INTEGRATED WATER CYCLE MANAGEMENT PLAN

Part 2
Strategy Plan

June 2009

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ABBREVIATIONS

DWE	Department of Water and Energy
GISC	Glen Innes Severn Council
IWCM	Integrated Water Cycle Management
LWU	Local Water Utility (here Glen Innes Severn Council)
OSD	On-Site Stormwater Detention
WSUD	Water-Sensitive Urban Design

1. Introduction

The *Integrated Water Cycle Management (IWCM) Part 2: Strategy Plan* for Glen Innes Severn Council (GISC) follows Council's adoption of Part 1: Concept Study and addresses all the issues raised in that study.

The Simplified Strategy is being followed here because GISC has shown that the IWCM issues found can be resolved without the need for significant capital works within the next 10 years. This use of the simplified approach has Department of Water and Energy (DWE) concurrence.

The Simplified Strategy shows how the IWCM issues not solved by the Business as Usual Scenario can be solved through the adoption of new best practice, minor capital works and/or significant capital works if beyond 10 years.

2. Issues Raised in IWCM Part 1: Concept Study[1]

2.1. Water Resources - Catchment-Based

1. Water abstraction for urban use can reduce ecological values of upper catchment streams

Council has operated an aerator in Beardy Waters since 2004 which has significantly reduced outbreaks of algae.

To supply Glen Innes, Council's existing strategy is to draw water from two separate sources (Beardy Waters and from the Mann River). Water abstractions from the Mann River are small, compared to abstractions from Beardy Waters.

Council has also investigated groundwater as a supplementary (drought) supply, however the potential for groundwater to make a significant contribution to Glen Innes' water supply appears limited at this time.

Due to a lack of alternative water supply sources that are economically viable, there is very limited opportunity to reduce water abstractions for urban use in order to minimise the environmental impact on upper catchment streams.

2. Raw water quality supplied to urban areas is reduced by rural activity in the upper catchment

Environmental initiatives including fencing of riparian zones in the Beardy Waters catchment area under the auspices of GLENRAC (Glen Innes Rural Advisory Council) have contributed significantly to reducing contamination of the water by stock.

This issue is not a concern for Glen Innes as its water treatment plant is designed to deal with the contaminants in the raw water. This is not the case at Deepwater where water quality readings are periodically outside of Australian -Drinking Water Guideline values. The planned construction of a water treatment plant (budgeted in 2008/09) will deal with this issue.

The issue of integration of water, sewerage and stormwater services, which potentially would reduce dependence on surface supplies has been

[1] IWCM Part 1 Section 5

investigated for Glen Innes and Deepwater. Such projects are not viewed as being cost effective at this stage.

3. Flow rates in streams supplying Glen Innes are irregular and this impacts on security

Flows into Beardy Waters Dam are highly variable. This along with the fact that the Beardy Waters storage is small (relative to the population it serves) leaves Glen Innes at risk during extended droughts. A back up supply is available from the Mann River but this has limited capacity. An additional source, by way of a bore situated on Red Range Rd, is being considered for development as a supplementary source during drought.

Siltation of Beardy Waters Dam has/will impact the security of Glen Innes' water supply. The effective storage has been reduced by siltation from a design capacity of 650Ml to around 450Ml. This is both a catchment-based issue (ie. Erosion in the catchment producing the silt load) and a water supply security issue. As the storage silts up over time, the volume of available storage will continue to reduce

A pumping strategy for the Mann River source is covered in Council's *Drought Management Plan 2007*

There has been a steady decline in annual water consumption in Glen Innes over recent years. This is likely due to the adoption of Council's Best Practice Water Management and increases in the price of water. This is covered in the updated *Strategic Business Plan for Water Supply Services 2008*.

Council's proposed development in 2006/07 of the Red Range Road bore field (2 bores with a combined capacity of 8 l/s or approximately 230 ML/a) and their integration into the Glen Innes water supply system (this work is included in the 2007/08 budget) as a supplementary water source provides increased water security. It also means that the water supply system will be sufficient to cater for the projected requirements of Glen Innes over the next 20 years, even if DWE introduces a requirement for environmental flows in Beardy Waters and the Mann River (see *Strategic Business Plan for Water Supply Services 2008)*.

Council determined at its February 2008 meeting to review the security of the Glen Innes water supply in 2008/09 following the appointment of a new Director of Engineering Services, specifically the options of increasing storage from the Beardy Waters source.

