual tap timer, water spikes and water saving crystals. The estimated water savings from an outdoor audit is around 15 kL/a.

Non-Residential Large User Audits

A non-residential audit program should be initiated, focusing on the regions top 60 largest water users over a 3 year period, as well as Council's own water usage. The audit program would be based on the guidelines for *Water Savings Action Plans*, prepared by DEUS. The purpose of Water Savings Action Plans is to identify and help deliver cost effective water savings in a practical, effective and flexible way. The initial audit and subsequent preparation of the Water Savings Actions Plan would be undertaken by the non-residential customer in association with the nominated Council employee responsible for water education.

The scheme would be subject to a nominal 50/50 cost sharing arrangement, with Council funding up to 50% of the cost of the audit, up to a maximum of \$3,000 per site, and the customer funding the remainder.

As one of the regions largest users, it is suggested that Council should prepare the first Water Savings Action Plan based on its own operations, in order to set an example to the other large users and the community in general. It is important that Council sets the example for water efficiency for the whole community, particularly in high visibility areas such as watering of parks and gardens.

Conditions & Commencement Date of Rebates on Retrofits & Audits

The commencement date for Council rebates on retrofits and audits that comply with Council's Demand Management Plan will be from and including the 28 February 2007.

Councils current Demand Management Program will run over three years up to 30 June 2010. The total program budget is \$835,000, or \$278,000 per year. Rebates will be limited on an annual basis to the available funds allocated by Council, with rebates paid from the available funds in the order of applications received.

Permanent Water Conservation Measures

Permanent Water Conservation Measures should be enforced from July 2007 to ensure that common sense water use practices are always adopted and to reinforce the other demand management measures by developing a culture of water efficiency. The rules to be adopted are easy to understand and follow and are designed not to cause undue hardship on the community.

The three basic rules are:

Watering of Gardens & Lawns	Sprinklers and fixed hoses cannot be used between 9am to 5pm on any day during Eastern Standard Time, and not used between 8am to 6pm Eastern Standard Daylight Saving Time. In addition, watering of gardens and lawns by any other means during the heat of the day is discouraged.
Washing Down of Hard Surfaces	No hosing of hard surfaces, including driveways, paths, concrete, timber decking and external walls of houses / buildings. Hard surfaces may only be washed down for health & safety reasons using a water efficient nozzle (less than 9L/min) or a high pressure cleaner unit.
Vehicle Washing	When washing a vehicle with a hose, a trigger nozzle must be fitted. Where possible, vehicles should be washed on a lawn or other porous surface.

Regulation & Planning Controls

Council should actively support and implement various state and national based regulation and planning controls that promote water efficient products, practices and developments. Key regulation and planning controls that should be supported and promoted by the Community Awareness Program include:

- **BASIX:** The NSW Government has introduced residential building planning controls that require all new homes to be water and energy efficient. New homes are generally required to install water efficient fittings, have indigenous garden species and install a rainwater tank.
- **WELS Rating Scheme:** The State and Federal Government have introduced a Water Efficient Labelling & Standards (WELS) rating scheme which applies national mandatory water efficiency labelling (up to 6 Stars) and minimum performance standards to household water-using products.
- **Smart Approved WaterMark Program:** WSAA has developed this nationally endorsed, non-compulsory water efficiency labelling scheme for products and services which help reduce outdoor water use.

Water Loss Management

A Water Loss Management Program should be developed in 2007 and implemented during 2007/08. The initial 3 year program would focus on the following areas:

- Metering of all properties and connections, including all public facilities, parks and gardens, standpipes and Council's water and sewer facilities (eg pumping stations). Most properties / connections requiring metering are located in the small town water supply systems.
- Periodic inspections of key assets for the detection and repair of system leaks, including water reservoirs, water pumping stations, major water system control valves and Council swimming pools.
- Preparation of an annual Water Loss Management progress report which includes an assessment of annual water loss for each water supply system based on the preceding 12 months of metering data.
- Investigate options for undertaking active leak detection using acoustic scanning, including the option of purchasing equipment and training Council staff, versus engaging contractors to undertake the work. A trial program should be undertaken by the end of 2009, to allow assessment of a trial prior to inclusion in the following 3 year management program.

A more active Water Loss Management Program, including active leak detection, service main replacements, meter replacements and pressure management should be considered in the future, once the basics of water loss management have been set in place across all water supply systems.

Water Recycling

Water recycling opportunities will be considered in detail in Council's Integrated Water Cycle Management (IWCM) strategy study, to be undertaken in 2007 and 2008. The study will consider various recycling opportunities, including effluent reuse, sewer mining, water treatment plant backwash recycling and stormwater harvesting. The study will assess the various opportunities for water recycling, considering the various potential recycled water sources along with the potential opportunities for town water supply substitution with recycled water, including (but not limited to) using recycled water for:

- Irrigation of public parks and gardens
- Industry
- Civil construction & maintenance
- Dust suppression
- Dual water supply to new residential developments

In addition to this study, effluent reuse opportunities will also be considered in association with investigations into ongoing effluent disposal and quality issues associated with the small town wastewater treatment plants.

Lot scale water recycling opportunities such as rainwater tanks and greywater reuse are covered by BASIX for new developments and the residential rebate scheme.

SUPPORTING INITIATIVES

In addition to the proposed demand management measures contained in the DMP, it is recommended that Council adopt a number of supporting initiatives to complement and reinforce the program.

The recommended supporting initiatives are:

1. Council should consider adopting a water efficiency target in association with the DMP. The water efficiency target should encompass both a total consumption per capita (or connection) target and a residential consumption per capita (or connection) target. With the three year program expecting to achieve around a 10% reduction in consumption, a water efficiency target of 10% by 2010 should be considered.
2. Council should immediately commence preparation of implementation plans for the key DMP measures, including consideration of supporting resources and systems (eg forms, assessment processes, financial systems)
3. In order to better assess the effectiveness of various measures in the DMP and to tailor future programs to local conditions, an end-use metering program should be undertaken over the next three years. The program should focus on three key local data gaps, including residential outdoor water usage, evaporative cooling systems water usage and rainwater tank yields.
4. In association with the Council's IWCM strategy study, a more detailed analysis of demands should be undertaken, in order to better understand the nature of both residential and non-residential water consumption in the Tamworth region.
5. Annual reviews and progress reports on the DMP should also be undertaken in association with annual Water Loss Management progress reports to assess the ongoing effectiveness of the program and the associated costs. Where necessary, adjustments and/or enhancements should be made to the program based on the annual progress reports.
6. Council also needs to develop and implement an Asset Management Program which includes an ongoing asset replacement program. An effective Asset Management Program is an important component of water loss management.