Summary Report

The Kāpiti Water Supply Project

Prepared for Kāpiti Coast District Council (Client)

By CH2M Beca Ltd (Beca)

8 November 2012

Project Summary: River Recharge with Groundwater

Providing a reliable water supply for the communities of the Kāpiti Coast that is sustainable and will meet the expectations of consumers is a legislative responsibility of Kāpiti Coast District Council (Council). This Assessment of Environmental Effects (AEE) focuses on the water supply for Kāpiti Coast's largest urban area – the Waikanae, Paraparaumu and Raumati (WPR) communities. This area has experienced one of the fastest growth rates of any district in the country in recent times, and continues to develop as a great place to live, work and play. A reliable and sustainable water supply underpins that development and provides for people's social, economic and cultural well-being.

The current water supply for the WPR area is based on a run-of-river system on the Waikanae River. Water is taken from the Waikanae River and treated at the Waikanae Water Treatment Plant (WTP) at Reikorangi Road, before being distributed to the community for consumption via Council's reticulated system. In dry summer periods, when the river is in low flow, the minimum flow requirements of the river mean that this run-of-river supply is supplemented or entirely provided by groundwater from a borefield in Waikanae. Water from the borefield, whilst meeting the New Zealand drinking-water standards, has been criticised by consumers for its taste and hardness. This has also caused problems with electrical appliances for consumers when Council switches to the 'harder' groundwater supply (for example kettles and water cylinders).

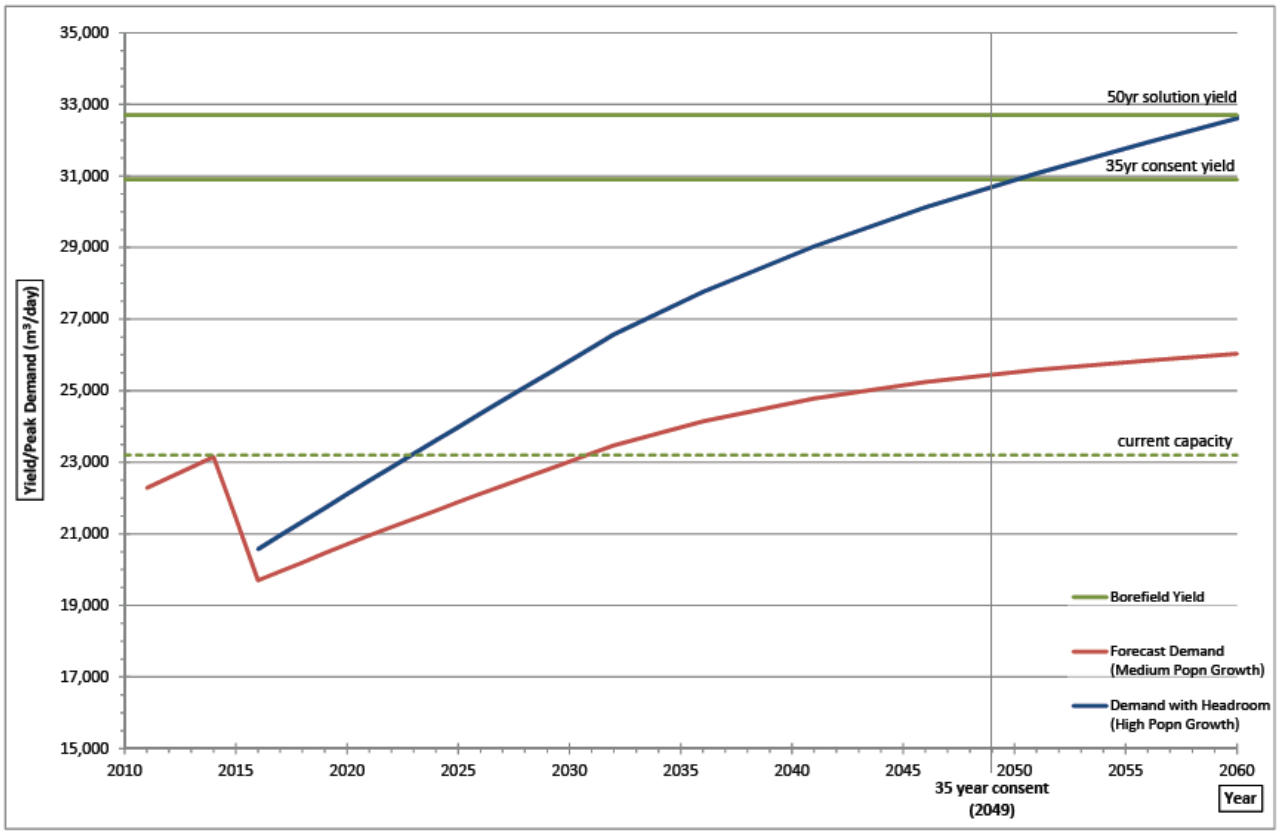
How the proposed river recharge scheme works (including the future dam).

