

Subject: **Makauri Aquifer - Managed Aquifer Recharge Trial Update**

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Meeting Date: 21 April 2016

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## Report to FUTURE TAIRAWHITI for decision

### SUMMARY

A trial of Managed Aquifer Recharge (MAR) is being considered for the Makauri Aquifer in order to identify whether this is a suitable method to recharge the aquifer.

Golder Associates, Council's geochemical and hydrological consultants for the project, have completed an investigation of the Waipaoa River water using existing infrastructure already established at Kaiaponi Farms.

An analysis of the pros, cons and costs of the Bushmere site - Waingake water source and the Kaiaponi site - Waipaoa River source has been undertaken. The analysis concluded the Kaiaponi site - Waipaoa River water source option to be the preferred for the trial.

The technical work to support an application for resource consent for the trial is complete and an extensive engagement programme has taken place. The resource consent application is completed and ready to be lodged. The Bay of Plenty Regional Council has been delegated authority to process the resource consent on the Council's behalf.

### RECOMMENDATIONS

#### That the Committee

1. receives the report
2. approves the use of the Waipaoa River at Kaiaponi Farms as the source of water and location for the Managed Aquifer Recharge Trial
3. instructs the Chief Executive to lodge a resource consent application for the Managed Aquifer Recharge pilot trial.



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## 1. BACKGROUND

Due to declining levels in the Makauri Aquifer, Council in partnership with HortNZ, Leaderbrand, Wi Pere Trust and other community stakeholders has been investigating Managed Aquifer Recharge (MAR) for the Makauri Aquifer for the last two years. Early investigations were funded through Envirolink and the Irrigation Acceleration Fund. These confirmed that MAR is a viable option for the Makauri Aquifer and that a trial project was warranted.

A trial project has now been set up funded jointly by the Eastland Community Trust and the Ministry for Primary Industries.

The trial initially planned to use water from the Waingake water treatment plant with an injection site at the Waipaoa water treatment plant at Bushmere Road. It was planned to undertake the trial when the Mangapoike Dams were overflowing in winter. In December staff began investigating the Waipaoa River as a possible source for the trial due to the current El Niño weather pattern making water availability unlikely and feedback from public consultation asking for the Waipaoa River to be considered for the trial.

Council staff contracted Golder Associates, geochemical and hydrological consultants for the project, to undertake the investigation of the Waipaoa River water using existing infrastructure already established at Kaiaponi Farms.

## 2. DISCUSSION AND OPTIONS

### 2.1 Trial Water Source and Location

Golder Associates have investigated the Waipaoa River in more detail. The water quality of samples taken from the river at Kaiaponi are nearly identical in quality to water drawn from the river for the Waipaoa treatment plant. Golder Associates indicated that minimal water treatment would be required and this could be achieved generally through the infrastructure already in place at Kaiaponi.

Golder Associates concluded that the water quality testing and geochemical work indicated that the Waipaoa River water is very suitable for the trial. A copy of the Golder's report is given in Appendix 1.

An analysis of the pros, cons and costs of the **Bushmere Site – Waingake water source** and the **Kaiaponi site – Waipaoa River water source** has been undertaken and was reported to the Environmental Planning & Regulations Committee on 16 March 2016 (Report 16-079); a copy of the report is given in Appendix 2. A third option using the existing Waipaoa water treatment plant has also been considered but has been dismissed due to operational issues (the volume of water produced is much greater than needed for the trial) making it not a practical or cost-effective option.

After comparing the two options, Golder Associates recommend that the Kaiaponi – Waipaoa option be used for the trial for the following reasons:

- The site provides a reliable water supply.
- A trial at this site would be directly scalable for a possible future groundwater replenishment scheme.
- Source water protection systems are not necessary at this site.
- There is a significant cost benefit to using the Kaiaponi – Waipaoa site.

Golder Associates recommendation has also been endorsed by Council staff.

Golder Associates also recommended that the trial take place in two separate phases with different source water options: filtered water only and filtered and chlorinated water.

This is to obtain as much information from the trial as possible about the characteristics and behaviour of the aquifer.

Source water treatment may be required at some sites in a future groundwater replenishment scheme as conditions may change (such as heavy rainfall) or where groundwater may be used for drinking water or to irrigate sensitive horticultural crops. A copy of the Golders report is given in Appendix 3.

A communication plan was developed to socialise the Kaiaponi site - Waipaoa water option, which included discussions at Annual Plan meetings, press releases, information brochures and the use of the Council website to publish all the technical reports and relevant information. A Project Steering Group meeting which included iwi representation was held to discuss the Kaiaponi option.

The proposed site for the trial is on land owned by Kaiaponi Farms who are very receptive to hosting the trial. Preliminary discussions have taken place with Kaiaponi Farms with the aim of formalising an agreement for the purposes of the trial.

