Summary of the different groundwater investigations, area and aquifer covered, key findings and recommendations in Northland

September 2012

Title of the report	Aim(s) of study	Key findings & recommendations
Matarau Aquifer - Preliminary Hydrogeological Assessment.	• Assess the hydrogeology of the aquifer. • Provide estimates on sustainable yield. • Identify information gaps and recommendations for management of groundwater resources.	• Estimated recharge for the aquifer is in the range of 21,930 to 35,735 m^3/d. • Bore and water use survey to assess permitted takes. • Water quality monitoring across the aquifer to identify potential quality issues. • Increase groundwater level monitoring.
Maunu-Maungatapere-Whatitiri Aquifers - Sustainable yield assessment.	• Assess the hydrogeology of the aquifer. • Develop a low complexity numerical model to estimate sustainable aquifer yield on a sub-catchment basis focusing on impacts to spring flows.	• Estimated average recharge for the Whatitiri, Maungatapere and Maunu sub catchments are 16190, 4440 and 9680 m^3/d respectively. • Majority of groundwater abstraction in the vicinity of the springs will come from spring flows.
Recharge estimates for "at risk aquifers" in Northland - Coastal aquifers - **Bland Bay**.	• Review aquifer management boundaries and provide likely groundwater recharge rates.	• Sand and gravel aquifer management area covers an area of 1.08 km^2 and the management area for the greywacke aquifer is approximately 2.02 km^2. Estimated recharge for the sand/gravel aquifer range between 1122 to 1496 m^3/d, and 84 to 420 m^3/d for the greywacke aquifer.
Recharge estimates for "at risk aquifers" in Northland - Coastal aquifers - **Matauri Bay**.	• Review aquifer management boundaries and provide likely groundwater recharge rates.	• The management area for the aquifer is approximately 2.84 km2. Estimated recharge for the greywacke aquifers in the range of 154 to 772 m^3/d.
Recharge estimates for "at risk aquifers" in Northland - Coastal aquifers - **Taupo Bay.**	• Review aquifer management boundaries and provide likely groundwater recharge rates.	• Sand/alluvial aquifer management area covers an area of 0.31 km^2 and the management area for the greywacke aquifer is approximately 2.95 km^2. Estimated recharge for the sand/alluvial aquifer range between 662 to 883 m^3/d, and 932 to 1454 m^3/d for the greywacke aquifer.
Recharge estimates for "at risk aquifers" in Northland - Coastal aquifers - **Te Ngaere Bay**.	• Review aquifer management boundaries and provide likely groundwater recharge rates.	• Alluvial aquifer management area covers an area of 0.31 km^2 and the management area for the greywacke aquifer is approximately 2.95 km^2. Estimated recharge for the alluvial aquifer range between 405 to 608 m^3/d, and 251 to 1257 m^3/d for the greywacke aquifer.
Recharge estimates for "at risk aquifers" in Northland - Coastal aquifers - **Whangaumu Bay**.	• Review aquifer management boundaries and provide likely groundwater recharge rates.	• Sand aquifer management area covers an area of 0.13 km^2 and the management area for the greywacke aquifer is approximately 1.02 km^2. Estimated recharge for the sand aquifer range between 119 to 179m^3/d, and 41 to 207 m^3/d for the greywacke aquifer.

