

Priority sub-catchments for staged development of property plans

Technical Leaders Group 29th March 2016

Purpose

Provide technical information to CSG on prioritisation of sub-catchments for staged development of property plans.

TLG Recommendation

The TLG considers that 'Alternative option 2' best delivers on the CSG's guidance criteria for the prioritisation of sub-catchments for a three-stage development of property plans.

Background

Part of the policy mix currently being developed by the CSG is the requirement to develop and implement property plans across the entire catchment (draft Rules 5 and 6). In considering the practical roll-out of these property plans the CSG are seeking a staged approach, with those sub-catchments where the contaminant loss from farmland is ranked disproportionately high being in the first stage. In discussing a mocked-up draft at its meeting of 2-3 March, the CSG provided the following guidance to the TLG:

1. There was a preference towards using the combined ranking of all four contaminants as a way to establish those 'top priority' sub-catchments for the first tranche of farm plans. There was a view that the top 20% of combined rank sub-catchments should be in the first tranche of farm plans.
2. If the ranking analysis in #1 does not include those sub-catchments draining to the Lake Waikare – Whangamarino system, then the CSG asked that consideration be given to adding them into the first tranche of farm plans.
3. If the ranking analysis in #1 does not include sub-catchments that have a high priority ranking (top 10%?) for one contaminant, then consideration should be given to adding them into the first tranche of farm plans.
4. Also, as a result of that meeting and further work from the property plan sub-group, the CSG is now proposing 3 tranches for developing farm plans, all within the first 10 years. As described in the CSG's recommendations tabled at the HRWO Committee meeting of 22nd February:
 - a. By 2019 'top priority' sub-catchments will have property plans
 - b. By 2022 'second priority' sub-catchments will have property plans
 - c. By 2026 'third priority' sub-catchments will have property plans

The TLG have considered prioritisation approaches that are consistent with the above guidance.

Approach

The analysis was carried out by Dr Annette Semadeni-Davies from NIWA, the developer of the catchment water quality module of the HRWO scenario model, with guidance from the TLG Chair. The water routing, water quality and land use information components of the HRWO model have been used to determine the relative extent of contaminant reduction required per hectare from farms in each sub-catchment to help close the gap between current state and desired state (Scenario 1) by:

- Removing the influence of point sources and geothermal inputs
- Including the N 'load to come' within the 'current state' of relevant sub-catchments as this is a better reflection of the water quality effects of current land management practices
- Using the routing algorithms to remove the effects of upstream sub-catchments so that the contaminant reductions required within each sub-catchment can be determined.

Findings

The results of the sub-catchment ranking process are presented in the Table ("DNA chart") and associated contaminant maps attached. Some key observations:

1. There is a cluster of high priority sub-catchments for both N and P in the Upper Waikato FMU.
2. There is a cluster of high priority sub-catchments for both *E.coli* and sediment in the Waipa FMU.
3. The Central and Lower FMUs contain some 'hot' and moderately 'hot' sub-catchments (red and dark brown, top 20%), for example, those draining to Lakes Whangape and Waikare and the Whangamarino for sediment.
4. This all leads to a 'mixed bag' with respect to the average ranks across all 4 contaminants.

The spatial differences of priority rankings between contaminants are not unexpected, and reflect the outcome of the differing effects of biophysical setting (e.g., slopes, soil type, climate), current patterns of land use (intensity and practice), and spatially-different desired attribute states for the water (as per Scenario 1). That is, the suitability of current land use patterns from a water quality attribute perspective.

Based upon the guidance provided by the CSG, we have prepared three alternative options for breaking the sub-catchments into the three tranches – 'top priority', 'second priority' and 'third priority'. These are presented as the 'shades of purple' columns in the Table and are repeated in the 'shades of purple' maps. All columns in the Table have been sorted by Alternative option 2.

It is the TLG's view that alternative option 2 best meets all the CSG guidance criteria provided above. With this option, 31 sub-catchments with estimated total farm land area of 244,323 ha would be 'top priority' for property planning, 23 sub-catchments with estimated total farm land area of 235,380 ha would be 'second priority', and 20 sub-catchments with estimated total farm land area of 201,763ha would be 'third priority'.

In a separate exercise, the Regional Council's implementation team are looking at the number and type of farms in the sub-catchments and will be providing the CSG with information on implementation feasibility.