The existing water supply system is under stress in terms of its capacity to meet the community's peak daily water demand in summer and early autumn. The Waikanae River and borefield currently supply up to a consented limit of 23,000 m^3/day. Due to population growth, peak daily demand over recent summers has approached this limit, and the continued use of borefield water for consumption is unacceptable to the community. By 2015 it is expected that the 23,000 m^3/day will be breached.

Within the next few years, population growth and high water consumption will result in demand that exceeds the Council's currently consented limit for water abstraction of 23,000 m^3/day. As a matter of urgency, Council must provide a long-term water supply solution that can meet future peak water demands. In 2009 Council proceeded with investigating a solution to provide a secure long-term (50-year) water supply to be implemented with relative urgency. Council wishes to establish a new water supply solution by 2014.

In consultation with the community, Council has developed a Sustainable Water Management Strategy (Water Matters Strategy) that sets out the vision for water management in the district over the next fifty years. The Strategy has a major focus on water conservation and commits the community to reduce peak daily consumption to 400 litres of water per person per day by the year 2014. This daily volume (plus an allowance for water losses of 90 litres per person per day) allows an estimate of future water needs to be determined for this project. By the year 2060 it is estimated that the WPR area requires a total of 32,300 m³/day for water supply, based on high population growth and the community meeting these conservation targets.

50-year solution, 35-year resource consent period



Although the existing water supply for the WPR area is nearing its consented capacity, it is important to understand that the Kāpiti Coast in general terms has abundant water sources. There are a number of rivers, groundwater aquifers of varying depths, and a reasonably reliable level of rainfall. There are a number of different options to provide a water supply to the WPR area – some 40 options have been identified to varying degrees of detail over the years as set out in Volume 4 of this report suite.

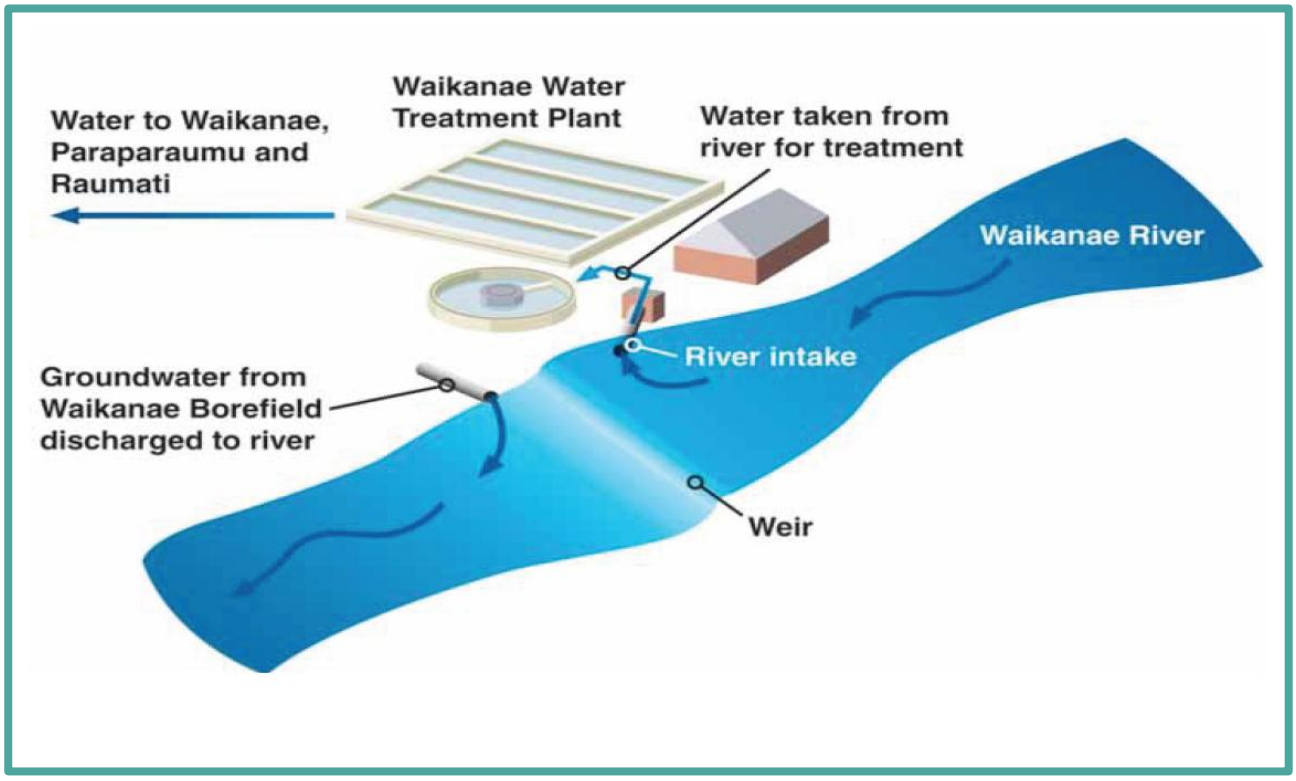
In reaching its decision to pursue the water supply option set out in this AEE, Council has undertaken a rigorous assessment, starting with a long-list of 40 options and working towards the preferred solution over the last three years. The challenge and opportunity for the Kāpiti Water Supply Project was to identify a water supply solution that can overall best deliver on the full range of economic, social, cultural, technical and environmental requirements.

