# Lake Rotorua catchment boundary

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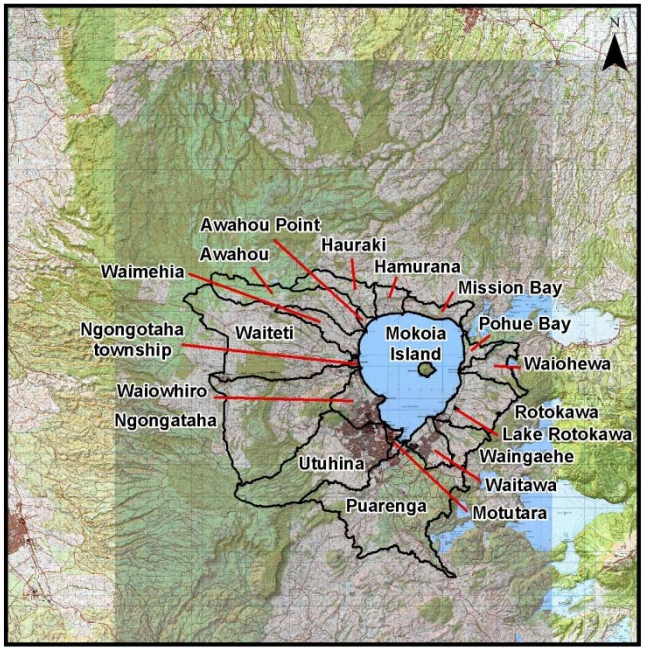
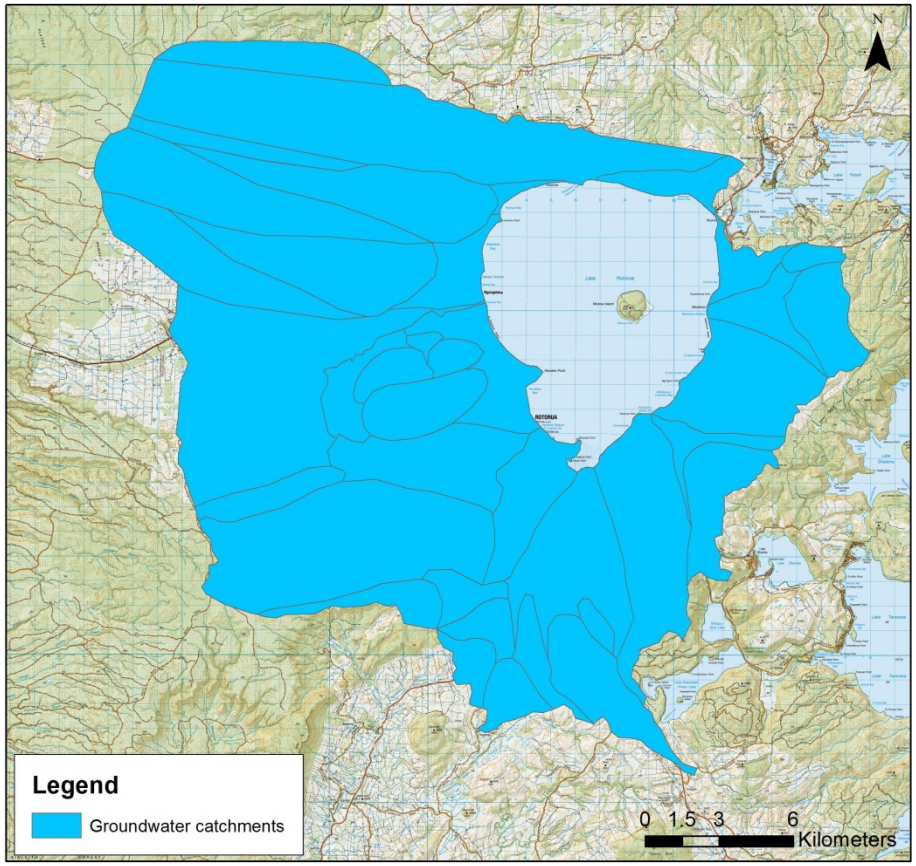
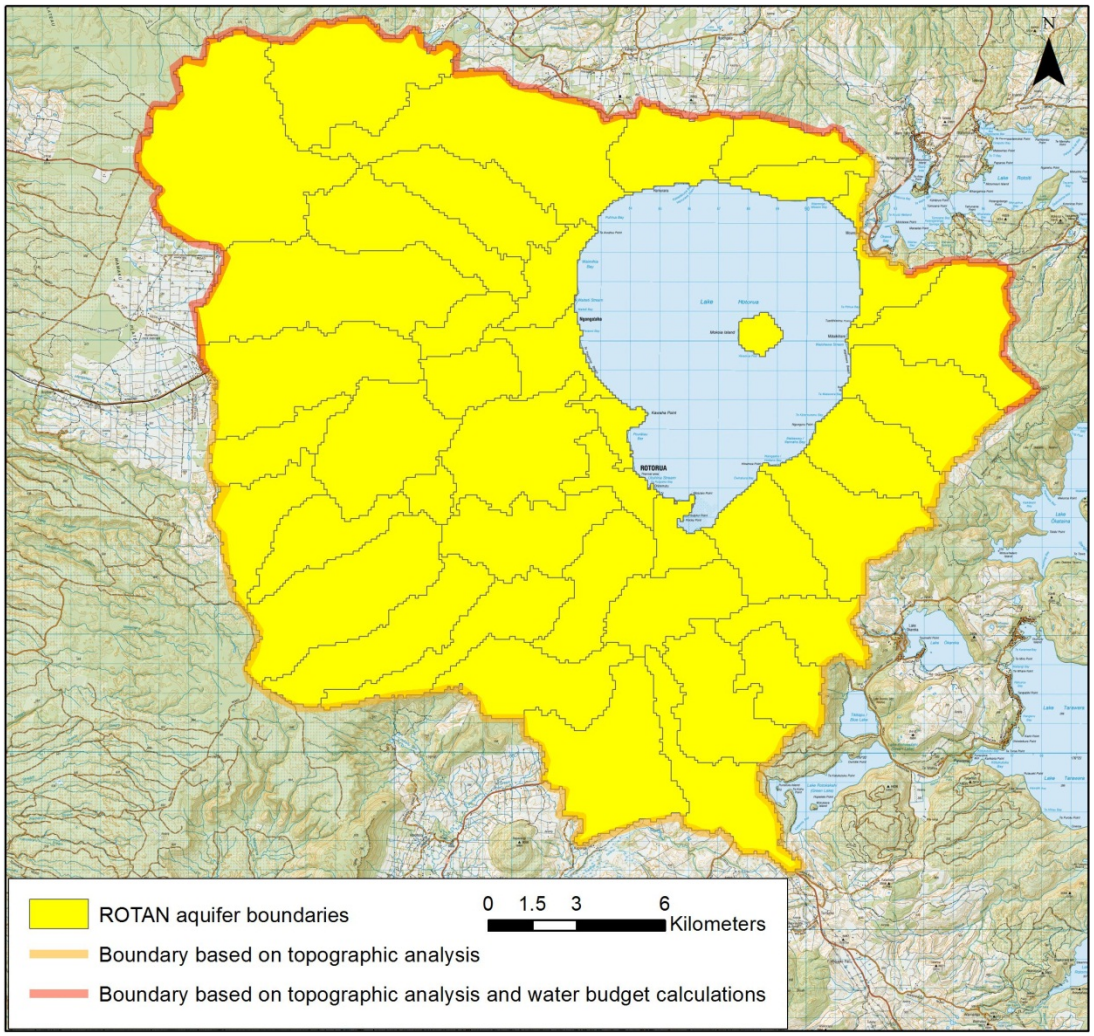
# BOPRC surface catchments
# - used in the groundwater model



