

SUMMARY DOCUMENT FOR 24 APPLICATIONS FOR NEW GROUNDWATER TAKES FROM THE AUPOURI AQUIFER.

In the period between February 2018 and August 2019, the Northland Regional Council (council) received 24 applications for new groundwater takes from the deep shell bed aquifer of the Aupōuri Peninsula to service proposed avocado orchards at multiple locations. Table 1 below provides each application number, the applicant's name and the requested volume of water. The **attached** Figure 1 shows the location of each application.

The council considered that further information was required regarding the cumulative effects of the combined applications for the new water takes on both groundwater levels within the aquifer and saline intrusion. The processing time for the applications was extended to allow this information to be provided by Williamson Water & Land Advisory (WWLA), being the groundwater expert acting on behalf of 23 of the 24 applicants. The council contracted an independent groundwater expert, Land Water People, to undertake a peer review of the individual applications and the requested further information, to confirm that the potential adverse effects of the combined applications had been adequately addressed. The applicants also offered conditions of consent and a groundwater monitoring schedule that are based on the recent consents granted by the Environment Court for 17 groundwater takes known as MWWUG.

Based on the information above, the council considers that the potential adverse effects of the 24 groundwater takes on the environment, including saline intrusion and surface water features such as wetlands, will be no more than minor.

However, the combined additional water taken by the 24 applications could potentially lower groundwater within the Aupouri Aquifer to a level that may adversely affect the ability of some people in the area between Ngataki and Ahipara to take water from an existing bore or surface water body. The timing and magnitude of this potential adverse effect will be dependent on bore depth and construction, the nature of the surface water body from where water is being taken, and the severity of any drought that may be occurring.

The Aupouri Aquifer consists of two layers that are generally described as the shallow sand aquifer and the deep shell bed aquifer. Water moves downward between these two layers and any restriction on this movement can influence the level of potential drawdown in each of the two aquifer layers. WWLA have used its model to produce possible worst case (maximum) groundwater level drawdown maps from the combined applications, on top of the existing water takes, during a 1 in 50 year drought. These maps have been **attached** for your information as Figures 2, 3 and 4.

The maps have been produced using two different scenarios named: Scenario 2 (leaky) and Scenario 3 (less leaky). The "leaky" scenario is where there is very little restriction of water movement through the two aquifer layers, whereas the "less leaky" scenario is where there may be a localised anomaly that fully restricts the vertical movement of groundwater in an area. It is very important to note that the Scenario 2 (leaky) drawdown map was produced using a calibrated version of the model and is therefore the most representative of the potential adverse effects that may occur on a regional scale. It would be incorrect to consider the Scenario 3 (low leakage) drawdown map as representative of groundwater drawdown over the entire area. This map has been included though as council has used it as the worst-case scenario in its assessment of affected parties.

The following technical documents that have been provided as part of these applications, and have been used by the council in making its assessments, are available on the Northland Regional Council website page <https://www.nrc.govt.nz/Consents/Notified-resource-consents/>:

- Documents 1 - 24 – Individual application and environmental assessment documents for all applications in Table 1;
- March 21, 2019 - Aupouri Aquifer Model Factual Technical Report – Modelling, WWLA;
- April 4, 2019 - Addendum to Assessment of Effects Reports Pertaining to Aupouri Aquifer Resource Consent Applications Compiled by WWLA;
- May 16, 2019 - Aupouri Aquifer Groundwater Model – Saline Intrusion Assessment for Combined Applications, WWLA

A copy of these documents, including the attached maps, can also be viewed at the following council office:

Kaitiāia Area Office
192 Commerce Street
Kaitiāia

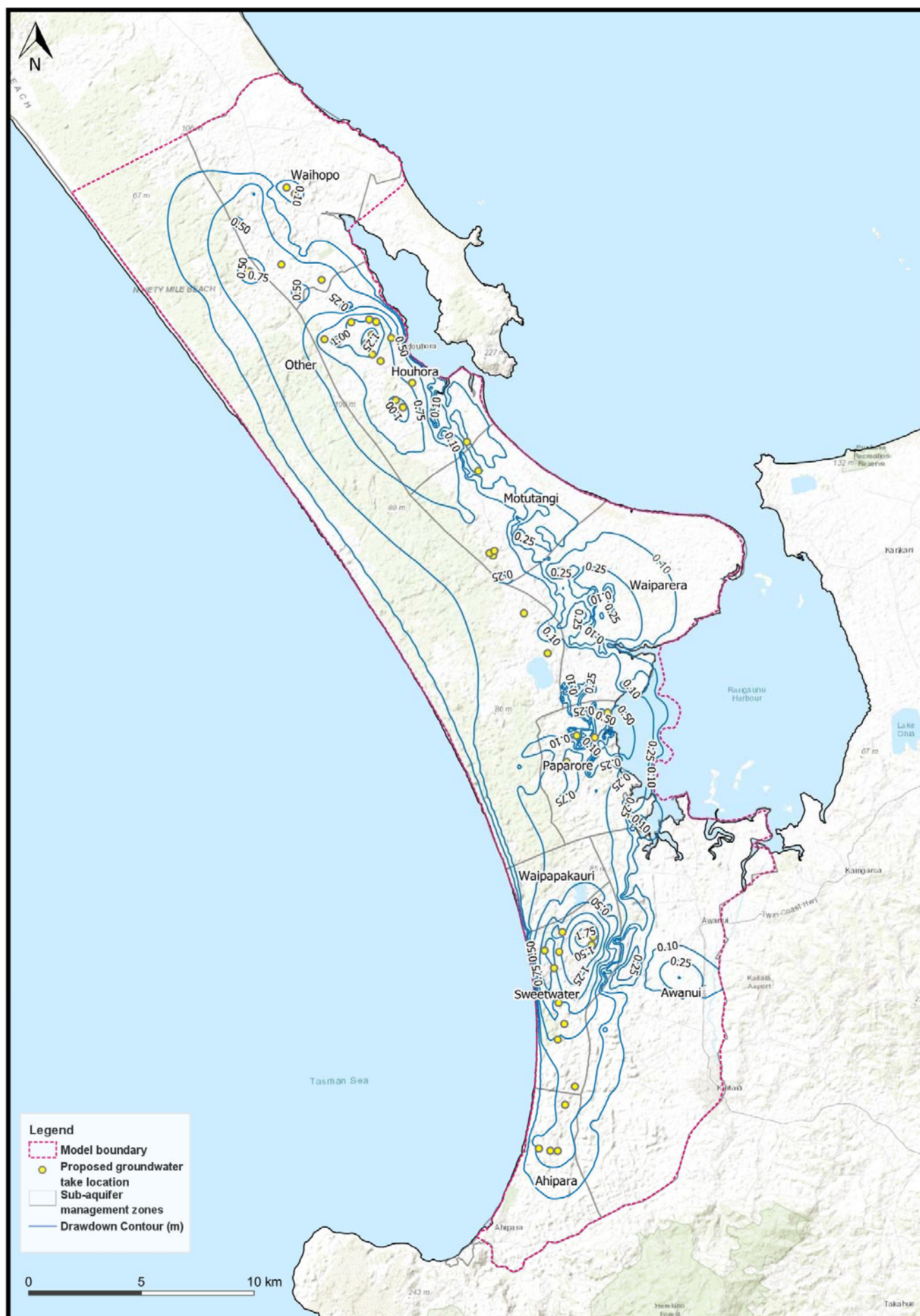
Office Hours 8.30 a.m. – 4.00 p.m.

