

TITLE: [CNR-CM] Tweed District Water Supply - Demand Management Strategy

ORIGIN:

Water

SUMMARY OF REPORT:

Council resolved at its meeting of 17 February 2009 to adopt a status report updating the Integrated Water Cycle Management (IWCM) Strategy, (originally adopted on 19 December 2006), which incorporated 18 revised Strategy Actions. Action 1 was to develop a Demand Management Program and as a result of that resolution a Demand Management Strategy (DMS) has been prepared in two stages.

The first stage of the DMS, focussing on residential water use, was adopted by Council in its meeting of 17 February 2009. It had been placed on public exhibition for a period of eight (8) weeks closing 1 August 2008 with only one late submission received. The report included demand-managed-water-use-projections for the entire shire to enable the continuation of ongoing planning, with a proviso that these estimates would be reviewed once the Stage 2 report was completed.

Stage 2 of the DMS, focussing on non-residential water use, plus a combined summary report to coordinate the recommendations from the two stages were completed in December 2009. The Stage 1 report was also updated as required to improve consistency between the three documents. This report relates to these three documents:

- Demand Management Strategy (Summary Combined Report)
- Demand Management Strategy - Stage 1 (Residential water) ADOPTED 17 February 2009
- Demand Management Strategy - Stage 2 (Non-Residential water)

The three documents were placed on public exhibition for a period of six weeks following Council's resolution from its meeting of 19 January 2010. Council subsequently extended this to a total of 12 weeks in its meeting of 16 March 2010.

This report addresses issues raised in public submissions and proposes recommendations for adoption. Recommendations from the DMS - Stage 1 adopted by Council on 17 February 2009 have not been changed since issues raised in this round of submissions were found to have already been dealt with in that report.

Prior to implementation of the Demand Management Strategy, the exact resourcing requirements will require review in light of Council's staffing and financial capabilities. Resourcing requirements would most likely be able to be met through a combination of Council employees and external service providers, together with a relaxation of the proposed implementation schedule. Note that Council has recently advertised for a fulltime Demand Management Program Leader to implement the demand management strategy.

RECOMMENDATION:**That Council:**

1. **Adopts the recommended non-residential Water Demand Management program:**
 - a. **Develops an auditing program targeting the major users (>20 ML/year).**
 - b. **Continues the auditing program targeting the balance of the caravan parks, shopping centres, clubs and aged care facilities within the top 100 water users.**
 - c. **The auditing of major water using parks and gardens, training for Council's Recreation Services staff, and development of Open Space Irrigation Guidelines.**
 - d. **Consider the introduction of regulations to control non-residential internal fitting and fixtures including taps, showers, toilets and possibly urinals.**
 - e. **A non-residential education program be developed by Council as part of the overall education program.**
 - f. **Liaise with key state government departments regarding the implementation of water efficiency programs for state government buildings, such as hospitals and schools. Liaise with industry and commercial representatives to form relationships and disseminate key information regarding conservation programs to target sectors.**
2. **Continues to encourage effluent reuse schemes and other integrated water solutions that are sustainable in the long term proposed by developers of greenfield sites.**
3. **Implements a performance tracking plan to enable the monitoring of targets to ensure overall demand is achieving long-term reduction goals envisioned by the program.**
4. **Adopts Key Performance Targets for average residential demand of 200Litres/capita/day and average total demand of 300Litres/capita/day by 2013 (15% reduction on 2006 figures).**

REPORT:

Council engaged the services of Montgomery Watson Harza (MWH) consultants to assist in the preparation of the Demand Management Strategy. The strategy, made up of three documents, are provided under a separate cover.

Contents

An overview of the Demand Management Strategy Reports is as follows:

Summary Combined Report

1. Introduction
2. Water Demand Analysis and Baseline Forecast – Provides data on population, water demand, and projected baseline demand forecast
3. Assessment of Options – Outlines the demand management scenarios investigated and assessed in the Stage 1 and Stage 2 reports.
4. Revised Demand Forecast – Outlines and compares the revised water demand forecasts for the implementation of given demand management scenarios
5. Implementation of Demand Management Strategy – Proposes implementation steps, staffing requirements, and outlines a schedule for implementation
6. Funding Opportunities – Outlines opportunities for federal or state government funding of demand management actions
7. Recommendations

Stage 1: Residential Water Use (adopted 17 February 2009)