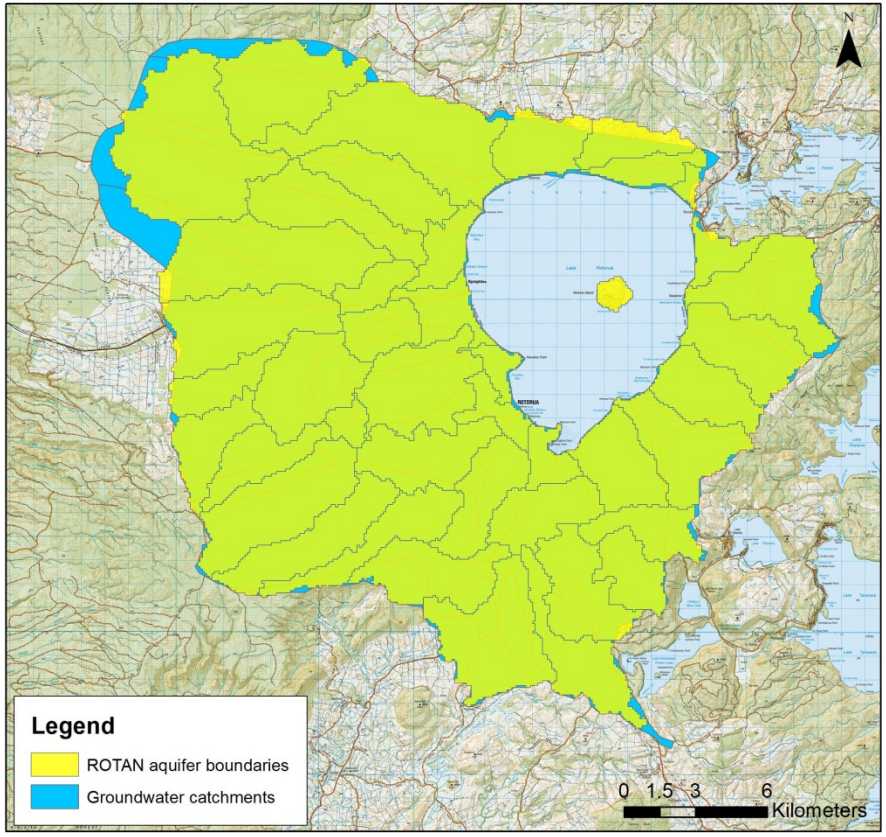
# Groundwater catchment- larger than the surface catchment