The Waikanae River is physically able to supply all the drinking water required over the next 50 years to meet the projected demands of the WPR community. That is, there is sufficient water in the river to meet demand. However, in order to protect the ecological values of the river, a minimum flow of 750 L/s is in place (or natural flow if that is lower). To implement a water supply solution for these times, Council proposes to discharge groundwater from the Waikanae borefield into the river to ensure the minimum flow (or natural flow) is maintained downstream of the abstraction point. In this way, the river and groundwater work together to maintain a reliable water supply and a sustainable river flow.

The solution is called River Recharge with Groundwater (RRwGW). The Waikanae aquifers provide a natural underground storage system that provides water to top-up the flow of the Waikanae River during low flow times and droughts, allowing more river water to be taken from the river for consumption (such that groundwater is feeding the river immediately downstream of the Waikanae WTP intake, while river water is being consumed by the local community).

Based on demand forecasts, RRwGW provides a 50-year solution that can be efficiently staged over time as demand increases, with the added benefit of effectively using the significant community investment in the existing Waikanae borefield.

Basic concept schematic of RRwGW



Based on the forecasted peak water demand for the WPR area out to 2060, the project will be broken down into four stages as summarised the table below. Note that Stage Four falls outside of the timeframe of a 35-year consent. The stages relate specifically to the yield required and not to the specific bores. The order of bore development and connection is proposed based on current information. It may be that as a result of monitoring effects that Council needs to commission new bores earlier and then spread the same rate of abstraction over a larger area. This could for example reduce effects such as on wetlands or saline intrusion risk.

The proposed staging of this project is summarised in the table below and also on the Staging Plan located at the back of this report (Figure 2).

Proposed Staging for RRwGW

Stage	Indicative Scope of Work (subject to detailed design)	Total Yield#	Estimated Timing*
One	Wellheads for bores Kb7, K12 and N2 Pipeline from bore N2 along Ngarara Road and End Farm Road to Smithfield Road Pipeline from bore K12 along Smithfield Road to bore K6 on Ngarara Road Possibly duplicate or upgrade existing pipeline along Ngarara Road Further develop bore K10 and replace pump to increase yield Bore K13 taken out of service due to poor water quality New pipework within Waikanae WTP and recharge outfall Modifications to existing river intake at Waikanae WTP	23,600 m^3/day	2014
Two	Construct and develop production bore N3, including wellhead Pipeline from N3 to N2 Possibly further duplicate or upgrade existing pipeline along Ngarara Road Replace pumps in bores, Kb4, K4 and K5 to increase yield	28,800 m^3/day	2033
Three	Construct and develop production bore S1, including wellhead Pipeline from bore S1 to M2PP Expressway corridor, over Waikanae River to Te Moana Road and connecting to existing pipeline	30,900 m^3/day	2041
Four	Construct and develop production bore S2, including wellhead Pipeline from bore S2 to bore S1	32,700 m^3/day	2051

Yield is dependent on further development at K10 and future production bore drilling.

