

# Report to the Collaborative Stakeholder Group – for Agreement and Approval

**File No:** 23 10 02  
**Date:** 26 February 2015  
**To:** Collaborative Stakeholder Group  
**From:** Chairperson – Bill Wasley  
**Subject:** **Freshwater management units and rationale for selection**  
**Section:** **Agreement and Approval**

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## 1 Purpose

The purpose of this report is to describe the Collaborative Stakeholder Group's (CSG) preferred freshwater management units for the Waikato and Waipa River catchments and the rationale behind their selection.

### **Recommendation:**

1. That the report [Freshwater management units and rationale for selection] (Doc #3288061 dated 26 February 2015) be received, and
2. The recommendation is:  
That the Collaborative Stakeholder Group
  - a) Divide the Waipa and Waikato river catchment into five Freshwater Management Units, being Upper Waikato River from Huka Falls to Karapiro, Middle Waikato River from Karapiro to Ngarauwahia, Lower Waikato River below Ngarauwahia, the Waipa River from headwaters to confluence with Waikato River, and Selected Lowland Lakes, as shown in Attachment 1.

## 2 Background

In August 2014 the Ministry for the Environment released the National Policy Statement for Freshwater Management 2014 (NPS-FM 2014). When managing freshwater, Regional Councils must identify Freshwater Management Units (FMUs), which are defined as:

*“Freshwater management unit is the water body, multiple water bodies or any part of a water body determined by regional council as the appropriate spatial scale for setting freshwater objectives and limits and for freshwater accounting and management purposes.”*

(Ministry for the Environment 2014, pg 7)

The NPS-FW in Policy CA1 and CA2 sets out requirements and process in relation to establishing FMUs, including:

- identify values for each FMU (must include compulsory values but appropriateness of other national and regional values to be determined);
- describe each FMU in terms of its current state and anticipated future state on the basis of past and current resource use;
- set objectives and limits for each FMU;
- be accountable for monitoring purposes i.e. measure, model or estimate contaminant loads and sources.

It is notable that the process of establishing FMUs does not require decisions about how land and activities should be managed to achieve objectives and limits. There is no requirement in the NPS-FM 2014 to have different policy provisions for each FMU.

CSG have discussed options for FMUs on a number of occasions<sup>1</sup>. This report outlines the preferred option and the rationale behind it.

## 3 Freshwater management units and rationale

At CSG5 a number of options were considered as set out in a report from the TLG (Waikato Regional Council 2014a). Option 3 was considered as possibly the preferred option.

In summary, the characteristics of Option 3 (from CSG5 FMU report) are that it is:

- Relatively simple
- Recognises impounded versus flowing water in the Waikato River
- The Waipa and Waikato catchments are separate
- Selected lakes can be treated separately
- Aligns with catchment management zones
- Clear boundaries for water quality/attribute state for policy development
- Recognises Hamilton urban and peri-urban area
- Partly combines geomorphic or hydrogeological units
- Monitoring sites are representative in part
- Partly aligns with Variation 6 boundaries
- Reflects policy issues to be managed e.g. flood management
- Aligns with WRISS sub-regions.

At CSG9 in February 2015 the CSG worked in small groups and looked at the options again in light of the attributes information and current state of the river provided by Bill Vant and

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<sup>1</sup> See reports Waikato Regional Council 2014a, b, c, 2015 and CSG workshop notes in reference list.

the TLG. A matrix showing site by attribute state for monitored attributes allowed FMU options to be considered on the basis of water quality.

The CSG also considered the WRA report card unconfirmed boundaries (which splits the Upper catchment into two at Ohakuri) but were not persuaded this would add value for the purposes of Healthy Rivers.

Feedback from consideration of a matrix showing site by attribute state did not provide a basis or any compelling evidence for changing the view that Option 3 is the most suitable or appropriate option at this stage (Facilitation session notes CSG9, 2015).

The CSG was very clear that FMUs are about the spatial scale for objectives and limits and for monitoring/modelling progress towards achievement of these. There are likely to be other spatial scales for appropriate management response/regulatory packages.