TABLE 1: Summary of Applications

Note: Applications identified with '**' are for increased volumes from existing consented takes

| Map ID | Application Number | Applicant's Name | Daily volume (m3) | Annual volume (m3) |
|--------|--------------------|---|-------------------|--------------------|
| 1 | APP.039859.01.01 | Te Aupouri Commercial Development Ltd | 10,735 | 1,170,000 |
| 2 | APP.040601.01.01* | Waikopu Avocados Ltd | 736 | 83,360 |
| 3 | APP.017428.02.01* | Henderson Bay Avocados Ltd | 178 | 45,000 |
| 4 | APP.040600.01.01 | Far north Avocados Ltd | 240 | 32,000 |
| 5 | APP.041211.01.01 | P McLaughlin | 700 | 78,400 |
| 6 | APP.040121.01.01 | NE Evans Trust & WJ Evans & J Evans | 1,675 | 160,000 |
| 7 | APP.040231.01.01 | P & G Enterprises (PJ & GW Marchant) | 350 | 28,000 |
| 8 | APP.039644.01.01 | MP Doody & DM Wedding | 2,375 | 304,000 |
| 9 | APP.040397.01.01 | A Matthews | 95 | 12,000 |
| 10 | APP.040652.01.01 | SE & LA Blucher | 720 | 96,000 |
| 11 | APP.040919.01.01 | NA Bryan Estate, SG Bryan, CL Bryan, KY Bryan Valadares & D Bryan (Property No 1) | 500 | 80,000 |
| 12 | APP.040979.01.01 | MV Evans (Property No 2) | 1,125 | 126,000 |
| 13 | APP.040558.01.01 | MV Evans (Property No 1) | 350 | 36,400 |
| 14 | APP.040130.01.01 | Tuscany Valley Avocados Ltd (M Bellette) | 375 | 36,000 |
| 15 | APP.040918.01.01 | NA Bryan Estate, SG Bryan, CL Bryan, KY Bryan Valadares & D Bryan (Property No 2) | 1,000 | 160,000 |
| 16 | APP.008647.01.06* | Avokaha Ltd (c/- K Paterson & A Nicholson) | 70 | 5,600 |
| 17 | APP.039628.01.04* | KSL Ltd (c/- S Shine) | 90 | 3,600 |
| 18 | APP.040361.01.01 | Tiri Avocados Ltd. | 3,876 | 581,250 |
| 19 | APP.040362.01.01 | Valic NZ Ltd | 1,158 | 173,700 |
| 20 | APP.040363.01.01 | Wataview Orchards (Green Charteris Family Trust) | 225 | 33,750 |
| 21 | APP.039841.01.02 | Mate Yelavich & Co Ltd | 450 | 52,000 |
| 22 | APP.040386.01.01 | Robert Paul Campbell Trust | 3,350 | 360,000 |
| 23 | APP.040364.01.01 | Elbury Holdings Ltd (C/- K J & F G King) | 1,875 | 200,000 |
| 24 | APP.020995.01.04* | Te Rarawa Farming Ltd and Te Make Farms Ltd | 10,705 | 776,000 |
| | | Total | 54,886 | 6,230,662 |

Figure 2. Shallow aquifer drawdown for Scenario 2 (leaky)
i.e. worst case scenario for shallow aquifer



Most likely drawdown effects. This Scenario has been calibrated with actual groundwater data.

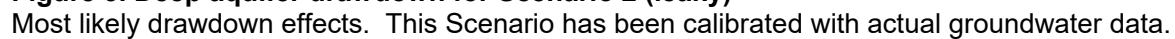


Figure 4. Deep aquifer drawdown for Scenario 3 (least leaky)

Worst case scenario, to show potential drawdown in locations where there may be a localised anomaly such as an impermeable hard pan limiting vertical recharge in a particular area. Not accurate for entire aquifer, but has been used for notification purposes.

