

Mayor and Councillors
COUNCIL

27 SEPTEMBER 2012

Meeting Status: **Public**

Purpose of Report: For Decision

WATER SUPPLY PROJECT - RIVER RECHARGE WITH GROUNDWATER - RESOURCE CONSENT APPLICATION

PURPOSE OF REPORT

- 1 This report provides a summary of investigations undertaken since August 2010, when Council selected River Recharge with Groundwater (RRwG) as its preferred water supply solution. This report also seeks Council's approval to lodge an application for resource consent.

SIGNIFICANCE OF DECISION

- 2 The 2009 Long Term Council Community Plan and the 2012 Long Term Plan (LTP) signalled the intended Water Supply project and provided for funding. The 2012 LTP financials were based on the preferred water supply option, RRwG (as approved in 2010). The 2012 LTP was reviewed under the special consultative process. Therefore the significance policy is not triggered and further consultation is not required.

BACKGROUND

- 3 In August 2010 (refer to AS-10-967 – Water Supply Project – Preferred Solution, 19 August 2010) Council selected its preferred water supply solution of RRwG. At that time, there were a number of areas identified that required further investigation and better understanding, before applying for resource consent:
 - Technical advisory analysis
 - River ecology
 - Cultural impact
 - Groundwater
 - Key stakeholder consultation
 - Environmental effects
- 4 This report reviews the findings of the investigations and how an adaptive management approach will be incorporated into the RRwG solution. It also reviews the Assessment of Environmental Effects (AEE) associated with the proposed resource consent application.

CONSIDERATIONS

- 5 Overall the investigations undertaken to date demonstrate, the environmental effects of this proposal are acceptable and can be sufficiently managed by way of conditions of consent, including a comprehensive monitoring programme that will trigger an appropriate management response to adapt operations so as to address any effects over time.
- 6 When assessing the effects of the RRwG, the project team has used a scenario that would represent the worst case. This is based on 50 years of high population growth and a 50 year drought occurring in or beyond 2060. This is the design horizon and drought standard Council has adopted for the project. However, in terms of the 35 year consent being sought it is a very conservative worst case scenario. This scenario is the benchmark for all effects considered in this report.

Adaptive Management

- 7 As the project team has progressed through the investigations and refined the RRwG solution, it has worked with; Technical Advisory Group (TAG), key stakeholders and Te Āti Awa Water Working Group (WWG). As the results of investigations have been discussed, it has become clear that the RRwG suits an ‘Adaptive Management’ approach.
- 8 Adaptive management is recognised as a Resource Management Act approach for making good decisions. These will be based on local knowledge, stakeholder involvement and monitoring critical factors so that RRwG can be adapted should issues emerge. The staged and flexible nature of RRwG allows adaptive management responses to be implemented over time. Effects will be monitored and triggers will be set so corrective actions can be implemented.

Technical Advisory Group

- 9 TAG has met six times since the Council’s decision of August 2010. At that time TAG made 11 key recommendations. The TAG recommendations have been addressed and are being incorporated in the proposed monitoring programme, or are planned to be completed as part of the first stage of RRwG construction.
- 10 The TAG’s final report (refer to appendix one) highlights several areas where TAG sees risks that need to be managed by Council, either through consent conditions or through ongoing monitoring and contingency planning:
 - The potential risk of saline intrusion
 - The changed understanding of aquifers since the previous analysis (impact on existing private bores)
 - Modelling of the “well founded scenarios” which can only take us so far
 - Predicted future environmental impact
 - Ongoing monitoring of borefield operations, water demand and environment factors

- 11 TAG's final report concluded that work undertaken has "been painstaking and well done" and "think the Council is in a position to make a final decision about whether and when to proceed with staged river recharge".

River Ecology

- 12 Some stakeholders including the WWG raised concerns about the potential impact of discharging groundwater into the Waikanae River. NIWA was engaged to investigate the impact of the water quality of the recharge on algae, invertebrates and fish.
- 13 In 2010, NIWA completed initial investigations during the option selection process. Subsequently, in 2011 an *on-river* experiment was conducted simulating the worst case scenario (high population growth with a 50 year drought occurring in 2060) with a 70% groundwater to 30% river water environment. This was peer reviewed by two independent scientists.
- 14 A second investigation, in 2012 this time *off-river*, was conducted to provide more certainty about the impact on algal growth. This investigation simulated the 70% groundwater-30% river water mix and compared algae growth in this water with just river water. This investigation indicated that there is likely to be an increase in algae growth with some types of algae, but this was considered to have only a minor effect on the river. In fact, NIWA stated the "results further imply that Phormidium [cyanobacteria - blue/green algae] mats are unlikely to increase".
- 15 Key stakeholders, two independent scientists and the WWG have agreed that Council should implement a river monitoring programme within an adaptive management framework, which will address any effects as they arise. This monitoring programme is being finalised and will be part of the proposed consent conditions. It will include;
- monitoring algae growth in the river upstream and downstream of the discharge point
 - monitoring the quality (temperature, dissolved reactive phosphorus, dissolved oxygen) of the river and groundwater
 - surveying fish stock following national protocols (expected to be every 3 years)
 - the formation of an Adaptive Management Committee comprising Council, Greater Wellington Regional Council, and members of Te Āti Awa. It is proposed that the committee would provide updates to stakeholders.