1. Introduction
2. Methodology – Outlines the integrated approach undertaken and modeling employed
3. Tweed Shire Overview and Issues - Provides detailed data on past, present and projected population, water demand, wastewater, and the water cycle
4. Water Demand Analysis and Baseline Forecast – Outlines historic and projected water demand including assumptions
5. Assessment of Greenfield Scenarios – Outlines alternative scenarios to manage the water demand in new Greenfield residential areas
6. Options Assessment for Whole of Shire – Outlines alternative scenarios to manage the water demand in the remaining areas of the Shire (includes Existing / Brownfield Areas)
7. Preferred Option Assessment – Outlines the results of a triple bottom line assessment of the scenarios identified in Chapters 5 and 6
8. Conclusions and Recommendations

Stage 2: Non-Residential Water Use

1. Introduction
2. Water Demand Analysis and Baseline Forecast – Outlines historic and projected water demand
3. Demand Management Measures Screening – Outlines twenty-one (21) alternative measures to manage the water demand of non-residential uses
4. Evaluation of Measures – Outlines the results of a triple bottom line assessment of the measures identified in Chapter 3
5. Conclusions and Recommendations

Community Consultation

Council has informed the community about the recommendations of the Demand Management Strategy and feedback has been sought through the following avenues:

- Daily News advertisement on 28 January 2010, Tweed Link advertisements and articles on 26 January, 9 February and 16 February 2010, and media releases 12 January, 2 February 2010 inviting comments from and inviting the community to attend information days at Tweed Heads, Murwillumbah and Pottsville.
- Three Community Information Sessions were held from 2pm to 7pm at:
 - Tweed Heads, Wednesday 10 February 2010
 - Murwillumbah, Thursday 18 February 2010
 - Pottsville, Tuesday 23 February 2010
- Free call 1800 telephone line enabling the public to have their questions answered and to take the effort out of writing a submission by making a 30 second verbal submission. Over 60 calls were received.
- Designated email address WaterTSC@tweed.nsw.gov.au to enable the community to contact Council's Water Unit directly.
- An Interested Parties Register to keep people and organisations informed of developments either by email or regular post. Over 100 people are registered and 13 circulars have been distributed.
- Council has made presentations to community groups including the Murwillumbah Rotary, the River Catchment Catch-up, the Aboriginal Advisory Committee, an open meeting of the Aboriginal Community, the Tweed River Committee, and Government Agencies.
- Multiple factsheets and reports to inform the community
- All factsheets and reports available online or at Council offices and libraries
- The date for submissions was extended following a request by the CWG to allow additional time for the community to make submissions

Council received 76 submissions from the community. Due to the volume of submissions and issues raised, details are listed and responded to in the Community Submissions Report. A summary of the main issues follows below.

Main Issues Raised

A number of issues were raised relating to wider Land-use Planning controls and strategies, and Population limits. These issues are not able to be addressed by the Demand Management Strategy and are not considered further in this report.

Other water demand management related issues that were raised include:

1. *That demand management actions should be selected based on sustainability.*

The Demand Management Strategy assessed each of the options based on triple bottom line sustainable assessment that analysed economic, environmental and social criteria.

2. *No clear direction from community groups or individuals on the most appropriate method of managing water demand. A broad range of conflicting and at times mutually exclusive methods were proposed.*

The Demand Management Strategy assessed the widest possible number of alternatives to determine the most sustainable demand management options for greenfield and existing areas within the Shire. Selection was based on a triple bottom line assessment of the environmental, social and economic sustainability of the options.

Options assessed	Greenfield areas	Existing areas
BASIX and WELS (legislated)	√	√
RW (rainwater) tanks (1kL-100kL)	√	√
Dual pipe recycling	√	X
RW + Dual pipe recycling	√	X
RW + Indirect potable recycling	√	√
Grey/Blackwater recycling	√	X
Urban stormwater harvesting	√	X
Education and training	√	√
Water tariff review	√	√
Rebates and Retrofits	√	√
Audits (water efficiency)	√	√

