

**TITLE: [CNR-OC] Integrated Water Cycle Management (IWCM) Strategy - Status Report**

**ORIGIN:**

**Water**

**SUMMARY OF REPORT:**

This report provides a summary of the progress on the implementation of the IWCM Strategy and its original 26 actions.

The report also identifies new activities to be undertaken and provides an updated Integrated Water Cycle Management Action Plan with 25 actions recommended for adoption by Council.

**RECOMMENDATION:**

**That:-**

- 1. Council notes the progress in the implementation of the IWCM Strategy.**
- 2. Council adopts the revised 18 Strategy Actions for the implementation of the IWCM.**
- 3. Council Officers bring forward a further report detailing the progress of the implementation of the Strategy Actions in 12 months.**

**REPORT:****IWCM Context Study and Strategy Report*****Background***

Integrated Water Cycle Management (IWCM) is the integrated management of the water supply, sewerage and stormwater services within a whole of catchment strategic framework and provides a long term focus on their integrated delivery.

Council engaged consultants Hunter Water Australia to prepare a Context Study & Strategy Report in order to define the catchment, water resource and urban issues faced by Council and to outline a broad strategy for the future. The study was placed on public exhibition and subsequent to that public exhibition on 19 December 2006 Council resolved to adopt the Integrated Water Cycle Management Context Study and Strategy Report incorporating the 26 Strategy Actions.

This report to Council provides summary of the status of the 26 Strategy Actions in the IWCM and identifies 18 updated Strategy Actions recommended to ensure the objectives of the IWCM are met.

***Progress on Implementation*****Urban Town Water Actions*****Action 1 – Demand Management Studies***

Stage 1 of the Demand Management Strategy which addresses demand management in both Greenfield (new) and Brownfield (existing) residential areas has been prepared, placed on public exhibition. A report has been prepared for the Council meeting scheduled for 27 January 2009 recommending its general adoption.

Stage 2 of the Demand Management Strategy which addressed demand management in commercial and industrial areas is to be undertaken within the next six (6) months.

On completion of Stage 2, it will be placed on public exhibition before finally placing before council for adoption.

***Action 2 – Target 12% for Unaccounted for Water***

It has been determined that the present Infrastructure Leakage Index for the Tweed District system is 2.3 which equates to 13% to 15% unaccounted for water. Further, Stage 1 of the Demand Management Strategy has recommended that an active leakage reduction program be implemented.

Council has applied for and received offers of advisory support from the Water Directorate to undertake studies to determine where the losses of unaccounted for water occur.

What is required to progress this Action is

- Update Council models of the network

- Undertake flow gauging to calibrate and understand flows
- Undertake a desk top analysis to determine the program and activities required to reduce the unaccounted for water.

At this stage Council does not have the resources available to develop and implement the program. Further consideration will be given to obtaining suitable external consulting support

### ***Action 3 – Explore Demand Substitution Options***

As part of the Demand Management Strategy options for demand substitution ranging from dual reticulation to potable reuse were identified and assessed.

The Demand Management Strategy - Stage 1 recommends that for major development that requirements above the NSW Government's Building and Sustainable Building Index (BASIX) be pursued through agreement for the provision of 5,000 L Rain Water Tanks with a minimum connected roof area of 160m<sup>2</sup>, dual flush toilets and 3 star shower heads.

Options such as dual reticulation were not considered viable but if proposed by a developer would be considered.

### ***Action 4 – Review of Secure Yields***

The Secure Yield of the Clarrie Hall Dam system has been reassessed. It has been determined that the secure yield is approximately 13,750 ML/annum based on a 95 percentile flow over Bray Park Weir and application of the 5/10/20 Rule.

This means that there will be a requirement to augment the Tweed Shire Council water supply in the foreseeable future.

In conjunction with this work a Drought Management Strategy has been drafted and is presently being reviewed before being placed before Council.

Consultants have been engaged to undertake a Water Supply Augmentation Options study. The study will identify and assess options for a new water supply for Tweed. A broad range of options considered include raising Clarrie Hall Dam, Byrrill Creek Dam, Oxley River Dam, connection to Rous Water and Gold Coast Water, groundwater and desalination. The study should be complete by mid 2009.

### ***Action 5 – Determine Impacts of Water Sharing Plans on Water Supplies***

Discussions have been held with the Department of Water and Energy (DWE) to seek advice on the requirements for environmental flows that may impact on the secure yield of Clarrie Hall Dam. In the discussions DWE advised that they may undertake some estimation of the requirement for environmental flows.