Cultural Impact

- 16 In August 2010, Te Āti Awa representatives addressed Council and acknowledged the partnership that was being developed. In October 2010, a Memorandum of Understanding relating to water was signed between Council and the WWG.
- 17 In April 2011, Hapai Whenua Environmental Advocates Ltd was engaged, on behalf of WWG, to undertake a cultural impact assessment (CIA) to identify the

cultural issues relating to the two preferred water supply solutions. The project team has been working with a draft version of the CIA since February 2012.

- 18 The draft CIA indicated a preference for a dam but does not preclude RRwG. The CIA has a number of mitigation recommendations that address cultural issues. Most of these relate to governance and the management of water activities. These are being further explored outside of the consenting process for the water supply project. However, some recommendations relate to the resource consent application for the RRwG;
 - Develop a monitoring programme for Māori environmental indicators for wetlands and water bodies.
 - Conduct a fish survey of local waterways focusing on availability, accessibility, abundance and quality of traditionally important species.
 - ‘Normalise’ the groundwater before it enters the Waikanae River. This would allow the groundwater to aerate and make contact with the ground before entering the Waikanae River.
- 19 The recommendations relating to monitoring and fish surveys are part of the monitoring programme, already being developed as part of the proposed resource consent conditions.
- 20 The *normalising* will be incorporated into the detailed design of the groundwater discharge. It will allow for groundwater to pass along a newly-created stream with associated planting before cascading into the Waikanae River.
- 21 The WWG have been involved with the *on-river* and *off-river* experiments. Following the *on-river* work Council officers agreed with the WWG and scientists that NIWA would undertake the *off-river* algae experiment. The experiment methodology was agreed with the WWG’s peer reviewer, Council’s peer reviewer and NIWA. Following the experiment, all parties have been involved in the development of the monitoring programme.
- 22 Meetings have occurred with the WWG to discuss the draft CIA recommendations relating to governance, managing effects on the river and the overall improvement of the catchment. The focus is on monitoring programmes and over-seeing projects that improve the quality of the upper catchment and river habitat. This would be developed in partnership with Greater Wellington Regional Council.
- 23 Council has been briefed on these discussions and has indicated a desire to further explore co-governance. The discussions are continuing and the formation of an Adaptive Management committee with Council and Te Āti Awa membership is a proposed co-governance structure. A separate report will be presented to Council once we have a formal response from Te Āti Awa.
- 24 Funding has been set aside in the Long Term Plan for Waikanae River catchment management and associated water education projects. It is proposed that the joint committee would have over-sight of this work as projects develop.

Groundwater

- 25 Council wanted to ensure a groundwater source could provide a sustainable water supply solution, which would meet projected community needs for the next 50 years. This borefield yield has been assessed at 32,700m³/day which provides for a peak demand of 490L/person/day with medium population growth and an allowance for headroom, to accommodate forecasting uncertainties.
- 26 Extensive investigative drilling and groundwater modelling included;
- drilling and testing of six new bores
 - analysis of drilling and testing information, and the long-term pumping test of the new production well at N2
 - monitoring of salt/fresh water interface
 - analysis of water chemistry
 - modelling of the community's future water demand to feed into the groundwater model
 - modelling of surface water yields (rainfall and river flows) to feed into the groundwater model
 - assessment of the effectiveness of injecting river water into bores to mitigate drawdown
 - amendments to the modelling work reflecting the peer reviewer's comments

Groundwater Yield

- 27 The project team's knowledge and understanding of the geology and hydrogeological yield has advanced since August 2010. The modelling proves that there is sufficient groundwater quantity and quality. The modelling shows;
- there is the required yield,
 - the aquifer system is semi-confined, inter-connected and 'leaky',
 - there is only a low risk of saline intrusion.
- 28 The table below shows the forecasted demand compared to the capacity of the proposed borefield.

Year	Peak Demand (m ³ /day)	Peak Demand with Headroom (m ³ /day)	Borefield Yield (m ³ /day)	Comment
2016	19,700	20,300	23,600	Demand savings achieved
2033	23,600	26,600	28,800	Stage Two implemented
2041	24,800	28,700	30,900	Stage Three implemented
2049	25,400	30,400*	30,900	35 year consent period (starting in 2014)

Year	Peak Demand (m ³ /day)	Peak Demand with Headroom (m ³ /day)	Borefield Yield (m ³ /day)	Comment
2051	25,600	30,800	32,700	Stage Four implemented
2060	26,000	32,300	32,700	50 year solution implemented

*The consent application includes an additional 300m³/day to meet the water needs of the Waikanae Water Treatment Plant.

