

TAURANGA FRESHWATER MANAGEMENT TOOL – INTEGRATING WATERWAY PLANNING AT A CITY SCALE

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ABSTRACT

Tauranga City Council (TCC) manages the three waters for NZs 5th largest city, home to approximately 160,000 people and covering 140 square kilometers. TCC owns and operates Water Supply, Wastewater and Stormwater infrastructure and through regulation and non-regulative policies manages land use and activities alongside the Environmental Regulator, Bay of Plenty Regional Council (BoPRC).

TCC in partnership with Morphum Environmental, Paradigm Environmental and GHD are producing a Freshwater Management Tool to better understanding the environmental impacts of their water abstractions and stormwater discharges, and identify optimal solutions in support of improved water management generally, and specifically in preparation to meet Regional objectives/ targets under the NPS-FM. The model is based on USEPA LSPC and Sustain modelling of the TCC catchments as utilized for Auckland and KMR FWMT projects. The process has involved engagement with Iwi, and with the regional and neighboring councils to ensure integration of the best available local knowledge and relevance of the model outputs to decision making in the region.

Some of the TCC stormwater and water supply catchments have extensive upstream subcatchments within WBoP District Council areas, and therefore the model domain adopts ki uta ki tai (mountains to sea) approach of modelling the entire catchments aside from the more extensive Wairoa and Kaituna Rivers.

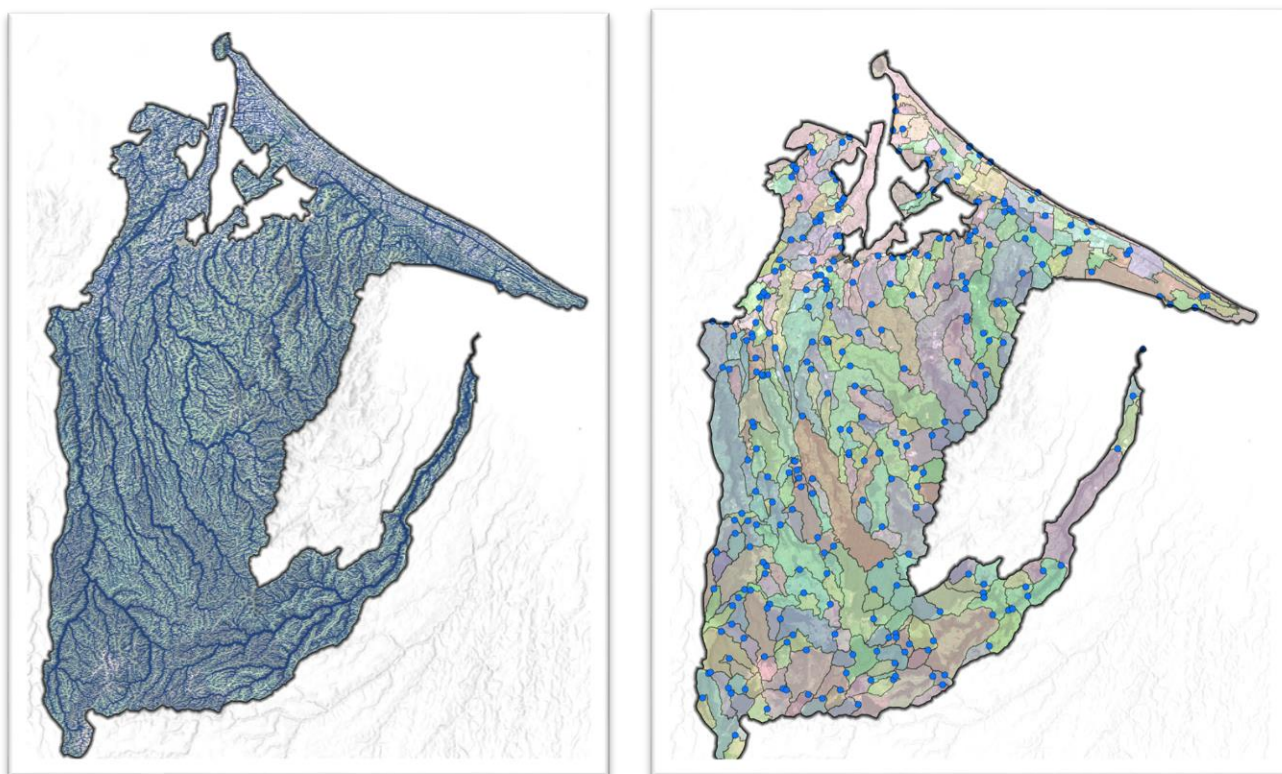


Figure 1 – Tauranga FWMT Model Domain Stream Network and Catchments

The construction of the TCC FWMT model has included the following advancements that will be shared:

- Automated cross section extraction for reach parameterization from GIS inputs. Due to a lack of survey or assessed data on wetted width, water and channel depth automated tools have been developed. These build on methods discussed in previous stormwater conference papers (Irvine et. a2022) to estimate average stream geometry per reach from Lidar,
- Assessment of prior groundwater studies and available data has led to advanced representation of groundwater as losing and gaining streams in the catchments with further work to refine hydrology through the scenario testing

The approach to model development attempts to integrate a Te Ao Maori approach by including Mana Whenua nominated peer reviewer role and incorporating elements of Matauranga Maori and Iwi cultural management plans in the menu of interventions to uphold Te Mana o te Wai within Tauranga into the future.