* Timing depends on actual growth and per capita peak demand – staging may be brought forward or extended - the nature of the RRwGW solution easily allows for this.

A range of water conservation and demand management measures are being implemented by Council to help ensure the efficient use and sustainable management of the precious water resource of the district – a conservation target of 490 litres per person per day has been set, consisting of consumption at 400 litres per person per day (L/person/day), with an additional allowance of 90 L/person/day for water losses. This includes the introduction of water metering, which is viewed by Council as an essential conservation tool to control the inefficient and wasteful use of water.

In addition to this RRwGW project proposed by this resource consent application, Council has identified a future water supply dam on the Maungakotukutuku Stream in the hills behind Nikau Valley. The required land has been purchased and this will secure a longer term (beyond 2060) option to build a storage reservoir in the future when required. The dam extends this water supply security out by a further 50 years. This combined 100-year solution is innovative, prudent and comprehensive as demonstrated by the various investigations that support it. Being an in-catchment solution, it importantly does not detract from the water supply to other parts of the district such as Otaki, Te Horo and Paekakariki.

Council seeks the following resource consents for the RRwGW proposal:

1. To take and use up to a maximum of 30,700m³/day of groundwater from within the Waikanae borefield as defined on Location Plan [Ref] for the purpose of supplementary public water supply through river recharge or emergency public water supply;

2. To construct and operate bores within the Waikanae borefield as defined on Location Plan [Ref] for the purpose of public water supply, including but not limited to the bores already consented, as well as new bores N2, N3, S1 and S2;

3. To take and use up to a maximum of 30,700m³/day of water from the Waikanae River at the Waikanae Water Treatment Plant for the purpose of public water supply;

4. To discharge groundwater up to a maximum of 30,700m³/day from the Waikanae borefield to the Waikanae River immediately downstream of the Waikanae Water Treatment Plant intake weir;

5. Works and structure within the bed of the Waikanae River – minor modifications to the existing intake structure and a new discharge structure at the Waikanae Water Treatment Plant site;

6. To discharge up to a maximum of 10,000m³/day of water from the Waikanae River into the Waikanae aquifer through bores within the Waikanae borefield abstraction area as defined on Location Plan [Ref] for the purpose of public water supply. Note that this amount of 10,000m³/day will be sourced from the overall river water take of 30,700m³/day, rather than being sourced in addition to that.

Council seeks a 35-year duration for the water take permits and the discharge permits, the maximum duration provided for under the RMA. Given Council's considerable investment in investigating the feasibility of this project and its investment commitment to deliver it in a staged manner over 50 years to meet public water demand, a 35-year duration is warranted in this case. The adaptive management approach proposed, the management framework set by conditions of consent, and GWRC's ability to review those conditions pursuant to s128 of the RMA provide further security and control to set a 35-year duration for this water supply solution.

A good portion of this project is already consented. Council has existing consents for the groundwater take from the Waikanae borefield and the Waikanae River up to a combined maximum take of 23,000 m³/day. These consents expire on July 2025. To put this proposal in perspective; Council is seeking to increase their existing consented take of 23,000 m³/day to 30,700 m³/day – that is, one third more than the present consent.

The proposed average withdrawal represents 7.3% of the total allocation for the lower aquifers and 2.6% of the total safe yield of the Waikanae groundwater zone as identified in the Regional Freshwater Plan. Given that the recharge scheme will not need to be operational for the full year, the proposed maximum allowable annual volume of groundwater take shall be 2.3 million cubic metres per year (from 1 July to 30 June). This annual volume has been determined from modelling water demands and river flows, and includes some contingency in case the 50 year drought pattern is longer than the modelled 90 days, or in case river water cannot be used and groundwater is needed for emergency water supply (eg severe algal bloom in river).

Many of the borefield wells and pipeline are already in place, as is the existing Waikanae WTP. The project will build on that existing infrastructure and increase the amount of water being abstracted from the borefield and the river to provide for up to a 35-year public water supply. Council has defined a Waikanae Borefield abstraction area located at least 1km in from the coastline as a precautionary measure to reduce the risk of saline intrusion. That area is shown on the Location Plan attached to the back of this report and also defines the saline monitoring area located between the coast and the borefield (See Figure 1).

