

Sediment, nutrient and geothermal input reductions to meet Maaori aspirations for the Waikato River

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In November 2010 the Waikato-Tainui Raupatu Claims Settlement Act 2010 came into force. It ushers in a new era of co-management between the Crown and the five Waikato and Waipa River iwi, to restore and protect the 'health and wellbeing' of the Waikato River for future generations. The Act gives status to a 'vision and strategy' (Te Ture Whaimana o Te Awa o Waikato), which is now the primary direction-setting document for the Waikato River. A new co-management entity called the Waikato River Authority, with a 50:50 Crown-Maaori membership, was created to provide direction to achieve the restoration and protection of the Waikato River, to promote an integrated, holistic and co-ordinated approach to management, and to fund rehabilitative initiatives through a Waikato River Clean-Up Trust.

A NIWA-led consortium carried out a scoping study to identify priority actions to rehabilitate the 'health and wellbeing' of the Waikato River, and to provide information useful to the Clean-Up Trust (Rutherford and Quinn 2010). The study sought to blend maatauranga Maaori (traditional knowledge) with western science, and use the combination to identify issues and to restore 'health and wellbeing'.

Degraded water clarity in the lower Waikato River and some tributaries (notably the Waipa) is an issue for river users. Modelling helped quantify the actions required to meet water clarity targets in various parts of the river. In the Waipa River the main cause of low clarity is inert sediment, and meeting clarity targets will require significant reductions to fine sediment inputs from eroding hill country – a recommended action is the retirement and reforestation of marginally economic hill country pasture. In the hydro lakes the main cause of poor clarity is high phytoplankton biomass stimulated by nutrients from farmland and aggravated by long residence times in the impoundments – beneficial actions include improved farming practice, 'capping' nitrogen exports from existing pasture, and limiting the expansion of dairy farming.

Faecal contamination from farm animals makes contact recreation unsafe in tributaries that drain intensively farmed catchments. Modelling indicates that fencing streams to exclude cattle and better management of farm runoff significantly reduce *E. coli* concentrations – and also have co-benefits for aesthetics, habitat, water temperature, sediment and nutrient. Sewage discharges are culturally offensive to Maaori, and cause locally elevated *E. coli* and nutrient concentrations. Wetland or land treatment would be beneficial and would meet Maaori aspirations.

Food gathering is traditional for Waikato River iwi and the abundance and safety of kai is an issue. Toxicants of geothermal origin (e.g., arsenic and mercury) have accumulated in the sediments of the upper hydro-lakes, and may pose a risk to drinking water supplies if released following a change in sediment redox. Toxicants may also be present in fish, waterbirds and watercress but not enough is known and a recommended action is to assess the health risks associated with the 'food basket'.

References

Rutherford, J.C., Quinn, J.M. (Eds) (2010). Waikato River Independent Scoping Study. NIWA Client Report HAM2010-032. September 2010. www.mfe.govt.nz/publications/treaty/waikato-river-scoping-study.