DWE is working with the relevant stakeholders to finalise Macro Water Sharing Plans in which Environmental Flows will be defined. At this stage it looks as though the 95%ile low flow will be adopted as the minimum flow regime for the Mid Tweed Reach. This means that when the flow in the River reaches the 95%ile limit, extraction from the River

will cease. For Council the implication is that this is when we would release from Clarrie Hall Dam to supplement the flow in the River so that pumping could be continued. The Macro Water Sharing Plans have a 10 year life but can be review by the Department within that time. The Department will continue to monitor river health performance against objectives and will vary the Water Sharing Plans and associated extraction licences accordingly.

Council has provided all information requirements to DWE for issue of a new water extraction Licence under the recent Legislation and is now awaiting a formal response.

In addition Council have engaged a consultant to scope the studies required to determine environmental flow requirements. The studies that result from this work will determine environmental flows and from that determination secure yields can be revised if needed.

Discussions with DWE are continuing.

### ***Action 6 – WTP Tyalgum***

It is proposed to build a new water treatment plant at Tyalgum. An options study has been completed and Council has chosen to have constructed a membrane filtration plant.

The next steps to progress this Action are

- Finalise a procurement option
- Seek and gain Section 60 approval from DWE
- Seek and gain Stage 2 approval (approval to call tenders) from DWE

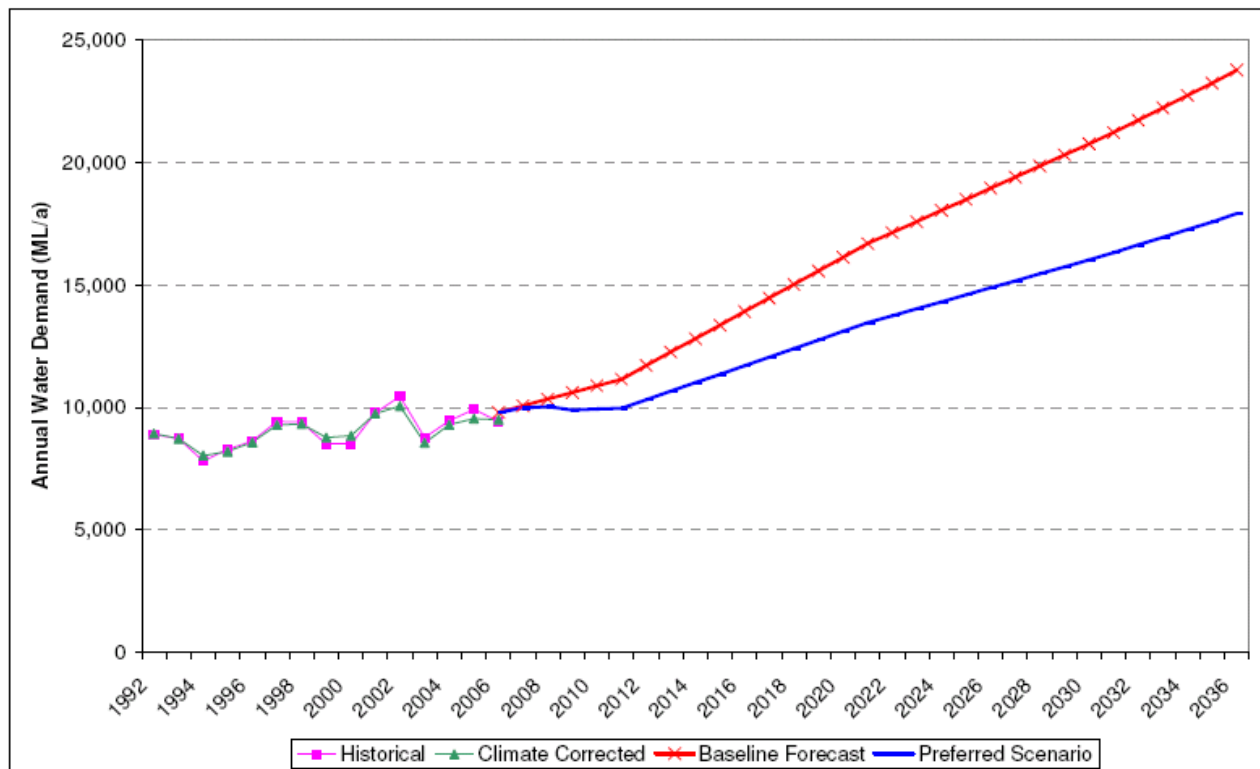
It is anticipated the work will be commenced in 2009.