One matter the CSG were not sure about was the boundary between the Upper and Mid FMUs. The TLG report to CSG5 indicated Karapiro as the boundary, but there is no monitoring point at Karapiro and there was concern that the effects of the dam would make it difficult to monitor at the dam. The current monitoring site, with several decades' history, is at the Narrows and includes the effects of discharges from Cambridge. Another suggestion was Horahora bridge, but there is no monitoring site there. The CSG asked for further advice from the TLG about merits of where exactly to set that boundary.

A report from the TLG (Attachment 2) considers the issue of location of boundary relative to monitoring site at Karapiro and concludes that there is no particular technical issue with the non-coincidence of FMU boundaries and monitoring sites. If required, corrections can be made and these corrections will most likely be small (of the order of 5%).

## 4 Summary

In summary the CSG have concluded that Option 3 remains the most suitable and appropriate option to describe the FMU boundaries.

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## References

Facilitation session notes from CSG workshop 9 (9 and 10 February 2015). Day 2 10 February 2015. FMU's – Dr Bryce Cooper. Document #3286363.

Ministry for the Environment 2014. National Policy for Freshwater Management 2014. Wellington: Ministry for the Environment.

Waikato Regional Council 2014a. Report to Collaborative Stakeholder Group. CSG workshop 5. Dated 1 August 2014. Freshwater Management Unit options for consideration by the Collaborative Stakeholder Group. Document #3121490.

Waikato Regional Council 2014b. Report to Collaborative Stakeholder Group – For Agreement and Approval. CSG workshop 6. Dated 2 September 2014. Freshwater Management Units – report back on current thinking for the Waikato and Waipa catchments. Document #3151912.

Waikato Regional Council 2014c. Report to Collaborative Stakeholder Group – For Agreement and Approval. CSG workshop 7. Dated 20 October 2014. Selecting Freshwater Management Units – a comment from the Chair of the TLG. Document #3194192.

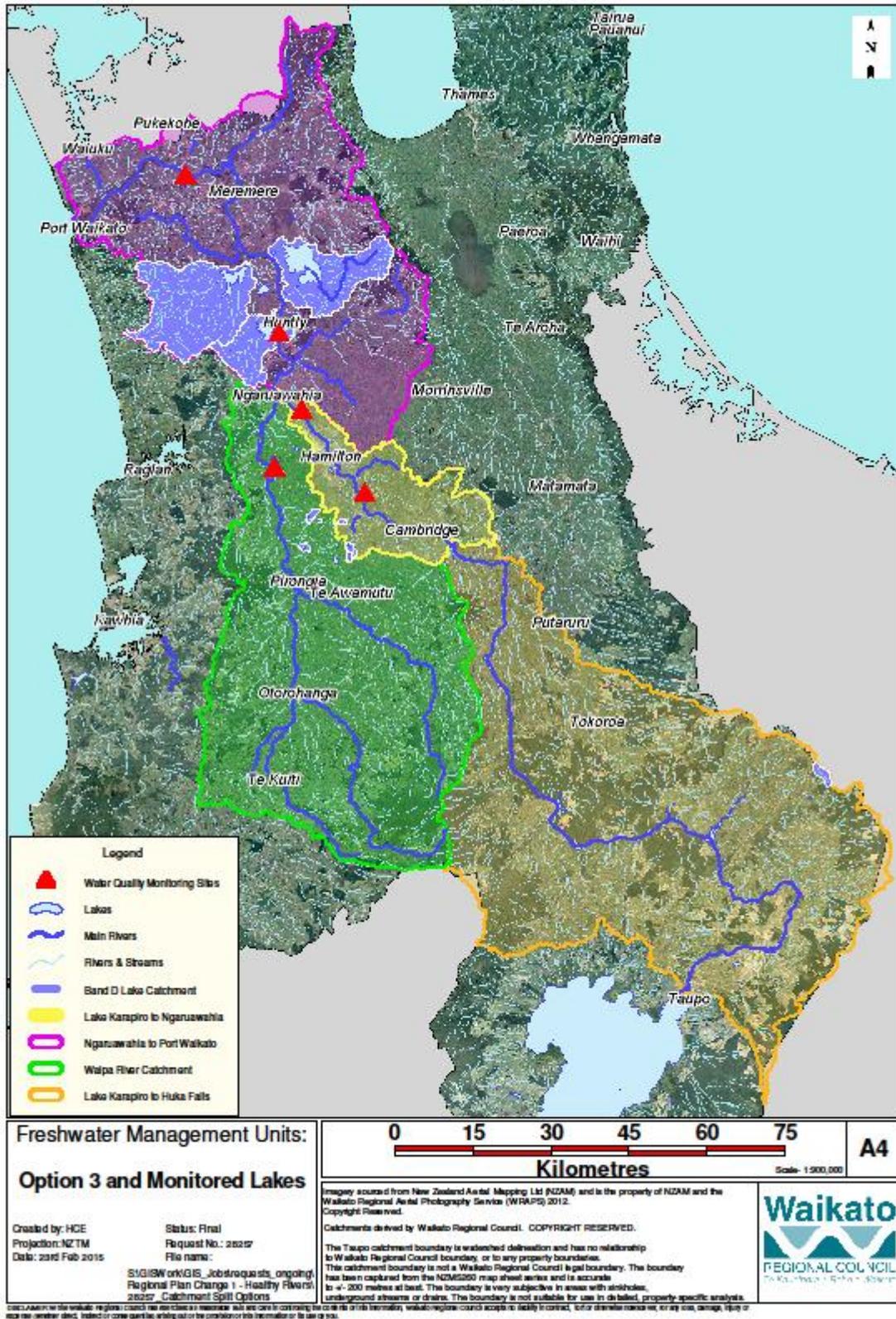
Waikato Regional Council 2015. Report to Collaborative Stakeholder Group. CSG workshop 9. Dated 3 February 2015. Summary of discussion on Freshwater Management Units. Document #3274549.