This presentation will provide the baseline current state results from the continuous simulation, process-based hydrology modelling. Figure 2 shows an example map of predicted vs observed grading and Figure 3 shows an example source load assessment.

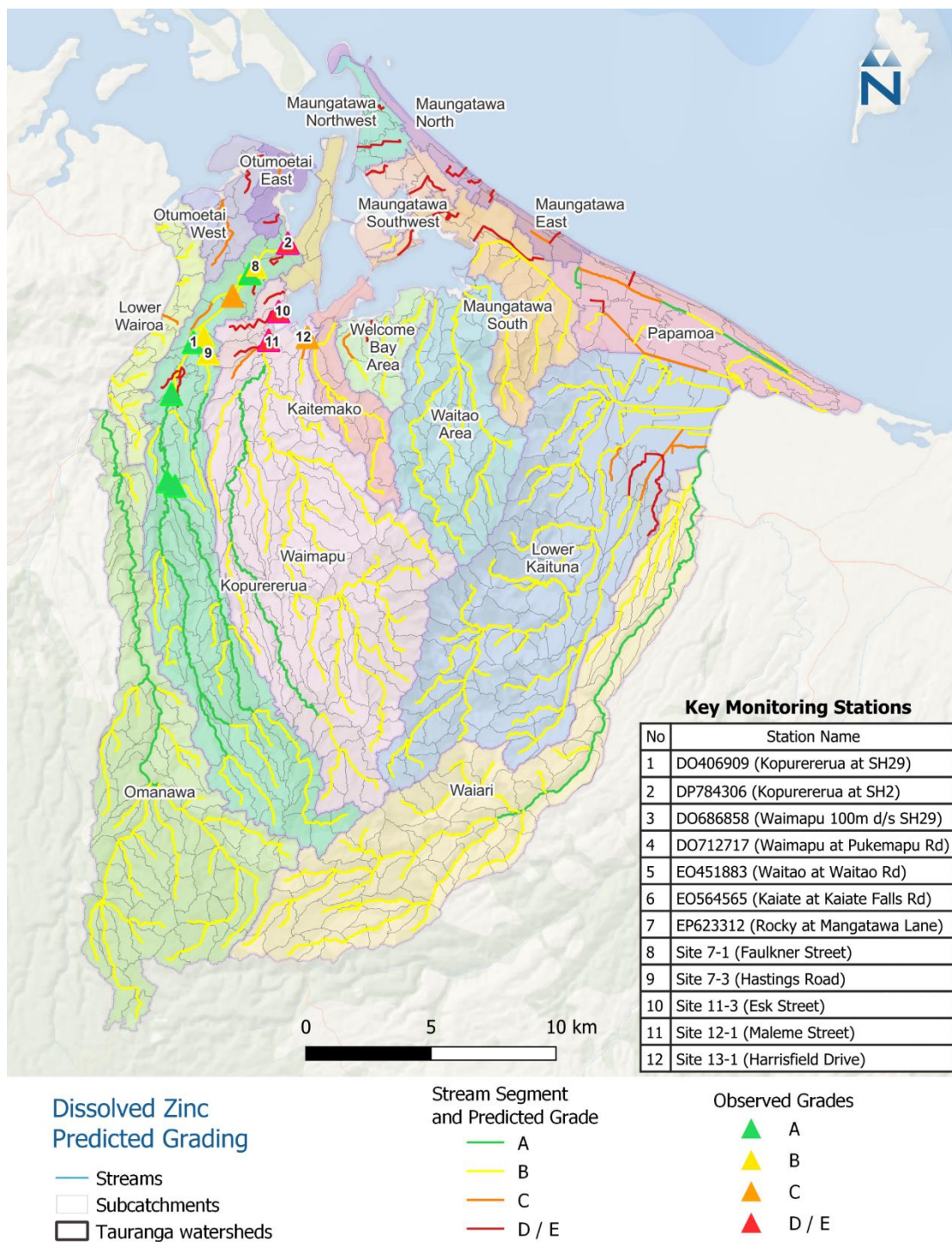


Figure 2 – Dissolved Zinc Predicted Grading

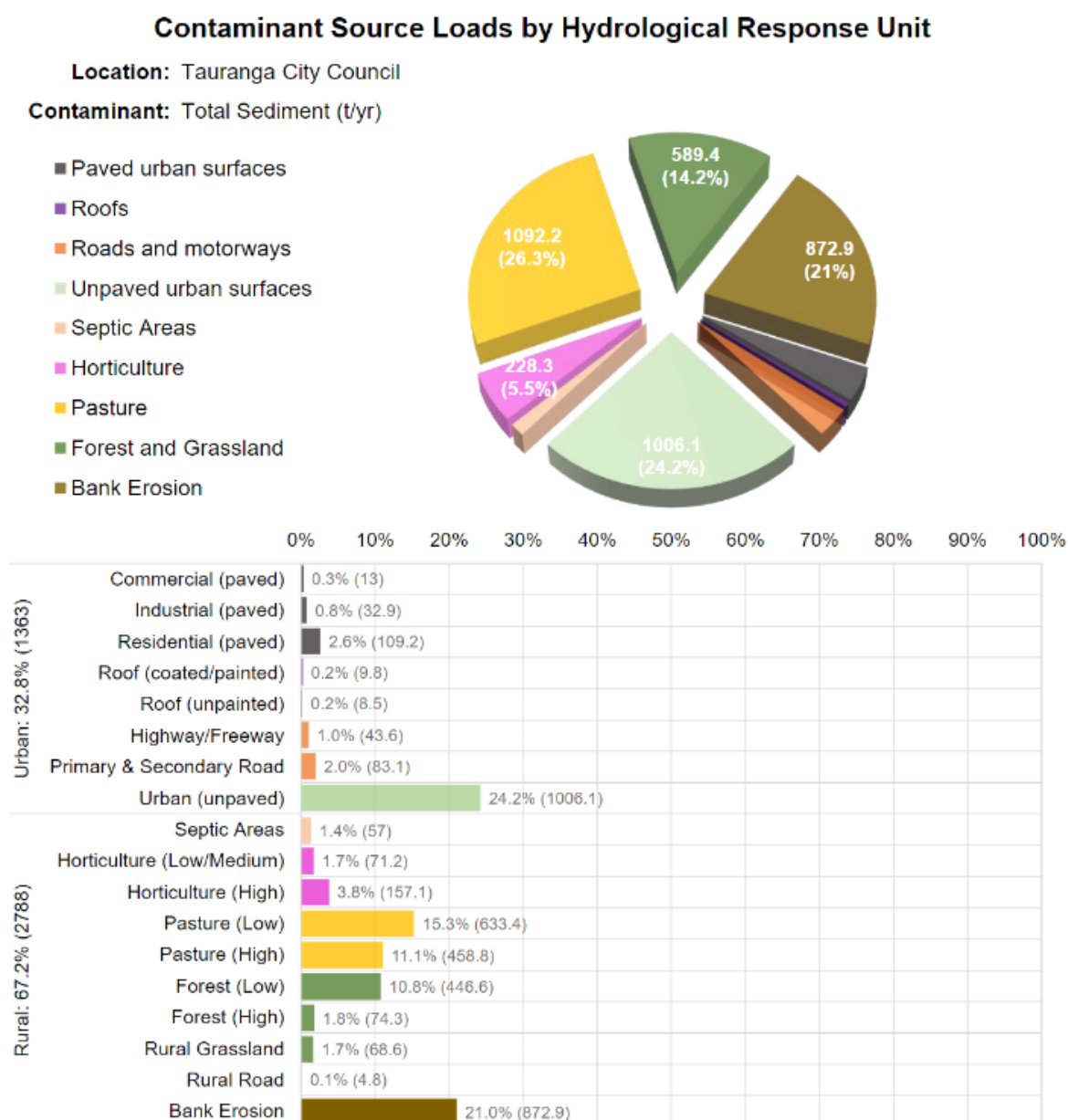


Figure 3 – Total Sediment (t/yr) source assessment for Tauranga City Council

Discussion of the results will be provided including implications for the planning of infrastructure and other interventions by TCC. Observations and learnings from the work will be provided including the following:

- Unique environments encompassing coastal dune systems, shallow extensive volcanic aquifers and long hinterland catchments draining to shallow complex harbours.
- Existing public and private infrastructure including high and low rate on lot soakage systems.
- City Council role under the RMA and LGA in the context of Regional Council responsibilities under the NPS FW.
- Integration of considerations for upstream catchments under the management of BoPRC and WBoP DC.
- Scenario planning with potential for the modelling to add value for integrated management of catchments to the benefit of all parties.

Moving into three waters reform TCC is leveraging investment in hydrology and contaminant modelling software from other regions and taking a holistic and future focused approach to its water management responsibilities. This aims to support partnership with iwi, and integration with regional and adjacent district water management processes to set a course for improved water management and to facilitate understanding of potential long-term improvement for TCCs waterways and harbors.