### ***Action 7 – Undertake Long Term Demand Forecasts***

Long term demand forecasts were completed in Stage 1 of the Demand management Strategy.

The graph below shows the baseline demand comparison with the overall demand forecast for the preferred Greenfield & Brownfield demand management scenarios. By 2036 this represents a water use reduction of 25% or 5870 ML/year.

However the secure yield determined in Action 4 being approximately 13,750 ML/annum is exceeded in 2015 on the baseline forecast and by 2022 if all demand management measures are implemented and successful. This forecast therefore emphasises the urgent need to augment the water supply yield and a consultant engagement is underway preparing a Water Supply Augmentation Options Study which is to be completed mid 2009.



### Long Term Demand Forecast

#### **Action 8** – Undertake Review of Impact of Australian Drinking Water Guidelines

Council has completed a risk identification within the three catchments for its water supplies. The risk identification has not been progressed into a catchment management plan.

Notwithstanding, with the proposed upgrades of Tyalgum WTP and Bray Park WTP the requirements of the Australian Drinking Water Guidelines should be met.

In respect to Uki WTP, all the requirements may not be met and a plant upgrade could be required.

For the reticulation network down stream of Bray Park, a normal linear HACCP analysis is impractical. Council will seek advice on what type of risk analysis would be appropriate and then consider undertaking that analysis. A consultant engagement will be called in February 2009 for this work.

#### **Urban Wastewater Actions**

#### **Action 9** – Undertake Sewerage System Gauging and Monitoring

Council has prepared a Sewer Overflow Abatement Strategy. The Strategy identifies actions to be taken and those actions have been placed in a program. The program has been included in future budgets for implementation with the majority of items being completed by 2013.

#### **Action 10** – Sewerage Optimisation

Council has undertaken flow gauging and monitoring in the catchments of Banora Point and Tweed Heads Central. The data is presently being analysed to determine any program of works required to abate overflows and optimise these two catchments. Further flow gauging is programmed for Bilambil Heights and Sections of Murwillumbah in February to April 2009.

Updating of the Sewer Network Model has been delayed due to in-house resources being diverted to major development approvals.

**Action 11**– *Effluent Reuse Opportunities Report*

Several Reuse projects have been identified and are at various stages of investigation and design including:

- Banora Point WWTP – Arkinstall Park Municipal Oval(TSC);
- Banora Point WWTP – Tweed Heads Cemetery (TSC);
- Hastings Point WWTP – Barry Sheppard Oval and Pony Club (TSC);
- Hastings Point WWTP – Rugby Club (TSC);
- Hastings Point WWTP – Turf Farm (privately owned);
- Kingscliff WWTP – Chinderah Golf Course (private ownership);
- Kingscliff WWTP – Chinderah Ti Tree Plantation (private ownership);
- Uki WWTP – Nursery (TSC);
- Tyalgum WWTP – Currumbin Wildlife Sanctuary Eucalyptus Tree Plantation

Council is currently pursuing the following opportunities for reuse. They are

- Kingscliff WWTP – Chinderah Golf Course (private ownership)
- Hastings Point WWTP – Turf Farm (privately owned);
- Hastings Point WWTP – Rugby Club (TSC);
- Banora Point WWTP – Arkinstall Park Municipal Oval(TSC);
- Banora Point WWTP – Tweed Heads Cemetery (TSC);

Planning to realise these opportunities has been undertaken with DA prepared for the turf farm and the sports field. Development Consent has however been granted for the irrigation scheme at Chinderah Golf Course.

Federal Grant Funding has been allocated for the installation of the reuse facilities at the Chinderah Golf Course and Hastings Point sports fields

**Action 12** – *Wet Weather Performance of upper Tweed WWTPs*

Data has been collected on the wet weather performance of the WWTP. The data has yet to be analysed. This action is related to works to be undertaken as part of Action 10.

**Action 13** – *Assess Options for Increasing Effluent Quality and Reuse*

Options for reuse were considered in Stage 1 Demand management Strategy. Further reuse opportunities have been identified and planning to realise those opportunities are undertaken as part of Action 11.

In respect to new development, Council is willing to receive and assess submissions from developers who propose reuse.

***Action 14 – Dual Reticulation and Decentralised Sewerage for New Development Areas***

As part of the Stage 1 Demand Management Strategy options for dual reticulation and decentralised sewerage were assessed. It was found that in general dual reticulation and decentralised sewerage provided no advantage or additional advantage over the proposed implementation of BASIX, with 5,000 kL water tanks and reduced infiltration gravity sewers (RIGS).