## **2.2 Lodgement of Resource Consent Application**

It was agreed at the Environmental Planning & Regulations Committee meeting on 16 March 2016 (Report 16-079) that the MAR Trial would be brought back to Council for approval to lodge the resource consent. Substantial progress has been made. The technical work to support an application for resource consent for the trial is complete and the resource consent application has been prepared.

Extensive public engagement has taken place and to date has included more than 10 meetings with groups including: the Freshwater Advisory group, water users, iwi land owning entities, iwi trusts, individuals and one public meeting. Articles in Conservation Quorum, Gisborne Herald and the Council website have also been provided. All technical papers are available on the Council website. A Stakeholder Advisory Group has been formed and this group has had three meetings about the project. Further communications are planned and will be ongoing after the resource consent has been lodged. The Resource Management Act process will allow full public participation through submissions and a hearing before an independent and expert panel.

At its 27 August 2015 meeting the Council approved the delegation of resource consent processing to Bay of Plenty Regional Council and also resolved to seek public notification of the consents. This is in order to both be transparent and provide a clear separation from the Regional Council arm of Gisborne District Council (the applicant).

In addition to Bay of Plenty Regional Council processing the consent independent commissioners will be appointed should a hearing be required under the Resource Management Act. The intention to use independent commissioners for any resource consent hearing has previously been reported to the Environment Planning and Regulation Committee (reports 15/215, 15/293 and 15/425).

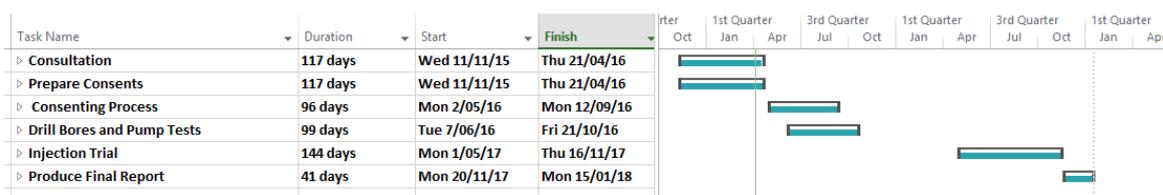
The decision on the resource consent application and any conditions imposed will attract considerable public scrutiny. Therefore, the appointment of independent commissioners for the hearing is just as important as delegating the processing of the consent, in order for Council to be seen to be outside the decision making process. A report to appoint the independent commissioners will go to the 19 May 2016 Council meeting.

This and previous reports have been written assuming that a resource consent hearing will be required.

At this time the option of direct referral to the Environment Court is also being investigated. A legal opinion is currently being sought which will advise if direct referral is a better option for this consent. The outcome of the legal opinion will be reported to Council.

### 2.3 Timeline Going Forward

Assuming resource consents are lodged at the end of April, a six month period is provided for a public notified resource consent process including a hearing. This means, provided the consent is granted and there are no appeals, Council will be able to undertake the drilling of the bore, and the pre-work for the trial by November 2016. This could include injection of a small amount of water to check the initial geochemistry and clogging impacts, ahead of the full scale trial. The full trial would be undertaken at the end of the 2016/2017 summer.



This timeline assumes that a resource consent hearing will be required. If a direct referral to the Environment Court were to proceed the timelines could alter considerably. Council would be given a hearing date by the Court and it is likely to take four to six months for the application to be heard, a decision would be expected within 12 months.

### 2.4 Governance and funding of a full Managed Aquifer Recharge

This trial will inform a number of key aspects that will determine the shape and form of any ongoing Managed Aquifer Recharge scheme. It is known that the cost of providing water for irrigation using a Managed Aquifer Recharge replenishment scheme will out-perform other methods of enhancing water supply – such as surface water storage. The Ministry of Works undertook an options analysis for surface water dams for irrigation of the Poverty Bay Flats in 1986. The costings of this have been updated, and a dam to irrigate 1600 ha would cost in the order of \$37m (\$23,000 per ha). By comparison, the costs of a five bore Managed Aquifer Recharge have been estimated in the order of \$3m to irrigate about 550 ha (\$5500 per ha).

Until the trial is undertaken however, the number of wells, how far apart and rate of water injection for a full Managed Aquifer Recharge are all unknowns. These factors will determine the actual likely costs and feasibility of a Managed Aquifer Recharge.

In terms of funding options and governance for a full Managed Aquifer Recharge, Council is yet to undertake detailed work on this, as it will depend in part on the results of the trial as this will determine if Managed Aquifer Recharge is a viable option going forward. Examples of other Gisborne and New Zealand irrigation schemes and their funding and governance are contained in the table below. These show a range of approaches from full private sector funding to largely central and local government funded.

