

Environment Bay of Plenty

Rotorua Lakes TAG (No 9)

Date: Wednesday 30 November 2005

File Reference: 3365 04

Venue: Rotorua Office

Attendance: *EBOP:* Paul Dell, Dougall Gordon
RDC: Greg Manzano, Peter Dine
TMTB: Roku Mihinui, Bella Tait
NIWA: Clive Howard-Williams, Julie Hall, Max Gibbs
UoW: David Hamilton
GNS: Paul White

Apologies Kit Rutherford (NIWA)

1 Action Sheet

Item (2) Zeolite to remove Ammonia: Paul had talked to Craig Mowatt and noted thought needed to go into what to do with the saturated zeolite.

Item (3) (a) David noted that the Mesocosms had been removed, cleaned and new trials reset

- Alum
- Zeolite
- Allophane
- Slag
- Phoslock

Early results showed the Alum to have shown positive results.

David noted that Carolyn Faithfull has completed a review of various flocculants for Environment Waikato. The report will be on the web:

Item 3 (b) - Clive noted that further discussions were required with David on the practicality of using chambers due to the ooze on the bottom of the lake bed. The idea would be to have a capped area and also controls.

Item 3 (c) - Paul noted that John McIntosh and he had received proposals from Nick and would circulate them for comment from David and others.

Item 5 (a) – Max had produced the final report on the Hamurana Stream outflow.

Item 6 – The final Risk Assessment had been completed and presented to Council's Joint Committees. Paul thanked the TAG members for their input to the document and noted some of the changes made.

2 Groundwater - Update

Paul White gave an overview of the groundwater investigations that were being undertaken.

Each catchments groundwater levels, topography and flowing and ephemeral streams had been evaluated to define the groundwater recharge and discharge. He had identified where approximately the majority of the groundwater discharged. This work would help identify areas where land change could have a more rapid impact on nutrients.

The drilling programme had defined a number of boundaries for the Hamurana Springs, but further work was required to define what catchment fed the spring.

Clive asked about the role that faults could play. Paul wanted to try and assess recharge zones before suggesting faults.

The flow model should be in draft by Christmas. A meeting with Kit is programmed for 19 December 2005 to discuss inputs to his modelling. Will also have better defined nutrient inputs from the ungauged catchment.

Clive asked if there was still thought of water by passing the Ohau Channel and getting into Lake Rotoiti. Paul did not think this was likely to be major.

Paul then outlined the summer field programme, and collection of water samples for aging and chemistry.

David raised the issue of monitoring of particulate phosphorus. Paul noted that NIWA had monitored flood flows in four catchments to determine nutrient loads from runoff. Paul would check what was happening on analysing this data. Discussion then took place on the Groundwater report and the need to review the comment on phosphorus.

ACTION: John McIntosh to contact Kit Rutherford to discuss analysis of the flood flow data.

ACTION: Paul White to review comment on Phosphorus/Phosphate in report.

3 Nutrient Targets

Discussion took place on the nutrient targets and how to interpret an estimated 200 tonne increase in nitrogen over the next 200 years based on the groundwater research. The group discussed the various estimates from Kit Rutherford, John McIntosh (TAG nutrient budget), groundwater predictions and David Burger's work. It was not clear whether the current nutrient budget made allowance for future increases.

It was suggested that Paul and John McIntosh organise a meeting in Wairakei when Kit is available to discuss target update on 19 December 2005.

ACTION: Paul/John McIntosh to organise meeting in Taupo on 19 December 2005 with Kit and Paul White.

4 **Ohau Diversion Consent**

Paul updated the Group on the 3 appeals on the resource consent and the estimated timing to get through to the Environment Court if necessary (May 2006). In the meantime the monitoring required by the consent conditions was being implemented. Peter Dine would also get Beca's to start the detailed design work.

ACTION: Peter Dine to instruct Beca's to commence detailed design work.

5 **Tikitere Geothermal**

The diversion proposal has had geotechnical work done and initial design. Scott would be doing some dispersion modelling in the New Year.

Greg was evaluating the impact of geothermal from Tikitere on the sewage plant operation. This work will be completed by early 2006. Then hydraulic issues etc will be assessed.

ACTION: Greg to report back on sewage option in February 2006.

6 **Hamurana Diversion**

Beca has done the geotechnical work and preliminary design. There is no urgency at this time.

7 **Lake Rotorua Modelling**

David gave a presentation on Lake Rotorua water quality and contrasted this with Lake Delevan in Wisconsin. He also outlined some historic weed issues in Lake Rotorua.

He showed the work by David Burger on Phytoplankton response to nutrient additions in Lake Rotorua. Both nutrients are sensitive, although P may have more of an effect. When tested against the various algae both nutrients had an effect.

He then showed the recycling of nutrients that David Burger's modelling was showing. Paul noted that it was important to understand what the numbers in the model actually meant in terms of taking action to restore the Lake. It was agreed to change the gross numbers to nett.

The use of a diversion and alum dosing in Lake Delevan had been a failure as the diversion was not properly designed and understood (temperature short circuit) and the alum capping was overcome by continual inflows.

The group then discussed the importance of the sediments and the need to try and understand the nutrient flux in the sediment. Clive, David and Warwick to discuss possible options:

The group then discussed various scenarios for modelling of nutrient reductions for Lake Rotorua.

Scenarios:

o Planned actions

- | | | | |
|----------------|---------|--------|-----------|
| ▪ RDC Sewage | N – 15T | | |
| ▪ S/W | N – 5T | P – 1T | (2 years) |
| ▪ Reticulation | N – 10T | P – 1T | |
| ▪ Tikitere Geo | N – 25T | | |

o “P” Locking: Puarenga & Utahina N - 6T (2 years)

o Hamurana Diversion: N – 40T P – 6T (5 years)

o Land Use (Option 1): N – 100T P – 3T (30 years)

o Land Use (Option 2) N 200T P – 6T (30 years)

o In Lake Action P – 15T (5 years)

o Future Assessment – No action: N + 200T P No change

ACTION: David to have David Burger run scenarios.

ACTION: Further thought required on sediment flux

8 Phoslock Independent Toxicity Testing

Julie and Clive noted that they had been approached by the makers of Phoslock regarding toxicity testing on the product.

9 Monitoring Chain – Lake Rotorua

David outlined progress on developing a monitoring chain for Lake Rotorua. This would include temperature, oxygen, fluorescence, bottom redox, conductivity and nitrate. The array will be telemetered. It is hoped to deploy the chain in mid January. David and NIWA were assessing buoys.

Paul thanked everyone for their efforts and wished them a good Christmas break.

NEXT MEETING: Wednesday 8 February 2006

Paul Dell
Lakes Project Coordinator