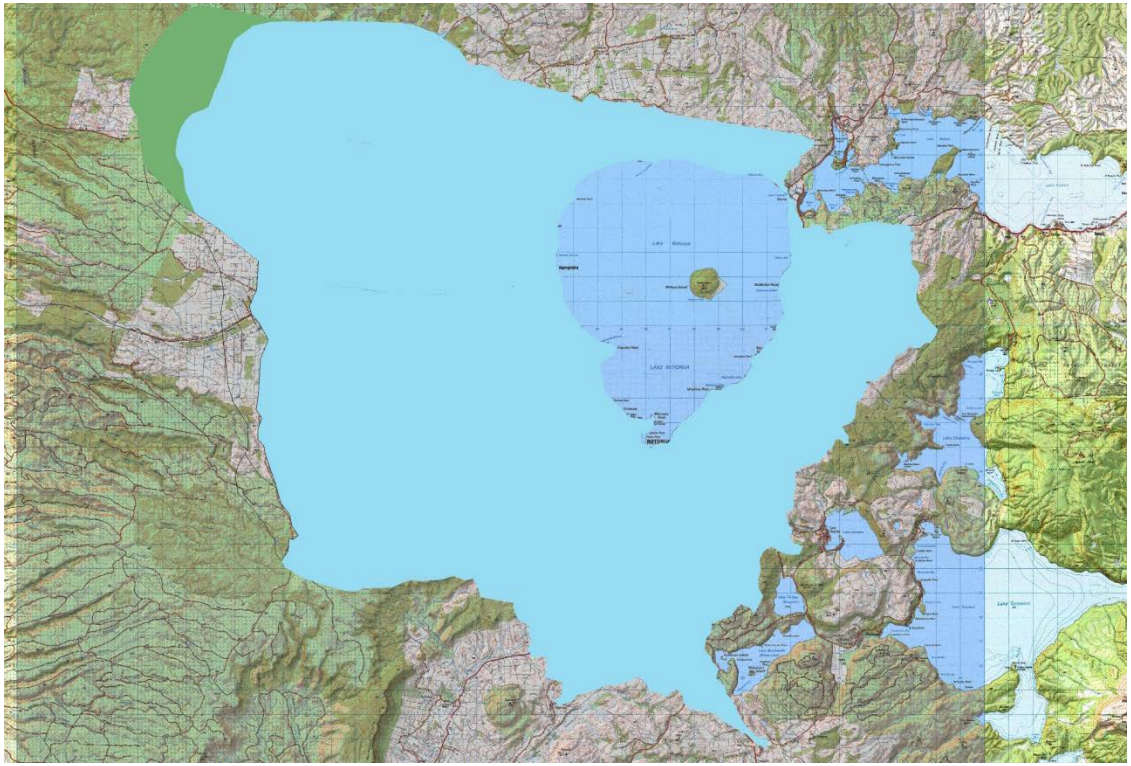
# ROTAN model boundary



# Comparison of the two boundaries



# Uncertainty



Possible extension to the Lake Rotorua catchment (green-coloured polygon to the west) that accounts for Rutherford et al. (2008) estimates of uncertainty in: rainfall, rainfall undercatch and AET (White and Rutherford, 2009).

# Recommendations

Task 1: define the boundary

- NIWA and BOPRC identify the topographic model to use in assessment of the boundaries of surface catchments relevant to the Lake Rotorua catchment boundary
- NIWA, BOPRC and GNS Science identify the location and area of groundwater catchment beyond surface water catchment. This will probably include agreement on surface flow calibration values, rainfall maps and AET estimates. The long-term (1960 – 2006) average rainfall map of Tait et al. (2006) and the AET map of Woods et al. (2006), scaled to a 500 m by 500 m grid are suggested as relevant to the project. Calculation of baseflow and runoff may be relevant.

Output: a non-pixelated GIS map at a 1:50,000 scale, e.g., approximately 1 point per linear 100 m

# Recommendations

Task 2: uncertainty

For the boundary controlled by the DTM:

- Assess uncertainty of DTM and topographic contours using a standard method

For the groundwater area beyond the catchment:

- the long-term (1960 – 2006) average rainfall map of Tait et al. (2006) and the AET map of Woods et al. (2006), scaled to a 500 m by 500 m grid are used to calculate rainfall recharge to groundwater and possibly runoff;
- NIWA, BOPRC and GNS Science identify the area and boundary where rainfall recharge to groundwater, and possibly runoff is within +/- 5% of the value calculated for catchments bordering the boundary identified in Task 1.

Output: a non-pixelated GIS map at a 1:50,000 scale, e.g., approximately 1 point per linear 100 m