

# Report to Strategy and Policy Committee August 2014 – To be received

**File No:** 41 52 92  
**Date:** 23 July 2014  
**To:** Chief Executive Officer  
**From:** Acting Group Manager, Policy and Transport  
**Subject:** **Economic Impact Joint Venture Project**  
**Section:** A (Committee has delegated authority to make decision)

---

## Purpose

This report provides an update on the status of the Economic Impact Joint Venture Project.

## Recommendation:

That the report "*Economic Joint Venture Project*" (Doc #3117632 dated 23 July 2014) be received for information

## Background

The Economic Impact Joint Venture (the joint venture) is a project initiated by the Ministry for Primary Industries, Ministry for the Environment and Department of Conservation. A key aim of the project was to provide information to central government to support its decision making in relation to the National Policy Statement for Freshwater Management. These agencies have sought to work with regional councils and others to assess the economic, environmental, social and cultural implications of different water quality and quantity management scenarios. This central government initiative has carried out work in Southland, Canterbury and Waikato as a sample of possible impacts across the entire country.

This assessment is expected to have value in informing other decision-making processes at a regional level, and this encouraged a number of parties to establish the joint venture project in early 2013. The primary partners in the joint venture are the Ministry for Primary Industries<sup>1</sup>, Dairy NZ, Waikato Regional Council (WRC) and the Waikato River Authority (WRA).

### *Phased approach*

The joint venture has adopted a phased approach to meet the differing needs of the partners. Phase 1 of the joint venture was largely driven by central government requirements for information to support decision-making in respect of changes to the National Policy Statement for Freshwater Management. This effectively formed a pilot phase involving the development of a model linking land use profitability with water quality targets. For practical reasons, the scope of catchment modelling was limited to the upper Waikato catchment.

---

<sup>1</sup> Central government leadership of the project was previously based in the Ministry for the Environment, but has moved to the Ministry for Primary Industries.

Water quality scenarios tested were based on the draft National Objectives Framework, and the NPS requirement to 'maintain and enhance' water quality.

It was recognised that the Vision and Strategy for the Waikato River would prevail over the NPS in terms of setting water quality outcomes for the Waikato River catchment. It was also acknowledged that the scenarios tested were driven by central government's needs, and that it was important not to prejudice any of the collaborative processes being established under the Healthy Rivers: Plan for Change/Wai Ora: He Rautaki Whakapaipai project.

Phase 2 is in progress, and involves extending the modelling approach piloted in phase 1 to cover the entire Waikato-Waipā catchment. One key difference is that catchment modelling will stop short of incorporating the links between discharges from land use and nutrient concentrations in water bodies. This is because the joint venture steering group considered that it was more appropriate for the Healthy Rivers/Wai Ora Technical Leaders Group to determine the most suitable methodology to link discharges to nutrient concentrations.

Several other reports have been, or are being completed under the joint venture. These include a stocktake of major municipal and industrial point sources, and reports into 'non-market' valuation in relation to water quality in the Waikato catchment.

#### *Relationship with Healthy Rivers: Plan for Change/Wai Ora: He Rautaki Whakapaipai*

As noted above, it is intended that the outputs generated by the joint venture will be available to the Healthy Rivers/Wai Ora project, and in particular, that the modelling framework that is being established will assist in evaluating policies, as required under section 32 of the Resource Management Act 1991. In order for it to be able to assess the joint venture approach, the Technical Leaders Group has been given the reports available to date, and it is expected that the current joint venture arrangement will be largely completed in October.

The joint venture partners have endeavoured to ensure that the quality of information generated is high. The major reports produced have all been independently peer reviewed. Nevertheless, it is acknowledged that more data will become available over time, and that the joint venture information should be open to incorporating this where possible. The Healthy Rivers/Wai Ora Technical Leaders' Group may wish to further develop this modelling work, or to commission additional studies to inform the policy development process.

## **Joint venture outputs**

### *Context*

The numbers published in the reports to date should be interpreted with care. In particular, it is important to note that the scenarios considered in the catchment modelling work were for the purposes of testing the modelling framework, and were not intended to represent policy scenarios for the purposes of Healthy Rivers/Wai Ora, nor the Vision and Strategy. The purpose is to provide a tool that the Healthy Rivers/Wai Ora team can use, so the scenarios and numbers in the catchment modelling reports should be seen as hypothetical. In addition, when interpreting the outputs of the modelling, it is important to bear in mind the set of assumptions that underpin each scenario. With these caveats in mind, the next section provides some points to note from the current joint venture reports.

### *Catchment modelling*

Much of the initial work of the joint venture focused on developing a catchment modelling approach, piloted in the upper Waikato catchment. This work was undertaken by Dr Graeme Doole of the University of Waikato, but also incorporated information from a range of sources

including Aqualinc Research Limited, NIWA Research Limited, AgFirst Waikato Limited, Dairy New Zealand and Scion. The model estimates the effect on farm surplus for the catchment as a result of meeting specified water quality limits. It particularly focuses on nutrients, but could potentially be extended to include other types of discharges.

