

# Environment Bay of Plenty

## Rotorua Lakes TAG (No 12)

**Date:** Thursday 9 November 2006

**File Reference:** 3365 04

**Venue:** Rotorua Office

**Attendance:** *EBOP:* Paul Dell, John McIntosh, Andrew Wharton  
*RDC:* Peter Dine  
*NIWA:* Kit Rutherford, Max Gibbs,  
*UoW:* David Hamilton  
*GNS:* Paul White  
*TMTB:* Hera Smith

**Apologies** Roku Mihinui, Clive Howard-Williams, Julie Hall, Trevor Stuthridge

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### 1 Review of Action Sheet

The Group went through the action sheet from the previous meeting. The majority of actions had been completed or would be discussed at the meeting. The following were carry over actions.

- **Paul to organise presentation of Ohau Fishery investigation to Ngati Pikiao.**
- **Paul to organise presentation of Hamurana Fishery investigations to Ngati Rangiwewehi.**
- **Peter to report back on evaluation of mudcrete.**
- **Peter/Max to follow up on temperature issues with Hamurana diversion.**
- **John to consider how to define an acceptable Lanthanum level in fish liver/flesh.**

### 2 Update Nutrient Budget

Discussion took place on the adjustment that had been made to the nutrient loss coefficients. Overall the Group considered the adjustments were acceptable. Suggestions were made to refer to the nutrients as was. It was agreed that a figure of 360 T N and 26 T P should be used which could be recycled up to 10 times per year. The definition of internal load would be "nutrients available from the sediments".

Kg's/ha. Also change the heading from nutrient budget to "long term nutrient inputs" from Lake and Catchment. Discussion took place on the rainfall coefficient as well. Major discussion took place on what the true internal load.

**ACTION: John McIntosh to update nutrient table.**

### 3      **Nitrogen Use by Algae**

Warwick talked to his Algae Report. He indicated that to support the productivity there needed to be a large amount of nitrogen recycling in the Lake. Nutrient input has primed an internal pump that is now dominating the nutrients available in the Lake. If it was possible to remove the nutrients it would make a difference. For Lake Rotoiti you would need to filter 600m<sup>3</sup>/ sec. Two important points:

- Can we harvest the nutrients – No
- Large recycling of nitrogen

The phosphorus would be a tenth of nitrogen in load . These matters could be considered in review of the position statement.

### 4      **Dredging Report**

The group discussed the draft dredging report from Nick Miller. There were a number of questions:

- Would dredging expose a new active surface (what depth)
- Evaluate options for treatment of the dredged material. Air drying, treatment, etc.

Paul asked that this work be considered by the Sediment Remediation Sub-group. A student could be involved in bench testing: Paul asked for any feedback in the next week: John and he would meet with Nick to discuss.

### 5      **Freshwater Mussels to reduce nutrients**

Discussion took place on the Draft NIWA report on the potential for bio-manipulation of phytoplankton abundance by freshwater mussels (Kakahi) in the Rotorua Lakes. Some work could be done on strengthening the conclusions relevant to the introduction. Paul and John would discuss with Ngaire Phillips.

**ACTION: Paul and John to discuss the report with Ngaire.**

### 6      **Weed Harvesting**

Discussion took place on the benefit of weed harvesting to remove nutrients. One issue was to have regard to triggering prolific blooms. There was also discussion on whether the macrophyte got its nutrients from the water column or sediments. John noted that John Clayton indicated hornwort got it's nutrients from the water column.

The use of weed harvesting could be beneficial but a number of issues need to be considered. Warwick questioned what nitrogen was in the Lake weed and what was being removed. This would need to be assessed for the Lake nutrient budget.

It was also noted that spraying weed in the Lakes was not seen as good as it resulted in faster recycling of nutrients.

John noted that weed harvesting would remove the majority of the N target for Lake Rotoehu.

## 7      **Review of Position Statement**

The group discussed changes to the position. A number of changes were made. Significant discussion took place on the calculation of the targets for nutrient reduction. Kit was unsure why the target of 250 TN that he had calculated was now assumed to be 150 T N for 2005 with 250 T N being in 2050. The group could not resolve the matter today so would leave it to John and Kit to resolve on Monday 13 November 2006.

**ACTION: Kit to review previous workings on the nutrient targets for N and send comment by Monday 13 November 2006.**

**Paul to update the Position Statement in track changes.**

## 8      **Presentation on Aeration/Oxygenation**

Hans Burggraaf from Page Macrae engineering presented on the use of aeration/oxygenation technology. He talked to physical removal, chemical treatment or natural processes e.g. aeration/oxygenation.

The technology sources oxygenation from the atmosphere. To build a plant for Lake Okaro would cost \$1150,000. Numerous Lakes in Germany use this technology. The company was keen to establish a system in a lake. It was agreed that Environment Bay of Plenty would search the literature and actual examples in places such as Germany.

**ACTION: Environment Bay of Plenty to search the literature (web) for examples of the technology.**

## 9      **Tikitere Update**

Greg noted that consultants should have the next report on assessing the treatment issue and costs of the sewage treatment option by end February 2007.

**ACTION: Greg to report back to the TAG in February/March 2007.**

## 10     **Zeolite Trials**

Peter noted the work that Craig Mowat was doing on assessing Zeolite to strip ammonia from the landfill leachate. This could be an option for Tikitere also. It also involved mixing with biosolids. The material could then be used as a soil conditioner.

**ACTION: Peter to report back as the project progresses.**

## 11     **Z<sub>2</sub> Update**

Paul noted that he and John had met with SCION and ????? to discuss the Lake Okaro application and future planning for its possible use in Lake Rotorua. At least 100

Tonnes was required. This would be applied in March 2007. John McIntosh was coordinating the consent application.

## 12 **Sediment Remediation Meeting**

David circulated a report from the second workshop on sediment remediation options and issues. He discussed the Lake Okaro Trial and also the Plot trials for Lake Rotorua. He outlined the methane issue that has been proposed by Chris Hendy.

The risk for sediment renovation needed to be considered. It could be a barrier to "ploughing" but possibly not the "capping" option.

David also wanted to assess the time for "run down", if no action was taken on the sediments.

Timing for various actions needed to be determined and agreed. Paul outlined his current thoughts on timing. It was agreed that while the Lake Okaro work would need to be monitored over an annual cycle to assess changes in nutrient release, the plots in Lake Rotorua could be done at any time as the benthic chambers would allow anoxic conditions to be created.

David would coordinate progression of the Lake Rotorua Trials. The option of dredging would also be considered as part of this work.

**ACTION: David to coordinate progression of the lake remediation work.**

Paul Dell  
**Lakes Project Coordinator**