In approaching the Council to undertake the MAR Trial, the Gisborne Horticulture Sector have been very clear that if the trial is successful, their preference is for a privately funded limited company to be set up to construct and operate a full Managed Aquifer Recharge.

Scheme and Location	Governance Structure	Funding
<b>Private Sector/Irrigators</b>		
Patutahi Pipelines, Gisborne (transports water from the Waipaoa River)	Limited company equally owned by three shareholders. Originally set up by the shareholders to provide water for their orchards.	Funded by the shareholders who developed the scheme. Company holds consents and sells water to irrigators to cover operating costs.
Blind River Irrigation Ltd, Marlborough	Limited company. 50 shareholders.	Landowners put in an initial \$50/ha to do feasibility/consents. Construction funded by shares. Operational costs funded by water charges to irrigators.
<b>Mix of Public and Private Funding</b>		
Maungatapere Irrigation Scheme, Northland	Co-operative company with irrigator shareholders. Since 1990.	Funded through a combination of government grants and shareholder contributions.
Flaxbourne Community Irrigation Ltd, Marlborough. Consented but not built	Limited company.	Initially funded through farmer levy from 54 properties. Council matched farmer funding. Community Irrigation Fund has supported feasibility.
<b>Mostly public – central and local government funding</b>		
Ruataniwha Dams, Hawkes Bay	Council owned investment company (HBRIC). Seeking additional investors to the company with a view to a Build Own Operate Transfer (BOOT) model.	\$80million in the HBRC Long Term Plan + additional investors required. Funding support from the MPI Irrigation Acceleration Fund. Irrigators sign up to long term supply contracts and purchase the water - to cover construction and operating costs. Council is also purchasing water from the company.
Wairarapa Water Use Project	Project Group (feasibility stage) with Greater Wellington Regional Council as sponsor. Wairarapa Economic Development Agency initiated. Wairarapa Regional Irrigation Trust also involved. End goal a commercial entity with a mix of public and private sector input.	Initially Community Irrigation Fund funded. Now 50% MPI Irrigation Acceleration Fund. Greater Wellington has committed \$750,000.

### 3. SIGNIFICANCE

Significance	Degree of Significance
The effects on all or a large part of the Gisborne District	Low
The effects on individuals or specific communities	Medium
The level or history of public interest in the matter or issue	Medium
Consistency with Council's Strategy and Policy	Medium
Impacts on Council's financial strategy, LTP and Annual Plan	Medium

This project is of moderate significance due to the community interest and the economic significance of the Makauri Aquifer to the horticultural sector.

#### **4. COMMUNITY OUTCOMES**

Undertaking a trial MAR contributes to a prosperous Tairāwhiti as the Makauri Aquifer is a significant contributor to the economic viability of horticulture on the Poverty Bay Flats. The project also contributes to an Environmentally Sustainable Tairāwhiti as the Makauri Aquifer is a source of springs across the flats. Without recharge, the aquifer will continue to decline putting both these outcomes under threat.

#### **5. STRATEGIC CHALLENGES**

At this stage what is proposed is a trial and contributes to the Natural Resource Use Strategic Challenge. Careful monitoring and assessment of this will be part of any resource consent requirements, and the trial should give the Council a wealth of additional information about the extent and state of the aquifer, as well as an understanding of whether MAR is a viable option going forward.

#### **6. POLICY**

The MAR trial project has arisen out of the freshwater planning process as it was through this that the extent of decline of the Makauri Aquifer became widely understood. There is policy support within the Proposed Freshwater Plan for projects like MAR recognising that water storage is an important solution to meet both current and future needs for water. The MAR trial project is identified as a key non-regulatory project in the Waipaoa Catchment Plan.

#### **7. LEVELS OF SERVICE**

Undertaking a trial MAR in the Makauri Aquifer contributes to achieving water and coastal resource levels of service which include efficient and effective management of our water resources.

#### **8. FINANCIAL**

The majority of the costs of the trial MAR will be met by external funding: \$200,000 from Eastland Community Trust and \$250,000 from the Ministry of Primary Industries. Staff time and the costs of the resource consenting process have been provided for in the Long Term Plan.

#### **9. LEGAL**

The proposed site for the trial is on land owned by Kaiaponi Farms who are very receptive to hosting the trial. Preliminary discussions have taken with Kaiaponi Farms with the aim of formalising an agreement for the purposes of the trial.

#### **10. APPENDICES**

- Appendix 1: Poverty Bay Managed Aquifer Recharge: Pilot trial – Kaiaponi Site and Source Water Options
- Appendix 2: Environment Planning and Regulation Committee Report 16-079
- Appendix 3: Poverty Bay Managed Aquifer Recharge: Pilot trial – Options Analysis