Workshop notes from CSG workshop 5 (14 and 15 August 2014). Day 2, 15 August 2014 Section 8, Freshwater Management Units – Tony Petch (TLG). Document #3136044.

Workshop notes from CSG workshop 6 (15 and 16 September 2014). Day 1 15 September 2014. Document #3177101.

Workshop notes from CSG workshop 7 (30 and 31 October 2014). Day 2 31 October 2014. Approvals session: FMU report - to be received. Document #3208894

# Attachment 1: Freshwater management unit boundaries – Option 3



## **Attachment 2 – The non-coincidence of Freshwater Management Unit boundaries and monitoring sites**

### **A report back from the Technical Leaders Group 25<sup>th</sup> February 2015**

At CSG#9 the CSG discussed Freshwater Management Units (FMUs). One particular matter discussed was the downstream boundary for an 'Upper Waikato' FMU and its relationship to a monitoring site. As previously put forward, the downstream boundary for this FMU was proposed as Karapiro Dam whilst the nearest existing monitoring site is at the Narrows (23km downstream). The CSG asked that the TLG provide a paper on this matter and how it could be resolved. This is that paper. In preparing it we have also called on the expertise of Bill Vant at Waikato Regional Council.

1. The issue raised is not peculiar to Karapiro/Narrows - non-coincidence of an FMU downstream boundary with an existing monitoring site is common to all of the FMUs in the CSG's preferred option, specifically:
  - a. Waipa @ confluence FMU versus Waipa @ Whatawhata monitoring site
  - b. Waikato @ Karapiro FMU versus Waikato @ Narrows monitoring site
  - c. Waikato @ confluence FMU versus Waikato @ Horotiu Bridge monitoring site
  - d. Waikato @ Te Puuaha FMU versus Waikato @ Tuakau monitoring site
2. There are logical reasons for the choice of FMU downstream boundaries, as previously presented to the CSG and as discussed by the CSG at its meetings, including CSG#9 where it arrived at its preferred FMUs. These boundaries should remain. With specific reference to the Upper Waikato FMU, Karapiro Dam represents a logical boundary as it the river undergoes hydrological/hydraulic change from an impounded water system to one of flowing water and a significant change in geomorphology from incised volcanic terrain to the broad alluvial plains of the Waikato that is the most dominant geomorphic feature for the remaining length of the Waikato River.
3. There are also logical reasons why the monitoring sites exist where they do and for why monitoring sites are sometimes impractical at the exact point of the FMU downstream boundary. These include, for example, safety, suitable cross-section and bank-stability for a flow measuring site (see importance in #4), avoidance of back-up effects at the Waikato-Waipā confluence during storm flows, and tidal influences below Tuakau.
4. There is also significant value in having long-term data for water quality upon which future state and trends can be compared. The sites proposed in #1 all have long-term water quality records (>20 years) and, of added importance in accounting, have water-level recorders in place supplying long-term river flow records (the mass loads of a water quality attribute, e.g., kg per year, carried by the rivers being a product of concentration and flow). From a technical point-of-view, these arguments are persuasive. With respect to the Karapiro downstream boundary, it would be feasible to start a new record at the Karapiro tailrace, but as the discussion below illustrates the TLG regard this as being a "nice to have, but not essential".