Table 1: Alternative demand management options assessed

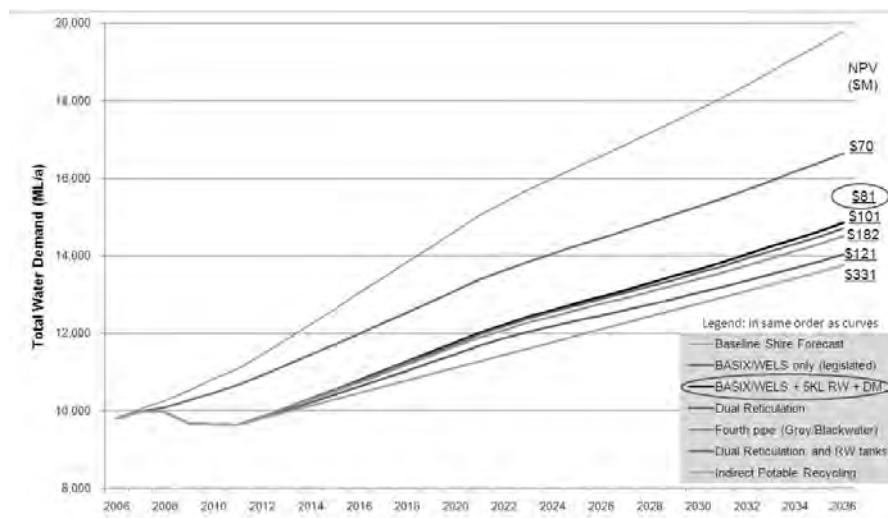


Fig. 1: Comparison of demand management water savings (recommended option circled)

3. *Queries over the accuracy of the assumed population projections and their affect on the success of demand management actions.*

Council has prudently assumed higher rather than lower population growth rates for water supply planning purposes. The preferred demand management scenario avoids the high upfront infrastructure costs and will be implemented as population growth progresses. It is flexible enough to deliver the required water savings should actual population grow at a slower rate.

Recommendations from the DMS - Stage 1 adopted by Council on 17 February 2009 have not been changed since the above issues, raised in submissions, have been dealt with in the original report.

Strategy Recommendations

The combined Demand Management Strategy makes the following recommendations based on the assessment of options in the Stage 1 and 2 reports, noting recommendations 1 to 6, 8 and 9 below were previously adopted as part of stage 1:

1. The Strategy recommends that Scenario 4 be adopted for the whole of Tweed Shire, in particular the existing and infill development areas (Brownfield Areas) with a key focus on developing an extensive active leakage control and pressure management program.

Scenario 4 being:

- A voluntary rainwater tank connected to external uses, toilet flushing and cold water to washing machines:
 - Single Dwellings minimum 5000L rainwater tank with a minimum 160 m² roof area connected to it.
 - Multi Dwellings & other buildings Rainwater tanks to be provided on a similar basis connecting 80% to 90% of the roof area.
- Implement an extensive active leakage control and pressure management program.
- Implementation of selected demand management measures, including education programs, residential audit programs, a retrofit service and rebate scheme (Shower Heads only) as shown in the Table 2 below.

Table 2

Measure Description	Annual Potable Water Savings (ML/a)			Annualised Cost (\$/kL)
	2016	2036	Avg.	
BASIX Fixtures and WELS	219	532	290	\$0.02
BASIX - Internal/External Rainwater Tank (5 kL)	827	2,611	1,277	\$4.42
Inclining Block Tariff	33	60	36	\$0.04
Residential Education Program	76	73	70	\$0.88
Landscape Use Efficiency Awards	62	71	57	\$1.17
Residential Rebate Program - Showerheads	29	10	20	\$0.51
Pressure and Leakage Management Program	532	813	556	\$0.94
Residential Retrofit	77	65	68	\$1.34
Residential Audit Program	54	64	50	\$1.56
Total	1,900	3,993	2,328	

It should be noted Council:

- Introduced an inclining block water supply Tariff for residential use in 2008/09. Additionally the 2009/1010 Revenue Policy and Statement included in Table 3 below proposing the volumetric pricing path to 2014/15.

Table 3

Volumetric Charge (\$502)	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15
Volumetric Charge	\$1.36	\$1.50	\$1.65	\$1.80	\$1.95	\$2.10	\$2.25
Excess Volumetric Charge	\$2.04	\$2.25	\$2.48	\$2.70	\$2.93	\$3.15	\$3.38

- Has been active in shower head replacement programs
- Has a long running education support program relating to water conservation particularly targeted at schools.

Additionally, approximately 120 residents of existing dwellings have installed rain water tanks to date and are likely to have taken up the available state and federal government rebates (available from 1 July 2007 until 30 June 2011).

2. Greenfield Development Scenario 1 be adopted for the Cobaki Lakes, Bilambil Heights, Terranora and Kings Forest developments.

Scenario 1 being:

- A voluntary rainwater tank connected to external uses, toilet flushing and cold water to washing machines:
 - Single Dwellings minimum 5000L rainwater tank with a minimum 160 m2 roof area connected to it.
 - Multi Dwellings & other buildings Rainwater tanks to be provided on a similar basis connecting 80% to 90% of the roof
- New dwellings on a voluntary basis will have minimum of dual flush toilets as well as 3 star showerheads and taps. Noting that BASIX is most likely to achieve this.
- The introduction of Reduced Infiltration Gravity Sewers (RIGS) in new development.