Notwithstanding opportunities may arise for sewer mining in such greenfield areas. Such opportunities will be dependant on the style of the development proposed and the willingness of the developer. Where opportunities are identified by the developer Council will assess the proposals put forward.

***Action 15 – Undertake Long Term Detailed Sewage Loading Forecasts***

This Action has not been progressed. To undertake the long term detailed sewage forecasts requires the completion of the current phase of land use planning by Council and then overlaying that planning with the demand management strategies and sewerage strategies such as the use of RIGS.

Until the this current phase of land use planning is completed this Action cannot progress.

**Urban Stormwater Actions*****Action 16 – Stormwater Retrofit Program (Retention and Treatment)***

A Stormwater Management Plan has been prepared. From the plan a 7 year infrastructure program has been developed. Funding has not been allocated to implement the program.

***Action 17 – Ongoing Review of Stormwater Management Plan***

Stormwater Management Plan is to be updated to reflect the philosophies of Water Sensitive Urban Design

**General Urban Actions*****Action 18 – Implementation of WSUD and ESD Principles***

Stage 1 Demand Management Strategy has identified demand management actions which can be undertaken as part of the implementation of any WSUD and ESD principles.

Notwithstanding there are further issues to be considered such as how developments are planned, education of the community and strengthening planning requirements. This additional consideration is being undertaken by Council Staff and the results will be incorporated into the updated LEP and future revisions of subdivision and stormwater design specifications.

***Action 19 – Update Local Planning Instruments***

Stage 1 Demand Management Strategy has made recommendations on the provision of water and sewerage services to new Greenfield developments. Council is not able to mandate these recommendations however they will be included in Councils submissions in response the public exhibition of these developments under Part 3A of the EP&A Act.

The recommendations include:

- 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.

***Action 20 – Preliminary Planning and discussions with Developers for Alternates to Rainwater Tanks***

Stage 1 Demand Management Strategy has identified and analysed options for alternates to rainwater tanks such as dual reticulation and stormwater. It recommended the use of rain water tanks and did not recommend items such as dual reticulation and stormwater harvesting.

Notwithstanding Stage 2 of the Demand Management strategy will address dual reticulation and stormwater harvesting in commercial and industrial areas.

***Action 21 – Asset Management Plans***

Asset management Plans have been completed and are being implemented. The plans are to be reviewed by 1 July 2010.

***Action 22 – DWE Best Practice Guidelines***

Council has completed or is completing the following plans in accordance with the DWE Best Practice Guidelines

Original Performance Criteria to be met.

- Strategic Business Plan (Complete)
- Pricing and Developer Services Plan (Complete)
- Demand Management Plan (Part 1 complete, Part 2 to be completed this year)
- Drought Management Plan (Draft completed presently being reviewed)
- Integrated Water Cycle Management Plan (Complete and status as per this report)
- Council undertakes annual performance reporting in accordance with the best Practice Guidelines

New addition Items as august 2007

- Sewer Backlog Areas Funding (Council approach of a single access charges across all customers is compliant)
- Vulnerable Customer Policy and Implementation Plan (new requirement not implemented)



- Risk Based Drinking Water Management Plan (new requirement to be included in Action 8)
- Quality Management Plan (new requirement not implement)
- Environmental Management Plan (new requirement not implement, Significant components of this plan are covered by Councils existing Operational Management System (OMS) and Operational and Maintenance Procedures for various sites)
- Pricing of Recycled Water and Stormwater Reuse (new requirement not implement)

### **Rural Catchment Management Actions**

#### ***Action 23 – On Site Sewage Treatment and Disposal***

The On-Site Sewage Management Strategy of Council is being implemented. Notwithstanding an enhanced catchment risk assessment which includes the catchments of all water supplies is required to integrate the On-Site Sewage management Strategy into the Catchment Management Strategy as part of Action 8.

#### ***Action 24 – Identify Hot Spots that Adversely Impact on Water Quality.***

A data base of hot spots has been prepared but as yet no Strategy to address the hot spots has been developed. See Action 8

#### ***Action 25 – Ongoing Support to Catchment Management Initiatives.***

The Tweed River Committee provides direction on initiatives for items such as stream bank protection, planning controls, education and revegetation. The mandatory Water & Sewer Dividend Payment funds catchment and water quality improvement initiatives.

#### ***Action 26 – Ground Water Study.***

Studies to determine the extent of groundwater and its suitability for urban supply are being undertaken as part of the Water Supply Augmentation Options study. The Study will be completed towards mid 2009.

### ***Revision of IWCM Actions***

The implementation of the IWCM has resulted in a number of overlapping activities. It has also identified a range of new associated activities that should be considered and some activities have been completed.