46.02/08 MOTION

1. *That, based on the information provided in the report of the Director of Engineering Services, Council forms the view that it is in a good position to adequately cater for the expected growth in water consumption in Glen Innes over the next 20 years.*
2. *That, should the State Government policy on releasing environmental flows change from the current position, the options*

for an increased water storage for Glen Innes be reconsidered by Council.

3. *That Council requests the newly appointed Director of Engineering Services to further investigate possible options (not already investigated/canvassed) for additional water storage within the Beardie and/or Mann River Systems, and that a report in this regard be prepared for Council's consideration at the July 2009 Ordinary Meeting of Council.*

CARRIED

Any proposal to augment Glen Innes water supply security in the future will be subject to detailed IWCM evaluation when the IWCM Strategy is next updated (recommended around 2014).

2.2. Water Resources - LGA-Based

4. There is minimal reuse of effluent in Glen Innes

Council's recently constructed state-of-the-art sewage treatment plant ensures that any effluent released to the river system will be of environmentally acceptable quality. The new sewage treatment plant has improved the issue of sewage bypasses at the STP. Further reductions in sewer infiltration in the future will improve the quality of effluent discharged to the environment"

The Golf Club is the largest user (60 ML/a or 10%) of reuse water in Glen Innes) and Council is continuing to seek potential areas for reuse, particularly for its public parks and gardens. In addition, adjoining landowners have indicated interest in receiving reuse water for agricultural purposes and will be pursued by Council in the 2008/9 Management Plan.

5. The Glen Innes stormwater system increases contaminant yield and stormwater peak flows

Council's *Stormwater Management Plan 2000* (SMP) aims to not only improve management of urban stormwater runoff (rate and volume) but also to reduce its contamination load. Discharge of acceptable quality water into the natural drainage systems is seen as beneficial to the environmental health.

Council has implemented water management policies consistent with the *Glen Innes Severn Council Stormwater Management Plan 2000* (community education, water quality monitoring, Streamwatch, installation and maintenance of rubbish bins in commercial, tourist and recreation areas), and its *Development Control Plans* (on-site detention, rainwater tanks, water-sensitive urban design). The SMP recommends the condition of stormwater structures be monitored and maintained on a regular basis. Water quality at strategic locations should be checked periodically.

6. Potable water in urban areas sometimes does not meet ADWG for faecal contamination

Council has constructed a roof on the Deepwater reservoir to eliminate further contamination and to help retain residual chlorine levels.

Council is currently preparing documents for the construction of a water treatment plant (WTP) in Deepwater. Although budgeted for 2007/08, delays have meant that construction should take place in 2008/09. This WTP will eliminate water quality problems in Deepwater.

Water quality testing at both Deepwater and Glen Innes follows the program recommended by the NSW Department of Health and Council follows Best Practice Management Guidelines in participating in Annual Performance Reporting through the Department of Water and Energy.

7. The unaccounted water percentage is high compared with similar towns

This is being dealt with by Council's *Water Loss Management Program* – the final stage, budgeted for completion in 2007/08, is the creation of four district metered areas with installation of two pressure reducing valves. This allows a significant pressure reduction in areas with excessive water pressure. The expected water savings (almost 50% of losses) will decrease unaccounted for water to about 8.5%.

8. Pricing structure does not encourage sufficient water conservation

Council's water pricing policy is in accordance with Best Practice Principles (including user pays basis and 75% of income from metered water use).

The analysis of water consumption (in the *Strategic Business Plan for Water Supply Services 2008*) indicates that consumers have decreased total consumption by 20% since 1989. Per-head water consumption is now already below the state median. These demonstrate that Council's water management strategy is working.

Given the already low per capita consumption of water, there is little justification in introducing a multi-level pricing policy.

9. Aging infrastructure is creating problems such as increased leakage, poor water quality, and increased future funding liability for mains replacement

Council is already addressing this issue and it is covered in the *Strategic Business Plan for Water Supply Services 2008*. Prioritised replacement of mains is carried out annually on the basis of failure history, age of mains, environmental risk, and constrained by the funds allocated in the budget.

Council's *Water Loss Management Program* will significantly reduce water pressures throughout the reticulation network, and will have a corresponding effect on main breaks and water leaks.

Council does recognise that renewal works will need to be significantly increased beyond 2018 because some of the reticulation network will be nearing the end of its useful life. Its Asset Management Plan (to be developed in 2008/09) will be linked to Council's 10-year Management Plan (Council has already recognised this as a strategic objective). This will provide a more rigorous means to prioritise the mains replacement program

and ensure adequate funds are provided in the budget program over the 10-year period.