A new discharge structure will be constructed at the Waikanae Water Treatment Plant to discharge groundwater to the river. In consultation with iwi, it is proposed to discharge that water to an open channel firstly at the Water Treatment Plant to 'reintroduce groundwater back to the surface' before being discharged to the Waikanae River. An indicative concept drawing is provided at the back of this report to show the approximate location of that open channel and discharge point to the river (see Figure 4).

This Assessment of Environmental Effects (AEE) in support of the resource consent applications addresses all effects both positive and adverse to meet RMA requirements. Overall, the AEE concludes that the environmental effects of this proposal are acceptable and can be sufficiently managed by way of conditions of consent, including a comprehensive monitoring and adaptive management framework to provide for sustainable management as required under Part II of the RMA.

The positive effects of this proposal are significant. The proposal is for a long-term community water supply that will enable people and communities to provide for their social, economic, and cultural well-being and for their health and safety. This RRwGW project will secure a reliable and sustainable water supply for the WPR area that best meets community expectations for quality of its drinking water. This proposal also provides additional resilience by using two sources of water. The project is readily stage-able to meet community water supply needs, providing a cost-effective solution that can be implemented over time to match demand. The importance of RRwGW as a reliable and cost-effective water supply solution should not be understated.

The key environmental effects and the proposed mitigation and adaptive management measures are summarised in the tables below. Overall, the environmental effects of the river recharge scheme are considered to be minor and able to be sufficiently mitigated and managed by way of conditions of consent.

Key proposed activities and their actual and potential effects

Proposed activity/ consent sought	Key actual and potential effects
Abstraction of river water from the Waikanae River for public water supply.	Positive effect – this will provide a reliable water supply into the WPR community and provide for their health and well-being. Neutral effect – this proposal will maintain the existing minimum low flow/ natural flow regime. During sustained low flow conditions, abstraction of river water (and its replacement by groundwater) will have no more affects than has been deemed acceptable by the setting of the minimum flow.
Discharge of groundwater to the Waikanae River to maintain low/ natural flow.	Positive - the recharge will maintain the minimum flow/ natural flow regime of the river, allowing Council to take more river water to provide a reliable water supply to the WPR community and provide for their health and well-being. Negative – the discharge (increased nutrients/DRP) will likely result in increased algal growth downstream of the discharge point. The increased algal growth may result in adverse ecological, visual and public health effects. Negative – the change in chemical signature of the river water may discourage fish to migrate up the Waikanae River. Positive – the cooler temperature of the groundwater entering the river during summer may potentially reduce algal growth where those algae are reliant on warmer temperatures to grow.
Abstraction of groundwater from the Waikanae borefield for public water supply.	Positive - the abstracted groundwater provides a recharge to maintain the minimum flow/ natural flow regime of the river, allowing Council to take more river water to provide a reliable water supply to the WPR community and provide for their health and well-being. Positive – the supplementary groundwater supply provides an alternative water supply source to the river water in major hazard events that render the river water unsuitable for public consumption, providing for a more resilient water supply for the WPR community. Negative – the drawdown effects may result in an adverse effect of saline intrusion. Negative – the drawdown effects may result in an adverse effect on surface water and existing wetlands in terms of adding to the adverse effects on wetland habitat and ecology during natural dry-out during drought periods. Negative – the drawdown effects may result in an adverse effect on existing bore users in terms of adding to the adverse effects on lower aquifer water tables during drought periods.

Construction effects and mitigation measures

Actual/potential effect	How the effect can be avoided, remedied or mitigated
The staged extension to the borefield will generate no more than a temporary minor nuisance - construction effects (such as potential traffic, noise and vibration, dust and sediment effects).	The preparation and implementation of a Construction Management Plan (CMP) for the pipeline works – to be prepared for the approval of GWRC at the time of detailed design separate to this application (for stream crossing consents for example). KCDC approval may also be required for traffic management of local roads and/or earthworks subject to detailed design.
The proposed works at the Waikanae WTP site, including within the Waikanae River bed and surrounds to create the discharge channel and structure and the minor modifications to the existing intake structure will generate no more than a temporary minor adverse effect – river bed disturbance, potential sediment to waterways, amenity effects.	The preparation of a Construction Methodology Statement and the implementation of a Construction Management Plan for certification by GWRC in order to avoid, remedy or mitigate construction related effects. This is proposed as a condition of consent to be prepared at the time of detailed design of the intake and discharge structures and submitted to GWRC for approval prior to any works commencing.