Council has provided comments to the Department of Planning for the three current large Part 3A projects being Kings Forest, Cobaki Lakes and Rise. At each phase, comments have and will continue to be provided by Council to try and incorporate the requirements of Council's adopted Greenfield component of the residential Demand Management Strategy (Stage1).

Additionally, since the introduction of BASIX in July 2005 almost all new single residential dwellings built in the shire, approximately 900 and approximately 60 Dual occupancies have installed a rain water tank of some description, even though it is not mandatory, noting however to obtain a BASIX Certificate a Rain Water Tank is considered the most straight forward method to score the required points.

A summary of the urban installations including new and existing dwellings to date is provided in table 4 below.

Table 4: Rain Water Tanks Installed from 1/1/2005

Tank Size L	Number	
3000	352	
4000	104	
5000	308	
Other	310	(various from 1000L to 45000L)
Total	1083	

The resulting median value is a 4,000L tank with 100m² of roof area connected which results in a yield of 220 L/day compared to the recommended 260 L/day for the 5,000L tank with 160m² of roof area connected.

3. For West Kingscliff, recycled water be made available to future industrial land use areas where demand is identified.
4. Rainwater tank education programs be developed, focused on the correct use and maintenance including a regular program of inspections.

Council's Rain Water Tank Policy is comprehensive and along with the application process alerts owners to their responsibilities.

5. An on-going communication and education program be developed as part of the preferred program to ensure that savings are maintained in future.
6. The inclining block tariff structure be maintained and enhanced to provide a price signal for high users.
7. The recommended non-residential demand management program be adopted:
 - a. TSC develops an auditing program targeting the major users (>20 ML/year).
 - b. Following the marketing and successful implementation of the major users audit program it is recommended that the balance of the caravan parks, shopping centres, clubs and aged care facilities within the top 100 be targeted. Auditing programs should include the requirement to conduct a leakage assessment using data-loggers.
 - c. The auditing of major water using parks and gardens should be undertaken and reinforced by training for TSC parks and gardens staff. Ideally, this should be complemented by the development of Open Space Irrigation Guidelines which would govern how parks and gardens and sports grounds within TSC are irrigated and managed in the future.
 - d. TSC considers the introduction of regulations to control non-residential internal fitting and fixtures including taps, showers, toilets and possibly urinals. This should be complemented by the requirement for any new major user (e.g. 5 ML/year) to complete a water management plan at the DA stage. The Plan may include the provision that customers must use of an alternative water source e.g. rainwater, stormwater, recycled water etc, for non-potable water uses on-site.
 - e. A non-residential education program be developed targeting the key sub-sectors identified. This could involve the preparation of fact sheets targeting water use efficiency within each of the targeted sectors e.g. caravan parks, clubs. There is

significant amount of resources available on the internet relating to these sectors, including guidelines and check lists, which can be adapted and used by TSC as part of the education program.

- f. As part of the overall communications strategy, council liaise with key state government departments regarding the implementation of water efficiency programs (i.e. audits, retrofits) for state government buildings, such as hospitals and schools. It is also recommended that TSC organise workshops with Chamber of Commerce as well as other industry and commercial representatives to form relationships and disseminate key information regarding conservation programs to target sectors.
8. A review be undertaken of the potable water design standards based on the demand assessment undertaken in this report. A regular assessment should then be undertaken to review the adopted design standards.
9. Council continues to encourage effluent reuse schemes and other integrated water solutions that are sustainable in the long term proposed by developers of greenfield sites.
10. The recommended performance tracking plan be adopted which will enable TSC to adjust the program to ensure that the overall demand is achieving the ultimate long-term reduction goals envisioned by the program.
11. Adoption of Key Performance Indicators where Council undertakes to reduce average residential demand to 200L/capita/d and average total demand to 300L/capita/d by 2013 (15% reduction on 2006 figures).

LEGAL/RESOURCE/FINANCIAL IMPLICATIONS:

If adopted, the Demand Management Strategy will require a significant long-term commitment by Council to reduce water consumption in the Shire and will require significant resourcing to ensure it is implemented in a planned and effective manner. Due to the significant requirements of the strategy, implementation should be staged as resources become available and the expansion of the program should be paced with the growing capabilities of staff, the success of initial implementation, the increasing understanding of the public and increases in the availability of funding.

