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Committee Social and Cultural Wellbeing Committee
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Rationalisation of Greater Wellington and Wellington City Council pipeline assets:

Thorndon to Macalister Park; Thorndon to Ngauranga

1. Purpose

To seek approval in principle to negotiate with Wellington City Council on the rationalisation of specific water supply pipeline assets.

2. The decision-making process and significance

No formal decision is being sought in this report.

The recommendation for approval in principle to enter into negotiations does not, in itself, result in a decision requiring consideration under the requirements of Part 6 of the Local Government Act 2002 (the Act).

The results of negotiations, when completed, will be reported back to the Committee, and may result in a recommendation that requires a formal decision to be made at that time.

3. Background

3.1 Bulk water/city reticulation interface at Thorndon

The Thorndon pumping station was the interface between the bulk water supply and Wellington City reticulation at the time the Wellington Regional Water Board (WRWB) was formed in 1972. The WRWB provided the bulk water supply to Thorndon, and also developed and maintained the Wellington City water reticulation under contract to the Wellington City Council.

The arrangement continued after the WRWB was absorbed into the Wellington Regional Council in 1980, until the city reticulation management contract ended in 2001 and was taken over by Capacity Infrastructure (Capacity).

3.2 Macalister Park reservoir and trunk main

Growth in the CBD population required a new city reservoir. The new reservoir was built at Macalister Park, Newtown and commissioned in 1993. A new 800 mm trunk main (reducing to 750 mm over the last section) was laid from the Thorndon pumping station to the Macalister Park reservoir. The pipeline was designed and project managed by Greater Wellington, but paid for by Wellington City Council as part of their reticulation. In addition to supplying water to the Macalister Park reservoir, the pipeline could also supply water directly into the city reticulation through a number of cross-connections.

3.3 Greater Wellington's pipe from Thorndon to Ngauranga

For around 30 years Wellington City Council has been using Greater Wellington's 525mm cast iron pipe between the Thorndon pumping station and lower Ngauranga Gorge to supply its consumers fed from the Hutt Road. This pipe is part of the pipeline from Wainuiomata that was decommissioned in the late 1970's. Greater Wellington does not need this section of the pipeline and does not wish to be liable for its maintenance or repair.

There will be operational advantages to Wellington City Council from ownership of Greater Wellington's cast iron pipeline to Ngauranga Gorge, and to both Greater Wellington and Wellington City Council from Greater Wellington's ownership of the trunk main to Macalister Park reservoir.

4. Comment

4.1 Bulk water to other cities and Wellington northern suburbs

For Upper Hutt, Lower Hutt and Porirua cities, the bulk water supply is provided to the inlet of each city primary reservoir and Greater Wellington's pipeline asset terminates at the inlet to the reservoir. This is also the case for primary reservoirs in Wellington's western and northern suburbs (except for a small number of special cases).

Greater Wellington monitors each reservoir level and supplies the bulk water to maintain the reservoir within agreed levels. Delivery from the primary reservoirs to consumers and secondary reservoirs is the city's responsibility.

This clear demarcation of responsibility allows the bulk water supply to be optimised and provided cost-effectively. It gives the city a high degree of certainty of the volume stored in their primary reservoirs. It provides security against temporary loss of the bulk supply or contamination, and simplifies the response to emergencies and recovery.

4.2 Auckland situation

Prior to the recent local government re-organisation in Auckland, Watercare Services was the water wholesaler and performed a similar function to Greater Wellington. In Auckland, there are dedicated water mains to the primary reservoir, though at that stage Watercare also owned these reservoirs rather than the city customers.

4.3 Issues with current supply arrangement to Wellington urban area

4.3.1 High reliance on pumping

Greater Wellington maintains water pressure at Thorndon mainly by the use of its pumps at the Waterloo water treatment plant (Wellington pumps). The draw-off from the trunk mains into the city reticulation results in a continuous but fluctuating demand on the Wellington pumps. Multiple pumps are needed to meet peak demand.

From Greater Wellington's perspective, this arrangement is inefficient and places a high reliance on the Wellington pumps and their power supply. The pumps run at times of peak electricity tariff and at lower efficiency for higher demand flows. Each of the three pumps draws 680kW at maximum load. Maintenance of the pumps or pipeline to Thorndon requires careful planning to ensure the Wainuiomata and Te Marua water treatment plants can meet Wellington's demand, but the volume of water available is limited and water is not always available from Wainuiomata. Failure of one or more of the three Wellington pumps could create severe operational difficulties for Greater Wellington.

Unless there is a reduction in the amount of water supplied directly to consumers through cross-connections and a greater emphasis on supply from reservoirs, additional pumping capacity will be necessary to meet growth in the CBD population.

4.3.2 Maintaining reservoir level

As a principle, providing water directly into the reticulation network means there is no certainty of reservoir level, and maintaining reservoir level is problematic. This is not simply an operational concern, but also a concern that in an emergency the expected volume of stored water may not be available for emergency supply.

While Greater Wellington is not responsible for the reservoir level at secondary reservoirs we monitor the main reservoirs, including Macalister Park, and take proactive steps to assist with reservoir level by increasing the volume of water pumped if possible, or providing additional flow from other parts of the network.

4.3.3 Reservoir turn-over

Water stored in a reservoir needs to be turned-over (replaced) within a few days to retain water quality. Water supplied direct to consumers through the cross-connections from the trunk mains reduces the draw down on the reservoirs and increases the turn-over time.

