
REPORT 2
(1215/52/IM)

WATER SECURITY IN WELLINGTON METROPOLITAN AREA

1. Purpose of Report

Greater Wellington Regional Council (GWRC) has considered a number of short and longer term water supply augmentation options to increase the supply of water as a means of addressing security of supply issues arising from population growth.

GWRC will present details of the option proposals to this committee meeting, and following Council's consideration it seeks Council's comments on the augmentation proposals.

2. Executive Summary

GWRC wishes to discuss with Council the options for augmentation works to restore and maintain the security of supply for water in the metropolitan region, as a consequence of recent population growth and projected future population growth, since these augmentation works will have corresponding impacts on future bulk water levies.

3. Recommendations

Officers recommend that the Committee:

- 1. Receives the information.*
- 2. Notes that the 3 short term options to reinstate the security of supply standards (raising the Stuart Macaskill lakes and increasing extraction from Hutt River and the Hutt Aquifer) are intended to be progressed following consultation.*
- 3. Notes that the construction of the planned CBD reservoir will improve the security of supply for parts of Wellington City on a day to day basis.*
- 4. Instructs officers to continue working with GWRC on initiatives intended to delay the need for the construction of any dam. This is to include the exploration of appropriate daily usages and levels of service.*
- 5. Agrees that if a dam should be required in the future Council agrees with the GWRC recommendation of the Whakatikei site.*

4. Background

As detailed in the report considered by this Committee on 12 June 2008 (1215/52/IM), GWRC has proposed options to increase the supply of water as a consequence of recent population growth and future growth projections.

The short term options itemised below are proposed by GWRC as a means of reinstating the security of supply standard which cannot now be achieved due to increased population and water demand. These options will also delay the need for major supply augmentation construction for a number of years but do not remove the need to plan for a long-term solution to water supply.

Population increases to date have created a peak summer demand supply risk and increasing population at the currently projected levels will mean that the increasing level of supply risk can ultimately only be reduced through an additional water storage facility. Demand management measures to be covered by the proposed Water Conservation Strategy report to be presented to this committee later this year will assist in deferring the construction of this water storage facility.

In addition to the short term options a number of long term supply options have been considered including river sources, desalination, a third storage lake and a dam, with a dam being the preferred option.

The GWRC reports on the various options are available on request.

Implementation of these options will have an impact on future bulk water supply levies. GWRC collects, treats and distributes bulk water to the four cities in Wellington Metropolitan area, and levies each of the four cities for the associated costs based on the percentage of bulk water consumed by each city.

As a consequence GWRC wishes to discuss with each of the contributing Councils the projected expenditure associated with the augmentation works and the significant impact it will have on future bulk water levies.

5. Discussion

5.1 *Level of Service*

The current level of service regarding the security of supply for the cities in the metropolitan area is based on a standard agreed by all parties some 5 years ago. This standard was agreed as being an assured supply (based on the current water usage rate) in a 1-50 year drought.

This level of service is one of the issues that will need to be addressed in the proposed report detailing a Draft Water Conservation Strategy being prepared for Committee consideration in December this year. Any proposed changes to the level of service would first have to be agreed by all the GWRC bulk water customers, i.e. the 4 cities in the metropolitan area, before any modification could be made.

For comparison, the current level of service in the Auckland Metropolitan area is for the current usage being assured in a 1 in 200 year drought.

5.2 Location of future dam

GWRC has investigated potential sites for a future water storage dam and the choice has been narrowed down to sites in each of the Pakuratahi, Wainuiomata and Whakatikei catchments. The design parameter chosen was for the provision of a dam that was able to increase the water supply to meet the needs of a population of 450,000 people with a 2% chance of shortfall in any year (i.e. a 1 in 50 year drought).

The three options identified as being able to provide for the long term supply needs are:

- Wainuiomata (Skull Gully Dam) - size 5,900 million litres, cost \$84M
- Pakuratahi Dam - size 6,400 million litres, cost \$150M
- Whakatikei Dam - size 8,400 million litres, cost \$142M

Following multi-criteria analysis the Whakatikei Dam option was shown to be clearly the preferred option over the other two sites.