Effects on river flow and mitigation measures

Actual/potential effect	How the effect can be avoided, remedied or mitigated
Without the groundwater recharge, the abstraction at the rate required to serve future population demand may not provide for the minimum flow of the Waikanae River to be maintained.	Council will ensure that a residual flow of 750 L/s in the river is maintained, unless the river naturally falls below that level. This is proposed as a condition of consent.
Without the groundwater recharge and a residual flow of 750 L/s in the river being maintained, unless the river naturally falls below that level, the proposal may not provide for adequate river flow for fish passage.	Council will ensure that a residual flow of 750 L/s in the river is maintained, unless the river naturally falls below that level. Council will maintain a flow over the intake gate and weir at all times to allow fish passage (at least 100L/s).

Effects on algae and mitigation measures

Actual/potential effect	How the effect can be avoided, remedied or mitigated
The RRwGW discharge may result in an unacceptable proliferation of algal growth downstream of the WTP site.	Council will implement a hierarchy of bore preference, using bores supplying groundwater with the lowest DRP concentrations in the first instance. This hierarchy shall be set out in the Operations and Maintenance Manual. Council will implement the recharge in accordance with a Monitoring Manual which shall be prepared and submitted to the Manager, Consents Management, and Wellington Regional Council for certification. The Monitoring Manual shall set out a comprehensive monitoring and adaptive management approach to algae management. The Monitoring Manual will require a monitoring regime in the river above and below the groundwater discharge point to record periphyton cover and water quality (including nutrients). The monitoring and response procedures shall be in accord with the Ministry for the Environment and Ministry of Health. 2009. New Zealand Guidelines for Cyanobacteria in Recreational Fresh Waters – Interim Guidelines or similar as deemed appropriate by GWRC. Continue with monitoring protocols and action plans currently in place by GWRC and KCDC to assess cyanobacteria cover that naturally occurs during summer months to manage the risk to public health. An Adaptive Management Committee shall be established, with representatives from KCDC; GWRC; Te Āti Awa or appointed representatives. The Adaptive Management Committee shall make recommendations for any adaptive management procuedures. Adaptive Management actions may include: ■ Generate a flushing flow at the Waikanae WTP to wash away algae (replicating a natural fresh) ■ Dislodge algae from substrate by physical removal (scrubbing for example) ■ Adhere to and implement national guidelines for surveillence, alert and action.

Effects on invertebrates and mitigation measures

Actual/potential effect	How the effect can be avoided, remedied or mitigated
The RRwGW discharge may result in an unacceptable adverse effect on invertebrate communities.	The proposed Monitoring Manual shall implement a monitoring regime in the river above and below the groundwater discharge point to record the health of the river. The Plan will focus on monitoring algal growth as a key indicator of in-stream health, however from time to time monitoring of invertebrate communities may be deemed appropriate by GWRC as consent authority or by the Adaptive Management Committee.

Effects on fish and mitigation measures

Actual/potential effect	How the effect can be avoided, remedied or mitigated
The proposal may not provide for adequate river flow for fish passage.	Council will maintain a flow over the intake gate and weir at all times to allow fish passage.
The RRwGW discharge may result in an unacceptable adverse effect on fish, including discouraging fish to migrate up the Waikanae River.	The proposed Monitoring Manual shall implement a monitoring regime in the river above and below the groundwater discharge point to record the health of the river. Fish will be monitored at least 3 yearly in accordance with relevant national fish monitoring protocols to study trends in fish species and numbers and make appropriate adaptive management changes if deemed necessary. Council has committed in its Long Term Plan to working with iwi to replenish fish stocks and improve catchment habitat as part of a long-term programme of riparian replanting in the catchment.

Effects on saline intrusion and mitigation measures

Actual/potential effect	How the effect can be avoided, remedied or mitigated
The proposal may increase the risk of saline intrusion.	The proposed borefield will be located at least 1km from the coastline as a precautionary measure. A saline monitoring buffer area shall be established between the borefield and the coast. Council will maintain a comprehensive monitoring regime for managing the risk of saline intrusion and implement a controlled adaptive management protocol based on agreed triggers and actions. The current trigger levels for conductivity is set at a 20% increase above the maximum 7 day moving average for each monitoring well. Adaptive management actions may include: ■ Reconfigure bore use (reduce take from bores near the coast) ■ Decommission bores, create new bores to spread the effects appropriately across the borefield ■ Aquifer injection should monitoring show increased levels of conductivity caused as a result of RRwGW.