The table below presents an indicative breakdown of annual budget requirements for strategy implementation to 2019. First year costs include considerations of funding required for program setup and implementation, with following years taking into account continued operating and administration costs.

Costs for pressure and leakage management are high due to the costs associated with establishing pressure and district management (metering) areas. Cost for this measure has been distributed over four years.

There is a significant decrease in costs after 2013 when the pressure and leakage management program has been established and the residential retrofit program ceases.

MEASURE	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Waterwise Residential Education	\$61,002	\$61,002	\$54,934	\$55,193	\$54,984	\$64,353	\$64,480	\$64,608	\$66,549	\$66,124
Waterwise Non-Residential Education	\$25,000	\$4,328	\$4,445	\$4,561	\$4,727	\$4,892	\$5,057	\$5,221	\$5,385	\$5,549
Pressure and Leakage Management	\$688,212	\$688,212	\$688,212	\$688,212	\$302,920	\$309,691	\$316,359	\$326,194	\$336,002	\$345,781
Residential Showerhead Rebates	\$32,943	\$18,791	\$18,791	\$18,791						
Residential Retrofits	\$311,454	\$301,451	\$301,448	\$301,445						
BASIX Rainwater Tank	\$11,918	\$23,849	\$35,891	\$48,057	\$60,123	\$76,651	\$93,239	\$109,889	\$127,504	\$144,891
Landscape Use Efficiency Awards	\$100,892	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000
Non-Residential Major Users Audits		\$50,000	\$42,873	\$22,476	\$22,470	\$7,843	\$7,837	\$7,830	\$7,809	\$7,807
TSC Open Space Audits		\$15,000	\$25,400	\$25,400	\$4,531	\$2,181	\$2,175	\$2,169	\$2,152	\$2,150
Aged Care Audits			\$15,000	\$11,700	\$12,918	\$2,101	\$2,376	\$2,373	\$2,371	\$2,364
Non-Residential Commercial Business Audits			\$55,000	\$35,600	\$14,836	\$14,198	\$14,219	\$9,771	\$6,642	\$6,691
Train Landscape Managers			\$5,000	\$10	\$10	\$10	\$10	\$15	\$15	\$15
Non-Residential Fixture Regulation			\$45,000	\$4,829	\$4,840	\$4,808	\$5,819	\$5,811	\$5,803	\$5,780
Inclining Block Tariff			\$20,000							
Total Estimated Budget Requirement	\$1,130,529	\$1,263,525	\$1,316,994	\$1,221,272	\$487,359	\$491,728	\$516,571	\$538,881	\$565,233	\$592,152

Prior to implementation of the Demand Management Strategy, the exact resourcing requirements will require review in light of Council's staffing and financial capabilities. Resourcing requirements would most likely be able to be met through a combination of Council employees and external service providers, together with a relaxation of the proposed implementation schedule. Note that Council has recently advertised for a fulltime Demand Management Program Leader to implement the demand management strategy.

POLICY IMPLICATIONS:

The residential sector recommendations proposed are in addition to requirements of the NSW Governments Building and Sustainability Index (BASIX). However Council cannot impose mandatory requirements in excess of BASIX aimed at reducing consumption of mains supplied water. Therefore the recommendations relating to development requirements can only be entered into on a voluntary basis between Council and each individual developer.

Various Policies, codes, standards will need to be amended to implement this strategy.

UNDER SEPARATE COVER/FURTHER INFORMATION:

To view any "**non confidential**" attachments listed below, access the meetings link on Council's website www.tweed.nsw.gov.au (from 8.00pm Wednesday the week before the meeting) or visit Council's offices at Tweed Heads or Murwillumbah (from 8.00am Thursday the week before the meeting) or Council's libraries (from 10.00am Thursday the week of the meeting).

1. Tweed Shire Council Draft Demand Management Strategy December 2009 (ECM 10774199)
2. Tweed Shire Council Draft Demand Management Strategy December 2009 - Stage 1 (ECM 10774198)
3. Tweed Shire Council Draft Demand Management Strategy December 2009 - Stage 2 Non-residential Program Evaluation (ECM 10774197)
4. Submissions Report - Demand Management Strategy - August 2010 (ECM 22399706)
5. Technical Paper – Large Stand Alone Rainwater Tanks - Feb 2010 (ECM 12846543)
6. Technical Paper – Stormwater Harvesting - Mar 2010 (ECM 22491313)

7. Council Workshop Presentation - Water Demand Management Strategy - Review and Recommendations - 28 Sep 2010 (ECM 22056503)
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