5. Water quality (both as concentration and mass load) at the downstream FMU boundaries can be estimated from the data for the nearest monitoring station. For the situation where the FMU downstream boundary is upstream from the monitoring site (Karapiro/Narrows) this estimate can be made by subtraction of inputs in between, for the others this will be by addition.

6. All the proposed FMU's are large in area and, as a consequence, have large flows and associated mass loads of the four contaminants at their downstream boundary. The adjustments required due to non-coincidence of FMU downstream boundary and monitoring site may therefore be expected to be small, and attributable to tributary inflows and inputs from any major point sources in-between.
7. Major point source dischargers measure and provide water quality and flow data as part of their consents, so calculations of their contribution is a relatively straightforward matter. Point sources of relevance include the Cambridge wastewater discharge (Karapiro/Narrows) and the Horotiu meat-works discharge (Horotiu/Confluence) and their contributions are small as shown by the analysis below for N and P:
  - a. Monitoring data show the annual mass loads at the Narrows are 3695 tonnes/year for N and 280 tonnes/year for P, with the Cambridge wastewater contributing 54 tonnes/year of N and 8.5 tonnes/year of P, a 1.5% and 3% contribution respectively.
  - b. Monitoring data show the annual mass loads at Horotiu Bridge to be 4220 tonnes/year for N and 385 tonnes/year for P, with the Horotiu meat-works adding a further 90 tonnes/year of N (2%) and 13.8 tonnes/year (3.5%) of P prior to the proposed FMU downstream boundary at the confluence of the Waikato with the Waipa.
8. Non-point source contributions arriving in the river stretch between the FMU downstream boundary and the monitoring site (or the reverse) can be estimated directly where data exists for incoming tributaries or indirectly from export coefficients or catchment models where it does not. These diffuse inputs can therefore be allowed for in calculating FMU statistics. In any case these contributions will be small relative to the mass loads being carried in the main stem of the rivers because the areas they drain are small relative to the total catchment areas at the FMU downstream boundary (less than 2%). Where export coefficient analysis or catchment modelling of unmeasured incoming tributaries suggest contaminant losses disproportionately high relative to their areal extent, there may be a case for monitoring to be instigated. This seems unlikely given that the regional council already sample the significantly sized tributaries, such as the Karapiro and Mangawhero Streams in the Karapiro-Narrows stretch.
9. The National Policy Statement for Freshwater Management (2014) requires regional councils to establish and operate a freshwater quality accounting system for those freshwater management units where they are setting or reviewing freshwater objectives and limits. The approach being proposed in the Waikato where FMU boundaries do not overlap tightly with monitoring/accounting sites appears to be in accordance with draft guidance on freshwater accounting provided by MfE.
10. **The conclusion** to be drawn is that there is no particular technical issue with the non-coincidence of FMU boundaries and monitoring sites. If required, corrections can be made and these corrections will most likely be small (of the order of 5%).