Reservoir turn-over has not been an issue for the Wellington CBD to date. However reservoir turn-over will become increasingly important after the new Prince of Wales Park reservoir is commissioned.

In 2011, Capacity installed an additional cross-connection from the 800mm trunk main to the CBD reticulation as a solution to local supply shortages. The

additional cross-connection has further increased reliance on the continued operation of the Wellington pumps and is expected to reduce the turn-over of the Macalister Park reservoir.

4.3.4 Pipeline maintenance

Wellington City has many more kilometres of water reticulation than Greater Wellington, but most of it is in smaller pipe sizes. When it comes to maintaining pipelines of 800mm diameter in the Wellington area, the expertise lies with Greater Wellington rather than Wellington City's contractors. This is why Greater Wellington was recently asked to undertake the maintenance work for the pipeline. If the pipe from Thorndon to Macalister Park was owned by Greater Wellington, then the repair stocks for seismic events would be increased to allow for this additional asset.

4.4 Proposed change to future water supply to Wellington urban area

The proposed solution to the issues with the current method of bulk water supply is to close the cross-connections from the trunk mains and supply the bulk water to Macalister Park reservoir and the Prince of Wales Park reservoir (when commissioned). That would allow the water level of both reservoirs to be managed by Greater Wellington. Consumers and secondary reservoirs would be fully supplied from Macalister Park and Prince of Wales Park reservoirs.

Such a change would supply the Wellington CBD on the same basis as the bulk water supply to our other city customers.

We recognise there are difficulties in parts of the central city reticulation that would make it impractical to close the cross-connections at this time. However, it is a goal that can be achieved incrementally, in conjunction with Wellington City Council, through planned reticulation upgrades to reduce, and eventually remove, flow through the cross-connections (except for emergency use and exceptional conditions).

The proposed change to managing reservoir water level and closing the cross connections will provide benefits to both Wellington City Council and Greater Wellington.

4.4.1 Benefits to Greater Wellington

Benefits to Greater Wellington from the proposed change in bulk water supply to the Wellington CBD include:

- Reduced reliance on the Wellington pumps and greater flexibility in the use of water from Te Marua and Wainuiomata
- Use of the Wellington pumps can be optimised to maintain reservoir levels
- Water treatment plant production rate can be scheduled in-line with an optimised supply to reservoirs
- Marginal increase in electricity used to pump all water to reservoirs will be more than offset by optimised pumping at times of lower tariff

- More flexibility in scheduling maintenance activities on pumps and pipelines
- Increased security of supply in meeting peak demand using reservoir storage
- Deferral of pumping capacity upgrade to meet peak demand

4.4.2 Benefits to Wellington City Council

There will also be benefits to Wellington City Council from the proposed change in bulk water supply to the Wellington CBD including:

- Improved security of supply for Wellington consumers against temporary loss of the bulk water supply
- Improved security of supply against failure of the Wellington pumps
- More certainty of minimum volume of stored water in an emergency
- Quality of water maintained by adequate turn-over of stored water (particularly after Prince of Wales Park reservoir is commissioned)
- Potential contamination of water supply can be isolated and contained
- Demand management through pressure reduction from reservoirs possible

4.5 Transfer of assets

To make the change, Greater Wellington would require control of the 800/750 mm trunk main from the Thorndon pumping station to Macalister Park reservoir inlet. This is best achieved through ownership of the pipeline to the reservoir inlet, as is the case for all other reservoirs that Greater Wellington supplies with bulk water.

The 800/750 mm pipeline has an asset value that should be discounted by deferred maintenance already identified, together with other improvements needed.

The net cost of asset transfer would be reduced by transfer to Wellington City Council of Greater Wellington's section of 525 mm cast iron pipe between the Thorndon pumping station and Ngauranga Gorge. The pipeline has a value from its current use by Wellington City Council and also its potential for future upgrade by inserting a smaller pipe inside it.

Other water assets that fall within the scope of rationalisation may also be identified during negotiations with Wellington City.

At this stage the net cost of the asset transfer is unknown, but is anticipated to be several million dollars.

It should also be noted that with ownership of the 800/750 trunk main, Greater Wellington will be responsible for building the inlet pipe from the trunk main to the proposed Prince of Wales Park reservoir as provided for in the

Wellington Regional Water Board Act. The inlet pipe is estimated to cost \$800,000.

This transfer of assets will improve the management of the bulk water supply to the CBD and clarify responsibilities for water distribution. It will also help support the emergency water provision for the regional hospital in Newtown that will be supplied from the Prince of Wales Park reservoir.

5. Communication

A media statement is not proposed at this time.

6. Recommendations

That the Committee:

1. **Receives** the report.
2. **Notes** the content of the report.
3. **Approves** in principle, negotiations with Wellington City Council on the transfer of water assets comprising:
 - a. Wellington City Council's pipeline from Thorndon pumping station to Macalister Park reservoir
 - b. Greater Wellington's 525 mm cast iron pipeline from Thorndon pumping station to Ngauranga Gorge
 - c. Other water assets that fall within the scope of rationalisation that are identified during negotiations.
4. **Notes** that transfer of the pipeline to Macalister Park reservoir to Greater Wellington will result in an obligation for Greater Wellington to build the inlet pipe to the proposed new Prince of Wales Park reservoir at an estimated cost of \$800,000.
5. **Notes** that a report will be presented to the Committee on the outcome of the negotiations with Wellington City Council when completed.

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