Drawdown effects on existing bores

- 29 Groundwater modelling indicates there are possible drawdown effects on a number of existing non-Council bores in the worst case scenario (high population growth with a 50 year drought occurring in 2060 or beyond). This drawdown is the localised effect of extracting water from a bore, and reduces with distance from the bore. Drawdown is also different for each of the four main water bearing aquifers and varies across the borefield.
- 30 The groundwater modelling predicts a drawdown under the maximum pumping scenario of:
- less than 1m in most of the shallow aquifer
 - less than 1m in the Parata aquifer, but +5m may occur in the northwest portion of the study area
 - about 10 to 15m in the Pleistocene Sand and Waimea aquifers
- 31 In practical terms this means the water level in a private bore may be lowered. These effects would vary but may lead to some issues around pumping for some bores with surface pumps, or for a pump set too high within the bore. These issues are easily addressed at limited cost over time as they arise.
- 32 Expert advice is that this risk can be managed by implementing a monitoring programme and mitigating these effects using an approach that adapts to reflect actual effects. The selected approach would depend on the monitoring results and how each private bore is actually set up. This would enable Council to;
- spread the drawdown effect across the borefield by decommissioning (or reducing the take from) some of the bores and creating new bores to the south of the river
 - inject river water into the borefield during winter river flows
 - provide for modifications to private bores (e.g. lowering the pump)
 - provide an alternative water supply source (This work can be staged over a number of years)

Drawdown effects on wetlands

- 33 Wetlands are potentially affected by groundwater drawdown but this has to be assessed in the context of natural variations in water levels of 1 to 2m, during natural drought periods. In the worst case scenario, and assuming nationally

recognised wetlands are directly linked to groundwater, modelling indicates that the potential drawdown effects “could be up to 230mm”. Expert advice states “the predicted changes are less than the actual water level variations that naturally occur in these areas, therefore effects may be unnoticeable”. Any drawdown effects are of a short term nature. Modelling shows that the wetland recovers at about the same time as it recovers from natural drawdown in a drought event.

- 34 If these effects are measured through the monitoring programme, they can be mitigated by using an approach that adapts to the actual effects. The selected approaches that Council can apply could be;
- reconfiguring use of the borefield by reducing the water abstraction from bores near affected wetlands
 - spread the drawdown effect across the borefield by decommissioning (or reducing the take from) some of the bores and creating new bores to the south of the river
 - injecting river water into the borefield during winter river flows
 - direct watering of affected wetlands.

Key Stakeholder Consultation

- 35 As with the option selection process in August 2010, the project team has maintained an active approach with key stakeholders. Consultation has been ongoing throughout the project, with a focus on keeping stakeholders well-informed of progress and, more recently, seeking their feedback on technical investigations, the AEE outcomes and proposed conditions of consent.
- 36 This has been achieved by a range of methods, from project updates in the local newspapers, through to meetings with stakeholders to present technical findings. The water care group (consisting of DoC; Fish & Game; Forest & Bird; Friends of the Waikanae River; Kapiti Fly Fishing Club) are the key stakeholders for this project and have been meeting regularly at project milestones.
- 37 An extensive amount of consultation and discussion has been carried out to date and has not raised any significant issues. However, the water care group are keen to review the final monitoring and management plan. These discussions are ongoing and are expected to conclude before the consent hearing.

Assessment of Environmental Effects (AEE)

- 38 The AEE (refer to appendix two for an executive summary) prepared to support the resource consent application is comprehensive. The final resource consent application including all technical reports will be available at time of lodgement.
- 39 Overall, the environmental effects of this proposal are acceptable and can be sufficiently managed by way of conditions of consent, including a comprehensive monitoring programme and using appropriate management responses to address any effects.
- 40 Council has existing consents for the groundwater take from the borefield and the Waikanae River, up to a combined maximum take of 23,000m³/day. The project

will build on the existing infrastructure and seek to increase the amount of water being abstracted from the borefield, and the river, to provide for a 35-year public water supply (the maximum consent duration under the RMA).