Effects on existing well users and mitigation measures

Actual/potential effect	How the effect can be avoided, remedied or mitigated
The proposal may have adverse drawdown effects on existing well users.	Council will maintain a comprehensive monitoring regime for managing the risk of effects on existing well users and implement an adaptive management protocol based on agreed triggers and actions. Adaptive management actions may include: ■ Reconfigure bore use (reduce take from bores near affected area) ■ Decommission bores, create new bores (spread the effects appropriately across the borefield) ■ Aquifer injection ■ Replace or upgrade affected bores (deeper for example/ better pump).

Effects on existing wetlands and surface waterways and mitigation measures

Actual/potential effect	How the effect can be avoided, remedied or mitigated
The proposal may have adverse drawdown effects on existing wetlands and/or surface waters.	Council will maintain a comprehensive monitoring regime for managing the risk of effects on wetlands and surface waterways and implement a controlled adaptive management protocol based on agreed triggers and actions. Adaptive management actions may include: ■ Reconfigure bore use (reduce take from bores near affected wetlands) ■ Decommission bores, create new bores (spread the effects appropriately across the borefield) ■ Management of wetland system (controlling water levels though placement of weirs, redirecting drains, direct wetting of wetlands, restricting bore use in the area of wetlands during significant drought periods).

The effects on the Waikanae River can be sufficiently mitigated, remedied and managed to ensure that an unacceptable 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 RRwGW in a manner that is largely unnoticed by people and has a minor effect on aquatic life such as fish and the insects they feed on. Extensive investigation undertaken by NIWA to support this application demonstrate that the environmental effects of this proposal of the Waikanae River will be minor and manageable.

Equally, the effects on the Waikanae aquifer can be sufficiently mitigated, remedied and managed to ensure that a significant adverse effect on the aquifer system does not occur. The modelled drawdown effects under the worst-case Scenario 4 (Plans attached to the back of this report for visual reference) show minor drawdowns of between 0mm to 200mm at the shallow Holocene sands (<20m deep). Scenario 4 is based on a constant population equal to that at 2060, under an assumption of high population growth. Under this scenario the maximum combined pumping rate, averaged over the peak week was 29,700 m^3/day from a total of up to eleven wells, eight of which are existing or with three additional wells planned for future construction.

The proposed borefield has been placed inland (at least a 1km setback from the coast) as a conservative measure to minimise risk from seawater intrusion and allow a monitoring buffer area between the coast and the bores. It is estimated that the saltwater interface is several kilometres offshore.

Similarly, drawdown effects on existing well users and wetlands/ surface waters within the Waikanae borefield area can be carefully monitored and managed to ensure any adverse effects are avoided, remedied or mitigated. Any adverse effect over and above natural variations in groundwater levels and natural periods of drought are considered to be minor and able to be sufficiently managed through the adaptive management procedures proposed by Council.

There are 47 wetlands which are potentially affected by the RRwGW Scenario 4. Of these wetlands, 17 are nationally or regionally significant, 15 are locally significant, and a further 15 wetlands are of lower or unknown value. The modelling of effects on shallow groundwater, as indicated by the worst-case drawdowns in the Holocene Sand Aquifer, suggest that water level changes beneath wetlands range between 0-210 mm , being much less than the normal variations in water levels of 1 m to 2 m observed in wells completed in the shallow aquifers.

A map showing the predicted drawdown effects on identified existing wells is provided at the back of this report. Up to 49 wells identified in the GWRC database completed to depths of 20 m or less could potentially be affected by summer-long water level reductions between 200 mm and 500 mm caused by pumping of the Council wells. These Holocene Sand and Upper Pleistocene Sand aquifers drawdowns are less than recorded natural variations in groundwater level of 1m to 2m and are likely to be unnoticed by well users.

In August 2012 the owners were surveyed on whether their well was still in operation, the performance of the well and other details. A total of 89% of the well owners responded to the survey. They indicated that 41% no longer had operating wells or were duplications of other entries in the data base. Of the remaining 59% (wells in current operation), 43% had surface mounted pumps, 41% had submersibles and 16% did not know. Based on this summary we estimate that only about 60% of the affected well totals are likely to exist as operating wells and that about 40% of these are likely to have surface-mounted pumps that would be more likely to have their ability to pump affected by large drawdowns than their submersible counterparts. The ability of these wells to produce at their current rates has the potential to be affected by the pumping of the Council wells. Drawdowns caused by Council pumping could cause wells with shallow pumps or surface mounted pumps reliant on vacuum lift to stop producing water requiring lowering of pumps or, in extreme cases of wells too small in diameter for use of a submersible pump, well replacement. However, if properly constructed and completed with submersible pumps placed near the bottom of the well, they should still be capable of their permitted or consented yields. The adverse effects to these wells are considered to be low because they can be readily managed by lowering their pumps in the event adaptive management actions and operational changes to the borefield do not fully mitigate the effect.