The advantage to Wellington City of the Whakatikei site is its location on the western side of the main earthquake fault line. This site is the only source on this side of the fault line that was considered in the 3 options. It is also the only source that includes its own treatment and pumping facilities. The construction of a dam at this site will provide a water source closer to the growth areas of the northern suburbs and will increase the resilience of water supply to Wellington City.

Wellington City is very vulnerable to disruption of the water supply in the event of a major earthquake. The city is currently supplied by the bulk water supply pipeline from Te Marua, and a supply pipeline from the Waterloo and Wainuiomata sources. The pipeline from Te Marua is located along the Wellington fault line (SH2) and crosses the fault line in at least two places before reaching Wellington City. The pipelines from Waterloo and Wainuiomata are routed through the vulnerable Petone foreshore area and are not expected to withstand the effects of a major fault movement.

Resource consent will be required for any future dam and the consent process could take some time.

5.3 Short Term Solutions

Short term options are currently being investigated for implementation to reinstate the security of supply standard to the target probability of 2% (1 in 50 year), including a small buffer whilst water demand management and longer term decisions are made. Three options have been identified that together reinstate the current agreed level of service target and maintain it through to a population of 395,000, expected to occur in 2012.

A fourth short term option could increase supply for the peak demands of an additional 30,000 population up to 425,000, expected to occur in 2022.

The three options are:

- Raising the water level of the Stuart Macaskill lakes, increasing stored volume by 13% - cost \$4.5M
- Reducing the minimum flow in the Hutt river at the Kaitoke weir from the current 600 litres/second minimum residual flow down to 400 litres/second – no capital cost but a change of resource consent is required
- Constructing a new 3 party joint venture CBD water reservoir in Wellington City, in lieu of the GWRC terminal reservoir at Ngauranga previously planned for 2010. This does not provide additional source water but the reservoir would provide GWRC some peak demand supply buffer. Cost to GWRC is between \$3M and \$4.5M.

with the fourth option being:

- Development of the Upper Hutt aquifer – this aquifer has been modelled at 2 levels of abstraction. The lower level would provide water for an additional 30,000 population and the higher level for a 45,000 population. Extended abstraction, particularly at the higher level, draws water from the Hutt River with consequential river flow reduction. The development will cost \$16M to \$19M plus \$5M for possible additional pumping requirements.

Implementing all four short term options would increase the sustainable population to 425,000; or if higher abstraction from the Upper Hutt aquifer was possible, to a population of 440,000 taking the supply through to 2028.

These options are intended to reinstate the security of supply standard and meet the water supply needs of a growing population for at least 10 years, which should provide sufficient time to implement further demand management measures or to design, consent and construct a dam.

5.4 Funding

GWRC's current LTCCP capital expenditure programme includes funding for new sources, which with some adjustment of expenditure between years, will cover the cost of the short term options.

6. Conclusion

The short term option works are required to reinstate our current water supply security level. Failure to implement these works will increase the risk of a water supply shortfall at a rapidly increasing rate over time.

A water storage dam at the Whakatikei site would provide Wellington City with a more robust water supply in the event of a major earthquake.

Contact Officer: *Maria Archer, Manager Infrastructure Planning.*

Supporting Information

1) Strategic Fit / Strategic Outcome

The policy supports Council's outcome to "provide safe and reliable ...water supplies ... that protect public health and ecosystems." (see outcome 4.6 - Safer).

2) LTCCP/Annual Plan reference and long term financial impact

The provision of water supply costs is reflected in the bulk water levy and will be included in future Asset Management Plans for inclusion in future LTCCP processes.

3) Treaty of Waitangi considerations

None.

4) Decision-Making

This is not a significant decision. The report recommends that the GWRC proposals be endorsed and does not constitute a change in policy direction.

5) Consultation

a) General Consultation

The provision of future water supply will be publicly notified by GWRC as part of their water activities in future LTCCP.

b) Consultation with Maori

None

6) Legal Implications

None.

7) Consistency with existing policy

This report recommends measures that are consistent with existing WCC policies on water usage that prioritise water conservation and encourage more efficient use of water.