To update the IWCM and address these issues a draft revision of the IWCM has been completed. The Revision consists of 18 updated items under the headings of:

- Urban Town Water
- Urban Wastewater
- Urban Stormwater
- Urban Design
- Catchment Management

It should also be noted that a number of the items are interrelated such as on-site sewage and catchment management. In such cases the item has been placed in the most appropriate category.

The revised IWCM Action Plan follows.

Item	Action	Activity	Status
<b>Water Supply</b>			
1	Demand Management Strategy	Stage 1 Complete prepare Stage 2 of Demand Management Strategy	Adopt and Implement Stage 1 Stage 2 Engage Consultant complete mid 2009
2	Drought Management Strategy	Complete Drought Management Strategy	Draft completed. Awaiting review and finalisation prior to presenting to Council in 1 <sup>st</sup> Quarter 2009
3	Develop Risk Based Water Quality Management Plan	Council to seek advice on appropriate method of risk assessment Undertake Risk Assessment Amend management practices	A consultant engagement will be called in February 2009 for this work.
4	Develop and Implement Leakage Reduction Program	Update models Calibrate models Undertake desk top analysis to determine program for leakage reduction Implement program	Not commenced Council has received offers of advisory support from Water Directorate Further consideration will be given to obtaining suitable external consulting support
5	Quality Management Plan	Prepare Plan	Not commenced
6	Environmental Management Plan	Prepare Plan	Not commenced
7	Determine Preferred Option for the Augmentation of the Water Supply	Determine long range demand forecasts Determine environmental flow requirements Undertake Options Studies including groundwater Determine a recommended option Maintain liaison with DWE and stakeholders	Long range demand forecasts completed as part of stage 1 Demand Management Strategy Environmental Flow Scoping studies are being undertaken Augmentation Options Study presently being undertaken
8	Procure upgraded WTP at Tyalgum	Determine procurement methodology Complete documentation Undertake Procurement	Preferred option chosen Procurement report drafted but to be completed to satisfaction of DWE
9	Investigate and determine requirement for upgrading the WTP at Uki	Assess water quality against new Australian Drinking Water Quality Guidelines Determine any requirement for upgrade If required, design and procure upgrade	Not commenced
10	Implement Asset management plans	Implement and review	Plans completed and being implemented. Plans to be reviewed by 1 July 2010
<b>Wastewater</b>			
11	Optimise the present Sewerage Infrastructure	Create system model Undertake gauging and monitor flows to calibrate model Monitor wet weather performance of WWTP	Some flow gauging has been completed at Banora Point and Tweed Heads Further flow gauging is programmed for Bilambil Heights and Sections of Murwillumbah from February

Item	Action	Activity	Status
			to April 2009.
12	Determine Options for the Augmentation of the Sewerage Infrastructure	Determine long range demand forecasts Undertake Options Studies Determine a recommended option	Awaiting completion of current updates of land use planning strategies
13	Effluent Reuse Opportunities	Assess proposals for reuse when presented Continue to identify Opportunities for investigation	Ongoing
14	Implement Asset management plans	Implement and review	Plans completed and being implemented. Plans to be reviewed by 1 July 2010
<b>Stormwater</b>			
15	Implement targeted retrofit program for retention/treatment hotspots	Funding and implementation of program	Ongoing
<b>Urban Design</b>			
16	Ongoing implementation of WSUD and ESD Principles	Ongoing reviews of subdivision and stormwater design specifications	Ongoing
17	Continue liaison with proponents of developments to promote WSUD and ESD	Liaison with developers	Ongoing
<b>Catchment Management</b>			
18	Complete a Drinking Water Catchment Management Plan	Review Onsite Sewage Management Strategy Review risk identification in three water supply catchments From data base of hot spots determine strategies to minimise risk Draft Catchment Management Strategy Implement Strategy	Not commenced

#### **LEGAL/RESOURCE/FINANCIAL IMPLICATIONS:**

The Revised Action Plan is core business of Council as a Local Water and Wastewater Utility. This program of work requires significant resource and financial commitments to complete. If not completed to the satisfaction of government could put Council at risk. Poor Performance as a Local Water and Wastewater Utility could result in losing these functions.

#### **POLICY IMPLICATIONS:**

Further policy development across the full range of the Water and Wastewater functions of Council.

**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](http://www.tweed.nsw.gov.au) or visit Council's offices at Tweed Heads or Murwillumbah (from Friday the week before the meeting) or Council's libraries (from Monday the week of the meeting).*

Nil.

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