The Asset Management Plan's priority areas are the assessment of the condition of delivery pumps at Beardy Waters, the condition of facilities at the water treatment plant and securing a more reliable water supply source/alternative.

2.3. Sewerage System Management Issues

10. Not all urban homes are connected to sewers

There are very few homes within the designated sewerage reticulation area not connected to the sewer. The main reason for this occurrence is insufficient fall or excessive distance to Council's sewers. As the cost of connection would be considerable Council has not required that these houses connect to the sewerage reticulation system, although they are all charged the sewerage access fee.

In 2008/09 Council reviewed the situation. Orders were issued to a small number of residents requiring implementation of septic tank absorption trench extentions where operation was not satisfactory.

11. Sewer infiltration during wet weather is significant and results in bypassing at the STP

The new Glen Innes STP provides full treatment for sewage flows up to 3 x ADWF (average dry weather flow). It provides partial treatment only of flows between 3 x ADWF and 7 ADWF. Flows greater than 7 x ADWF are bypassed to a maturation (effluent) pond, which in turn has an overflow to Furracabad Creek.

The new sewage treatment plant has improved the issue of sewage bypasses at the STP. Further reductions in sewer infiltration in the future will improve the quality of effluent discharged to the environment"

Regular smoke testing is carried out to determine illegal connections and sites where sewer infiltration may occur. Identified problem areas are included in Council's compliance programme.

2.4. Stormwater System Management Issues

12. Rainwater tanks
(a) Use.

Approximately 40 rainwater tanks are installed in Glen Innes annually. The majority are used for garden watering and hence contribute to lowering of summer water demand.

(b) Many tanks that are installed are not connected to toilets and washing machines

Council has a cash rebate policy to encourage residents to install rainwater tanks (7 kl or more) in the urban area. Most rainwater tank owners choose to use rainwater for beneficial purposes (such as drinking, garden watering).

The high cost of retrofitting dual water supplies is neither practical not justified. However, in its Management Plan 2007/09 Council has a policy to assess all new dwellings on their merits, using BASIX. When used as a supplementary source, a 7-10 kl rainwater tank could probably meet toilet and laundry water requirements.[2]

13. Contamination load in stormwater exiting Glen Innes is high

This is covered in Council's *Stormwater Management Plan 2000*. It is not normally regarded as an IWCM issue.

14. No on-site detention policy

This is not normally regarded as an IWMP issue. It will be addressed in the next revision of Council's Development Control Plans

2.5. Water Cycle Asset Management

15. Asset Management Plan not yet fully developed and implemented

Council has budgeted to complete this project in 2008/09.

16. The Water Supply Strategic Business Plan needs updating

The *Strategic Business Plan for Water Supply Services 2008* has now been updated and will be put to Council at its May 2008 meeting for approval before being forwarded to DWE.

2.6. Community Consultation

Community consultation occurs by way of regular council meetings and occasional special meetings as the need arises.

Council is encouraged to incorporate a Project Reference Group (PRG) in the IWCM process when the IWCM reports are next updated (recommended around 2014). The PRG, which comprises representatives from stakeholder and government agencies, is designed to provide input to the process, both in identifying 'issues' and proposing solutions. PRG input should improve the quality of the IWCM process and increase LWU and community credibility of the report(s).

2.7. Minor Capital Works

A demand management programme is presently being implemented. This will reduce system leakage and main break frequency by reducing mains

[2] *Handbook for Affordable Water Supply & Sewerage for Small Communities*. Water Services of Australia. 1999. Appendix A

pressure across a large proportion of Glen Innes. The 2009/10 capital works programme includes the following:

- Reservoir leak repair at Martins Lookout
- Replacement of leaking isolation valves in water reticulation system
- Investigation of alternative ways to improve reliability and quality of water supply
- Replacement of damaged sections of sewerage infrastructure
- Reuse project at saleyards

17. References

Glen Innes Severn Council Demand Management Plan 2006
Glen Innes Severn Council Drought Management Plan 2007
Glen Innes Severn Council Stormwater Management Plan 2000
Glen Innes Severn Council Strategic Business Plan for Sewerage Services 2005
Glen Innes Severn Council Strategic Business Plan for Water Supply Services 2008
Glen Innes Severn Council Water Loss Management Program
Handbook for Affordable Water Supply & Sewerage for Small Communities. Water Services of Australia. 1999