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Recharge estimates for "at risk aquifers" in Northland - Coastal aquifers - **Whananaki North**.	• Review aquifer management boundaries and provide likely groundwater recharge rates.	• Sand aquifer management area covers an area of 0.43 km^2 and the management area for the greywacke aquifer is approximately 1.06 km^2. Estimated recharge for the sand aquifer range between 268 to 447m^3/d, and 40 to 198 m^3/d for the greywacke aquifer.
Recharge estimates for "at risk aquifers" in Northland - Coastal aquifers - **Oakura**.	• Review aquifer management boundaries and provide likely groundwater recharge rates.	• Sand aquifer management area covers an area of 0.97 km^2 and the management area for the greywacke aquifer is approximately 5.03 km^2. Estimated recharge for the sand aquifer range between 768 to 1152 m^3/d, and 165 to 826 m^3/d for the greywacke aquifer.
Recharge estimates for "at risk aquifers" in Northland - Coastal aquifers - **Kerikeri**.	• Review aquifer management boundaries and provide likely groundwater recharge rates.	• The management area for the aquifer is approximately 179.4 km^2. Estimated recharge for the basalt aquifer is in the range of 128742 to 171656 m^3/d.
Recharge estimates for “at risk aquifers" in Northland - Coastal aquifers - **Ngunguru**.	• Review aquifer management boundaries and provide likely groundwater recharge rates.	• Sand aquifer management area covers an area of 1.42 km^2 and the management area for the greywacke aquifer is approximately 2.61 km^2. Estimated recharge for the sand aquifer range between 555 to 1110 m^3/d, and 122 to 609 m^3/d for the greywacke aquifer.
Recharge estimates for "at risk aquifers" in Northland - Coastal aquifers - **Pataua North**.	• Review aquifer management boundaries and provide likely groundwater recharge rates.	• Alluvial aquifer management area covers an area of 1.97 km^2 and the management area for the greywacke aquifer is approximately 6.57 km^2. Estimated recharge for the alluvial aquifer range between 1957 to 2610 m^3/d, and 222 to 1110 m^3/d for the greywacke aquifer.
Recharge estimates for "at risk aquifers" in Northland - Coastal aquifers - **Pataua South**.	• Review aquifer management boundaries and provide likely groundwater recharge rates.	• Management area for the aquifer is approximately 0.42 km^2. Estimated recharge for the alluvial aquifer is in the range of 508 to 677 m^3/d.
Basic recharge estimates - **Teal Bay**.	• Review aquifer management boundaries and provide likely groundwater recharge rates.	• Management area for the aquifer is approximately 0.084 km^2. Estimated recharge for the sand/gravel aquifer is in the range of 127 to 169 m^3/d.
Basic recharge estimates - **Waimate North**.	• Review aquifer management boundaries and provide likely groundwater recharge rates.	• Management area for the aquifer is approximately 85 km^2. Estimated recharge for the Waimate North basalt aquifer is in the range of 53609 to 71478 m^3/d.
Basic recharge estimates - **Ohawini Bay/Parutahi Beach**.	• Review aquifer management boundaries and provide likely groundwater recharge rates.	• Management area for the aquifer is approximately 0.95 km^2. Estimated recharge for the greywacke aquifer is in the range of 50 to 250 m^3/d.

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Basic recharge estimates - **Church Bay/ Kowharewa Bay**.	• Review aquifer management boundaries and provide likely groundwater recharge rates.	• Management area for the aquifer is approximately 1.08 km^2. Estimated recharge for the greywacke aquifer is in the range of 43 to 213 m^3/d.
Basic recharge estimates - **Taiharuru**.	• Review aquifer management boundaries and provide likely groundwater recharge rates.	• Management area for the aquifer is approximately 0.16 km^2. Estimated recharge for the greywacke aquifer is in the range of 7 to 34 m^3/d.
Basic recharge estimates - **Moerewa**.	• Review aquifer management boundaries and provide likely groundwater recharge rates.	• Management area for the aquifer is approximately 8.74 km^2. Estimated recharge for the Moerewa basalt aquifer is in the range of 5167 to 6890 m^3/d.
Basic recharge estimates - **Okaihau**.	• Review aquifer management boundaries and provide likely groundwater recharge rates.	• Management area for the aquifer is approximately 44.35 km^2. Estimated recharge for the Okaihau basalt aquifer is in the range of 22385 to 29847 m^3/d.
Basic recharge estimates - **Pakaraka**.	• Review aquifer management boundaries and provide likely groundwater recharge rates.	• Management area for the aquifer is approximately 30.6 $km^{2.}$ Estimated recharge for the Pakaraka basalt aquifer is in the range of 14373 to 19165 m^3/d.
Basic recharge estimates - **Tauranga Bay**.	• Review aquifer management boundaries and provide likely groundwater recharge rates.	• Management area for the aquifer is approximately 3.13 km^2. Estimated recharge for the Tauranga Bay alluvial aquifer is in the range of 772 to 1543 m^3/d.
Basic recharge estimates - **Marsden / Ruakaka**.	• Review aquifer management boundaries and provide likely groundwater recharge rates.	• Alluvial aquifer management area covers an area of 138 km^2 and the management area for the greywacke aquifer is approximately 333.7 km^2. Estimated recharge for the alluvial aquifer range between 125373 to 167164 m^3/d, and 12841 to 64204 m^3/d for the greywacke aquifer.