- 41 The positive effects of this proposal are significant. The proposal is for a water supply solution that will provide our communities with the ability to provide for their water supply needs for the next 50 years.
- 42 The investigations undertaken to support this application demonstrate that the effects on the Waikanae River can be sufficiently mitigated, remedied and managed, to ensure that a significant adverse effect on water quality and in-stream health, does not occur. In terms of the quality and amenity of the Waikanae River, Council proposes to implement, as far as possible, RRwG in a manner that is unnoticed by people and has no more than minor effects on aquatic life, such as fish and invertebrates.
- 43 The effects on the Waikanae aquifers are acceptable as they can be mitigated, remedied and managed. Groundwater investigations have demonstrated that the proposed extended borefield can be successfully operated as planned over the 35-year period, and also meet the Council's objective of being adequate for demand in a 50 year return period drought. The risk of saline intrusion can be carefully monitored and managed over time, as can any effects on existing bore users and wetlands. Based on monitoring results, appropriate actions can be implemented to ensure that drawdown effects are well managed and do not generate a significant effect.
- 44 Other environmental effects, including temporary construction effects, effects on terrestrial ecology and visual effects, will be no more than minor, particularly as the project is staged over time.
- 45 In terms of cultural effects, Council and Te Āti Awa ki Whakarongotai are working together in the spirit of partnership to explore practical, innovative, culturally appropriate management of water. In the context of this partnership, as endorsed by the shared Memorandum of Understanding in Relation to Water, the cultural effects of RRwG will be addressed.
- 46 The process to assess alternative water supply options for the Waikanae, Paraparaumu, and Raumati communities has been comprehensive and forward thinking. Council will potentially have a 100-year solution in place. The process has involved an appropriate degree of technical investigations, relevant to the scale and nature of the proposal, and has benefitted from extensive stakeholder consultation, a partnership approach with WWG and independent scrutiny from the Technical Advisory Group.
- 47 Inherent to any project of this nature and scale, there is ultimately a degree of uncertainty around the actual effects of RRwG over time. This uncertainty is acknowledged and accepted as being able to be well managed. The management approach proposed as part of this application adds to Council's current water management framework, including the formation of an Adaptive Management Committee, to specifically address (and ideally reduce) uncertainty over time.
- 48 This approach is precautionary and consistent with sustainable resource management. The environmental assessments presented to support the project are

also precautionary - based on a conservative extreme scenario of a 1 in 50 year low flow and projected water demand of 32,600m³/day in the year 2060. However, in reality, in some years there will be no need for recharge at all, whilst in many other years recharge will be at lower volumes and for shorter periods of time. The staged nature of RRwG is well suited to adaptive management, particularly given that the assessed effects are considered to be minor and can be monitored.

Financial Considerations

- 49 Funding has been provided in the Long Term Plan within the Water Supply project, to meet the cost of the resource consenting process. However, if a resource consent decision is appealed to the Environmental Court a re-allocation of funding will be required. Any decision relating to such appeals, if any, would be brought to Council. This is considered unlikely due the high level of communication with the public and key stakeholders.

Legal Considerations

- 50 Simpson Grierson has been engaged to provide legal resource consent advice to the project team. They are working closely with the project team's planners and have been reviewing the Assessment of Environmental Effects and resource consent application. Their high-level review has been completed and no significant issues have been raised.

Delegation

- 51 Council may make a decision on this matter under Section A.2 of the Governance Structure and Delegations 2010-2013 Triennium: *“Exercise any other Council powers, duties and functions of a strategic overview nature including: coordination and prioritisation of infrastructure development;...”*

Tāngata Whenua Considerations

- 52 Tangata Whenua issues have been addressed through the close working relationship with Te Āti Awa WWG.
- 53 The formation of the WWG came about when Te Āti Awa Kaumatua committee became involved when Council was seeking Iwi representation for the water supply project. The Kaumatua committee, who represents Te Ati Awa on cultural matters, agreed to assist and appointed the WWG members to represent the Te Āti Awa Iwi.

Publicity Considerations

- 54 A press release will be prepared to inform the public. There will be an opportunity for the public to make submissions on the resource consent application through the Greater Wellington Regional Council managed process. The complete resource consent application will be made available on Council's website.

RECOMMENDATIONS

55 That Council;

- a) receives the information and conclusions in CH2M Beca – Assessment of Environmental Effects Report - The Kapiti Water Supply Project, September 2012 (refer to appendix two of the Report IS-12-672)
- b) approves lodgement of the River Recharge with Groundwater resource consent application with Greater Wellington Regional Council
- c) thanks the Chair, Don Hunn, and members of the Technical Advisory Group for their effort, dedication and contribution
- d) acknowledges the Te Āti Awa Water Working Group members for their constructive approach to working in partnership under the Memorandum of Understanding in Relation to Water, 6 October 2010

Report prepared by:

Approved for submission by:

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ATTACHMENTS:

Appendix one: Technical Advisory Group Second Report, September 2012 (edoc# 323421).

Appendix two: CH2M Beca – Assessment of Environmental Effects Report - The Kapiti Water Supply Project, Executive Summary, September 2012 (DVD will be made available of the final AAE report at the time of resource consent lodgement).