

Overview of sustainable water supplies for the Hunter and Central Coast regions, without the construction of a new dam at Tillegra, on the Upper Williams River

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Traditionally, urban areas have only survived and grown through investment in water infrastructure, i.e. dams located in distant rural areas and the associated water pipes, sewers and waste water treatment plants. In the case of The Hunter, it has two dams (Chichester and Grahamstown) which, combined with extensive groundwater supplies, can provide a secure water supply more than 10% above the current demand. In contrast, Sydney's normal water supply has a security level that is 10% lower than current demand.

Background information on the water supply for the region

The Hunter Valley has an abundant supply of rainfall and extensive reliable groundwater supplies. Its current yield is 79 billion litres per year and consumption is at circa 72 billion litres/yr. The Hunter does very little recycling (4%) and only a staggeringly low 0.1% percent of households have rain water tanks.

The sudden move to build the Tillegra dam suggests a hurried and somewhat ill-considered approach to developing a sustainable and cost-effective future for water in the Hunter Valley. The motivation for this move actually stems from outside the Hunter, namely the extensive population growth of the Central Coast, and the policy resistance of the NSW Government to the inevitable move towards recycling. Tillegra will become the source of water for the Central Coast, fed by a new network of pipe lines which will cross the Hunter valley from north to south.

The Central Coast water supply is the responsibility of the Gosford Wyong Water Authority (GWWA). The region has Mangrove dam, groundwater supplies and is building transfer pipes from Mardi Creek to boost supply. Four small desalination plants are being built as a contingency measure. Like the Hunter, rainwater tank usage is low (3.7% percent). However, the water authority now recycles 5.5% of its effluent for recycling at a number of golf courses and landscaping projects.

Impact on the Hunter

Tillegra Dam is clearly not required to meet the needs of water consumers in the Hunter Valley, yet water rates and usage charges in the region will rise to pay for this. The exact costs are unknown as Hunter Water has not submitted its pricing changes to the Independent Pricing and Regulatory Tribunal (IPART). However, when infrastructure of this magnitude is introduced into a water authority, it is not uncommon for water rates to increase between 25-50%.

Population growth on the Central Coast has forged a permanent connection to the Hunter and is forcing the Hunter to augment its water supplies some 10 years before it is required for the people of the Hunter Valley. By committing to Tillegra Dam, the Hunter's opportunities to develop and implement urban water harvesting and recycling will be hampered, due to the massive investments required to build the dam.

In addition, the dam is being built on a geological fault and will require significant and costly additions to ensure that the dam is safe and will not breach during a flood or seismic event.

Options to deliver sustainable, secure and safe water supplies to the Hunter and Central Coast.

The Hunter region is growing and will need to plan for the future when its own demand and the growing demand from the Central Coast start to erode its current excess capacity. At its current growth rate, the Hunter will need to have planned and delivered a means of securing its water supply by 2015. Given its relatively low industrial recycling, lack of stormwater harvesting, low use of rain tanks and no plans for potable recycling (like that proposed by the Queensland Government and the NSW Opposition), it is more cost effective to pursue these measures in the first instance, rather than committing to the construction of a new dam.

Like the Hunter, the Central Coast has relatively low industrial recycling, lacks significant stormwater harvesting, has a low uptake on rain tanks and no plans for potable recycling. The Central Coast (GWWA) did extensive planning studies over the last three years and has identified the need to upgrade its existing dams, infrastructure and transfer pipes. Unlike the Hunter, the Central Coast is now in a water crisis, and has commissioned 4 small desalination plants to assist future drought water supplies. To date it has rejected building a \$75m permanent desalination plant.

Table 1 Summary of water supplies and potential sources for growth in demand.

| Attribute | Hunter Water Corporation | Gosford & Wyong Water Authority |
|---------------------------------|----------------------------|---------------------------------|
| Population served (2006) | 517,403 | 305,000 |
| Secure Yield (GL/year) | 79 | 41 ¹ |
| Current demand (GL/yr) | 72 | 33 |
| Projected demand 2050 (GL/yr) | x | 48-55 |
| Alternate Sources yield (max.) | | |
| • Rainwater | • 18 | • 10 |
| • Stormwater | • 24 | • 13 |
| • Recycled (non potable) | • 28 | • 14 |
| • Recycled (potable) | • 22 | • 9 |
| Total alternative sources yield | 92 GL/yr | 45 GL/yr |
| | 137 GL/yr for both regions | |
| Total source from Tillegra | 66 GL/yr for both regions | |

¹ These yields are taken from the GWWA Water Plan 2050. They seem optimistic and given the moves towards desalination and the sudden need for Tillegra, there are questions about the validity of this secure yield.

Table 1 summarizes the opportunities for a sustainable approach to developing the future water supplies for both the Hunter and Central Coast regions. In essence, both regions clearly have adequate water supplies to meet their demand for the foreseeable future without the need for a new dam at Tillegra.

The adoption of rainwater, stormwater, non-potable and potable recycling need to be considered before a dam is built at Tillegra for either region's water supply. In addition, benefits of the alternatives need to be evaluated. Rainwater and stormwater harvesting reduces flooding and the need for expensive drainage systems. Recycling ensures that the waste products from our treatment plants is thoroughly removed and hence no longer pollutes water ways and beaches.

By adopting rainwater harvesting and recycling, both regions could achieve extremely secure and safe water supplies, combined with dramatically less water pollution. By building a new dam, the culture of consuming more while recycling less will continue and the next time growth exceeds demand (say 25 years' time) where will the next dam be built?

The logical approach- “use what you have, before you exploit others”.

Dam building is a time consuming process which, once started, is almost unstoppable. To build Tillegra will take between 7 and 12 years. Before embarking on such a venture, both the consumers of Hunter Water Corporation and Gosford/Wyong Water Authority need to be sure that the vast array of other options have been considered and in most cases adopted before a dam is built. Remember, Sydney has rejected building a dam at Welcome Reef or on the Colo River. It should be recycling, but is instead embracing desalination.

So what are the alternatives to Tillegra for both the Hunter and Central Coast regions? Quite simply, both regions appear focused on the traditional “suck-in - use once - spit out ” mentality towards water supply and have not seriously attempted to engage with the modern approaches to urban water harvesting and recycling. In addition the Hunter Water Corporation is ignoring infrastructure augmentations like Lostock Dam and the Stage 3 Grahamstown upgrade, both of which could be used to support growth for the Hunter Valley and Central Coast.

There are a number of hydrological and geological failings of the Tillegra dam site, and combined with the lack of action in recycling and urban water harvesting, attempts at justifying the requirement, location or cost-effectiveness of this dam do not stack up.

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