Any other environmental effect, including temporary construction effects as the project is staged over time, effects on terrestrial ecology and visual effects, will be no more than minor.

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, including the supply of drinking water to all communities within the WPR catchment area. That partnership is endorsed by the shared Memorandum of Understanding in Relation to Water. The Cultural Impact Assessment provided in Volume 3 sets out a range of recommendations for Council and iwi to work together on water management. Council plans a comprehensive approach to sustainably managing the Waikanae River catchment over the long term in partnership with iwi and has committed funding to catchment management activities.

The process to assess alternative water supply options for the WPR community has been comprehensive and forward thinking. Council effectively has the means available to provide a 100-year solution, with the staged RRwGW scheme and future dam option. The process has involved an appropriate degree of technical investigations matched to the scale and nature of the proposal and has benefitted from extensive stakeholder consultation, a partnership approach with iwi and independent scrutiny from the Technical Advisory Group.

Inherent to any project of this nature and scale, there is a degree of uncertainty around the actual effects of RRwGW over time. While the extensive investigations undertaken have significantly narrowed that uncertainty, some does remain. That uncertainty is acknowledged and accepted as being able to be well-managed through the monitoring and adaptive management approach proposed by Council. The public water supply system is comprehensively monitored – both the river and borefield – and well managed by both KCDC and GWRC and a number of other organisations and groups with an active interest in this matter. The adaptive management approach proposed as part of this application adds to that current water management framework, including the formalisation of an Adaptive Management Committee to specifically address, and ideally reduce, uncertainty over time in relation to RRwGW.

This adaptive management approach is precautionary and consistent with sustainable resource management. The environmental assessments presented in this report is also precautionary - based on a conservative extreme scenario of a 1 in 50 year low flow and projected water demand of 32,000 m^3/day in the year 2060. However, in reality, in some years there will be no need for recharge at all, whilst in other years recharge may be discharged at lower volumes and for only short periods of time. The staged nature of RRwGW is well suited to adaptive management, particularly given that the assessed effects are considered to be minor and can be monitored.

Overall, this proposal is consistent with the relevant national policy statements, national environmental standards, regional and district policy and plans. The proposal will ensure that the quantity and quality of fresh water meets the range of uses and values for which water is required; safeguards the life supporting capacity of water bodies; and meets

the reasonably foreseeable needs of future generations. Council seeks to manage the quantity of freshwater sustainably, promote efficient use of water and control the allocation of groundwater so that it is not depleted in the long term and seawater intrusion is minimised.

Council's approach is precautionary and proposes a comprehensive monitoring and adaptive management framework. This approach can be appropriately managed by way of conditions of consent.

Clearly, a safe and secure public water supply is a fundamental priority for the people that live, work and visit the WPR area. That community need is pressing - current projections show that even with conservation improvements, additional supply will be needed by 2015. When that priority is balanced with the full range of uses and values of the Waikanae River and Waikanae borefield and environment, the granting of this application will promote the purpose of the RMA as set out in Section 5 of that Act. This proposal is fundamentally about achieving the sustainable management of natural and physical resources as set out in Section 5 of the RMA – a community water supply project, for the well-being and health and safety of the community (current and future generations) that safeguards the environment and the life-supporting capacity of the Waikanae River and aquifer system.

This Summary Report (Volume 1) is supported by:

Volume 2: Assessment of Environmental Effects Report

Volume 3: Technical Reports
- Demand Modelling Report
- Surface Water Modelling Report (Hydrology and Yield)
- Aquifer Testing and Groundwater Modelling Report
- NIWA River Investigation Reports (a total of three reports)
- Ecological Impact on Wetlands Report
- Cultural Impact Assessment Report

Volume 4: Background and Option Selection Reports

Overall, these documents support the resource consent applications and meet the RMA requirements of Section 88 and Schedule 4. Pursuant to Section 104B of the RMA, Council seeks approval of the RRwGW proposal, subject to the conditions of consent or similar proposed. On the basis of this assessment and considering the importance of municipal water supply, a 35 year term of consents is sought to provide long-term security of supply for the Council and WPR community.