

Rous Water Supply Augmentation Strategy



Rous Water Lismore Source Development

Project Approach

BACKGROUND

Rous Water supplies water in bulk to the local government areas of Lismore, Byron, Ballina and Richmond Valley. Water presently comes from two sources being Rocky Creek Dam and Emigrant Creek Dam. Rocky Creek Dam was constructed in 1953 and has a capacity of 14,000 ML and a safe yield of about 11,600ML per annum. Emigrant Creek Dam was constructed in 1967-68 to provide a water supply to Lennox Head and Ballina and is currently used to supplement the supply from Rocky Creek Dam. Its capacity is 820 ML with a safe yield of about 2,600 ML/annum although this will fall to 1,600 ML/annum in the future due to environmental flow requirements.

Rous Water has also been undertaking demand management to reduce the demand for water. Even so, with the growth in population in the area, the existing supplies are considered not adequate to meet Rous Water's future needs. Council is therefore proceeding with the augmentation of the supply by the development of a new water source.

Our strategy developed in 1995, proposes the development of two new water sources. The first at Lismore in the upper reaches of the tidal pool and the second the construction of the Dunoon Dam.

The new water source at Lismore is referred to as the Lismore Source and will consist of a pump station abstracting up to 30 ML/day of water from the upper reaches of the tidal pool in the Wilson River. The point of abstraction will be about 5km upstream of Lismore (Howard's Grass) and is referred to as the Lismore Source.

To develop the source, a range of studies need to be undertaken and there also needs to be significant consultation with stakeholders, water users and regulators.

The first of these studies is the safe yield investigation which is essentially a "course screening" investigation to ensure that there would be sufficient water available from the Lismore Source and that the proposal to develop the Lismore Source is viable. This study is undertaken prior to any further studies to ensure that expenditure on the future studies is warranted.

The studies to be undertaken are outlined below.

STUDIES TO BE UNDERTAKEN

Safe Yield

Hydrological (IQQM) modelling of the Lismore Source is being undertaken by the Department of Infrastructure, Planning and Natural Resources (DIPNR). The results of the modelling will indicate how much water is available from the tidal pool. The modelling is being done on the basis of:

- Licence conditions will be based on maximum daily limits (the same as that for irrigators)
- There is no impact on the irrigators due to the Lismore Source

Risk Analysis

The quality of the water from the Lismore Source will be impacted on by the activities in the catchment of the Wilson River and Coopers Creek. Some of those activities may compromise the quality of water in the Lismore Source. Those activities need to be identified, the risk to the quality of water in the Lismore Source quantified and if appropriate risk mitigation measures put in place.

Ecological Impact Assessment

The extraction of water from the tidal pool will not be permitted if it will cause an adverse environmental impact. To determine what impact it will have, modelling of the system will be undertaken to determine what changes will occur in the river. For example, will the salt front move up the river?

The next step in the ecological impact assessment will be to identify species of Flora and Fauna which could be adversely impacted by the development of the Lismore Source. For each species the number of measures such as the possibility of loss of habitat will be determined to identify any adverse impact.

The ecological impact assessment will allow the Lismore Source to be designed such that there is no significant adverse impact on the ecology of the river and that natural flushing and water flows will remain.

Location of the Lismore Source WTP

There are two options for the location of the Lismore Source WTP. They are Howards Grass and Nightcap.

So that Rous Water can make a decision on the best location for the WTP, models of the two options need to be developed so that the capital costs and the operating costs of the two options can be estimated. Based on those estimates a decision on the location of the WTP for the Lismore Source can be made.

Operating Rules

The Lismore Source will need to be licenced by DIPNR. It also needs to be integrated into the existing Rous system, so that it can be licenced. The Lismore Source is used most effectively in conjunction with Rocky Creek Dam and Emigrant Creek Dam. Modelling of the complete water supply system needs to be undertaken to determine the optimal operational parameters for the system.

When these are determined they will become the operating rules of the Lismore Source.

CONCEPT DESIGN

On the completion of the above studies a concept design can be prepared. It will detail the amount of water which can be extracted from the Lismore Source. The measures which need to be taken to mitigate risks to the water quality, the location of the WTP and the type of WTP required and the operating rules by which the scheme will operate.

It will also include an outline or concept of where pipes will run and the works required to build the system.

ENVIRONMENTAL IMPACT ASSESSMENT

Under the Environmental Planning and Assessment Act, the scheme will need to be assessed for its environmental impact, both during construction and during operation.

This assessment will take the form of an EIS which will be prepared and publicly exhibited.

DETAILED DESIGN, LICENCING AND CONSTRUCTION

After the EIS has been completed and determined by the Determining Authorities, the detailed design of the pump stations, the WTP, and any other infrastructure can be prepared. Thereafter Rous Water will be able to apply for the licences required to operate the system and commence construction of the works.

COSTS

At this stage the final cost of the scheme is not known. It will depend on where the WTP is located, the type of WTP, the operating rules and many other factors.

Costs associated with the initial stages of the project are indicated below:

ACTIVITY	COST
Safe Yield Studies	\$60,000
Stakeholder Consultation	\$60,000
Risk Analysis	\$75,000
Ecological Impact Assessment	\$120,000
Location of WTP	\$70,000
Operating Rules	\$60,000
Concept Design	\$60,000
Environmental Impact Assessment	\$200,000
Detailed Design	\$375,000
Licensing	\$30,000
Construction	??????????

TIMEFRAME

The time to undertake the studies, concept design, the environmental impact assessment and the detailed design, licencing and construction is set out below.

Activity	Time Frame
Safe Yield Studies	12 weeks
Risk Analysis	16 weeks
Ecological Impact Assessment	20 weeks
Location of WTP	12 weeks
Operating Rules	12 weeks
Concept Design	12 weeks
Environmental Impact Assessment	40 weeks
Detailed Design	40 weeks
Licensing	10 weeks
Construction	52 weeks

It is hoped that some of the steps may be undertaken concurrently so that the Lismore Source may be commissioned in the first half of 2006.

An outline time line in quarters is shown below.

Time Line Lismore Source

Activity	3/03	4/03	1/04	2/04	3/04	4/04	1/05	2/05	3/05	4/05	1/06	2/06
Safe Yield Studies	■	■										
Risk Analysis		■	■									
Ecological Impact Assessment		■	■									
Location of WTP		■	■									
Operating Rules			■									
Concept Design			■	■								
Environmental Impact Assessment			■	■	■	■						
Detailed Design				■	■	■	■	■				
Licensing							■	■				
Construction									■	■	■	■