The scenarios modelled were based on the draft National Objectives Framework (NOF) and the requirement of the National Policy Statement for Freshwater Management to 'maintain and enhance' water quality. 'Maintain and enhance' was interpreted to mean that water quality must not deteriorate further from current state, and was modelled as two scenarios: one where quality must be maintained in all sub-catchments; and one where quality must be maintained on average across the whole of the Upper Waikato. From the perspective of central government, the scenarios were for the purposes of informing national decisions about the changes to the National Policy Statement for Freshwater Management. From the perspective of the Waikato Regional Council, however, these scenarios were hypothetical – purely for the purposes of testing the modelling approach. Nevertheless, some general points of interest included:

- Water quality at monitored sites in the upper Waikato is such that no change in land use or management practices was required to meet the NOF objectives of protecting health of people engaged in 'secondary contact' recreation (for example, wading or boating). This reflects the low level of the NOF standards relative to the water quality in the upper catchment.
- In the scenarios that required current water quality to be maintained, changes to land management practices and/or land use change were generally required. The modelling of these scenarios shows that the costs of these mitigations results affect the profitability of land use in the catchment (to varying extents, depending on the assumptions made).
- The attenuation of nutrients between land and the water bodies was a highly significant factor – scenarios that assumed high attenuation typically had lower costs than those that had low attenuation. This is because high attenuation implied that there was little 'load to come' in the ground water; low attenuation implied that quality will continue to deteriorate because of existing loads in groundwater, and therefore more significant land use/management change will ultimately be required.
- The costs of maintaining water quality everywhere were higher than the costs of maintaining quality 'on average' (ie allowing some 'overs' and 'unders') throughout the catchment.

This modelling framework is intended to answer questions about the implications of targets and limits for land users' profitability. While this is an important aspect of evaluating the costs and benefits of water quality targets, it needs to be considered alongside other information. For example, it provides limited information about which particular groups of land users may be affected. Also, expenditure on mitigations and changes in land users' incomes will have wider economic effects (for example, on suppliers or customers of the sector). The latter will be important information to fulfil the new requirements of section 32 of the Resource Management Act 1991, which now explicitly requires councils to provide information about the implications of plan changes for economic growth and employment. These are likely to be important considerations for the Healthy Rivers/Wai Ora project, but are outside the scope of the joint venture.

Also, this only considers the costs associated with changes in water quality. There are also a whole range of economic benefits, for many of which, no market exists. These values must be captured in decision-making using different techniques.

#### *Non-market values*

In order to provide an indication of some of the wider benefits of water quality, the joint venture has included work on non-market values. A literature review was undertaken by Dr Dan Marsh and Lena Mkwara of the University of Waikato to identify non-market values

associated with fresh water in the Waikato Region and to prioritise non-market values for further analysis. This review identified and categorised a whole range of non-market values, including:

- Recreation
- Landscape/aesthetic
- Fisheries
- Ecological health
- Biodiversity
- Flood control
- Non-use values
- Cultural
- Food gathering

Two extensive surveys of recreational and cultural uses of freshwater were carried out to provide information about who uses the resource, where, and for what. This information was used in the development of a non-market valuation study focusing on recreational uses of freshwater, and how they are affected by different levels of water quality.

The value of water as a taonga is another important consideration. How this is best incorporated into decision-making and freshwater management is beyond the scope of the joint venture. However, in recognition of its importance, the joint venture does include a study that aims to provide an overview of existing published information. It is not intended to be a complete statement of the iwi water quality-related values of the five co-governance partners. Rather, it is an acknowledgement that these values, and how they are affected by policy, are integral to decisions about the resource.

### *Point-sources*

The joint venture also commissioned Opus to undertake a study of significant municipal and industrial point sources in the catchment. This study provides estimates of: the value of capital in place for treatment of wastewater; the reduction of discharges to freshwater as a result of that plant; and an indication of the cost that would be required to achieve total contaminant removal from these point sources (based on a scenario of disposal to land at all sites). This study focused on discharges; it did not look at the different levels of expenditure that would be required for treatment of potable water for different water quality scenarios.

Total replacement cost of treatment plant at significant sites is estimated to be \$306 million, with annual operating costs of \$21 million. Further expenditures of \$247 million are expected over the next 10 years. Assuming disposal to land for all sites is estimated to require expenditure of \$836 million over the next 10 years.

Opus estimates indicate that the existing capital investment in wastewater treatment prevents: 71 percent of Total Nitrogen; 83 percent of Total Phosphorus; 93 percent of suspended solids; and more than 99 percent of faecal coliforms and *E.coli*. Since the completion of the Opus study, Waikato Regional Council staff have been working to compile more accurate information on point source discharges.

## **Conclusion**

The Economic Impact Joint Venture project is a joint initiative of central government, the Waikato Regional Council, the Waikato River Authority and Dairy New Zealand to develop an information base about the economic effects of setting targets and limits. It is intended that the outputs of the joint venture will be freely available, and that the Healthy Rivers/Wai Ora project will be able to make use of the information and modelling framework developed.

Some parts of the joint venture are complete and are available already. Other parts – notably the Waikato-Waipā catchment modelling and the documenting of existing cultural values are ongoing. All are expected to be complete by October. While the volume of work to date has been substantial, it also indicates a number of issues and gaps. These include:

- New data and information is always becoming available, and this may be able to be better incorporated into the Waikato-Waipā catchment model;

- Integrating the science and economic modelling to enable better links between policy targets and their economic implications;
- Estimating the impacts of proposed policies on the wider regional economy (including economic growth and employment);
- Further research on the changes in the various non-market values that may result from changes in water quality;
- A better understanding of the cultural values associated with water quality; and
- The implications of different water quality scenarios in relation to potable water treatment (and the associated costs).

### **Assessment of significance**

To the best of the writer's knowledge, this decision is not significantly inconsistent with nor is anticipated to have consequences that will be significantly inconsistent with any policy adopted by this local authority or any plan required by the Local Government Act 2002 or any other enactment.

---

**Blair Keenan**  
*Environment Economist*

---

**Tracey May**  
*Acting Group Manager  
Policy and Transport*