

**Before the Independent Commissioners appointed by the Northland  
Regional Council (NRC)**

In the Matter of            the Resource Management Act 1991

And

In the Matter of            applications by members of the Motutangi-Waiharara  
Water Users Group for new groundwater takes from  
the Aupouri aquifer subzones: Houhora, Motutangi  
and Waiharara

Statement of Supplementary Evidence of

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**Jon Williamson**

for the Motutangi-Waiharara Water User Group

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Dated: 25 March 2018

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# 1. Introduction

1. This document comprises brief supplementary evidence relating to:
  - (a) clarifications required by the Commissioners following the delivery of my evidence in chief (EIC) on the first day of the Hearing.
2. On second day of the Hearing the Commissioners asked Mr Baker (for the Department of Conservation) to consider the implications for wetland impacts if the applications were to be considered independently rather than as a collective. Given that I will likely need to respond to this, I thought it made more sense to hold my responses to DOC's evidence to our right of reply evidence, where in addition I will provide a summary of my evidence.

## 2. Clarifications for the Commissioners

### 2.1. Monitoring Map

3. The Commissioners requested a map of the proposed monitoring locations. This is provided as **Attachment A** and shows the applicant bore locations and the proposed location of the monitoring bores, some of which are indicative locations as signalled by TBC (to be confirmed).

### 2.2. Zone Allocation Status

4. The Commissioner's requested an updated Table 2 (groundwater allocation status as originally applied) of my EIC, showing the new allocation status if the volumes sought from Table 10 of my EIC (as now requested) were granted. This is provided in **Table 1** below and for the Commissioner's convenience, in the last column I have included the new status and in brackets, the status from my EIC. From this you can see that:

- (a) the level of allocation still remains below the allocation threshold in all zones;
- (b) there is a 1% increase in the Houhora zone, no change in the Motutangi zone, and a 5% reduction in the Waiparera zone; and
- (c) overall there has been a 2% decrease on the original application.

**Table 1. Summary of groundwater allocation status with revised annual volumes.**

Table Sub-aquifer	Allocation Limit		Current Allocation Status <sup>1</sup>		MWWUG Proposal	New Allocation Status (if these consents granted)	
	m <sup>3</sup> /year	% ann. average recharge	m <sup>3</sup> /year	%	m <sup>3</sup> /year	m <sup>3</sup> /year	% of current allocation limit
Aupouri-Houhora	2,141,300	11	1,045,494	49	394,833	1,440,327	67 (66)
Aupouri-Motutangi	1,069,600	10	374,497	35	657,737	1,032,233	97 (97)
Aupouri-Waiparera	2,312,200	10	288,445	12	1,265,984	1,554,429	67 (73)
TOTAL	5,523,100		1,708,435		2,318,554	4,026,989	73 (75)

1. According to NRC's allocation maps at <http://gis.nrc.govt.nz/LocalMaps-Viewer/?map=895e0785f7054d47b10a72edc38022dc>

### 2.3. Property versus Canopy Area

5. The Commissioners asked for an understanding of the areas in Table 10 of my EIC, with regard to canopy versus property area. I have reproduced this table as Table 2 below and in the area column, have indicated the total property area in square brackets. From this you can conclude that there is a mixed bag of property area and planted area that was submitted in the original application.
6. In accordance with my understanding as outlined in paragraph 80 of my EIC that the NRC's historical guideline was 25 m<sup>3</sup>/day/ha for property area and 40 m<sup>3</sup>/day/ha for canopy area, once it became clear through conversations with the Council, that for this hearing they were going to base allocation on 25 m<sup>3</sup>/day/ha, some of the applicants sought to modify their application areas to match their understanding of water requirement (e.g. the highlighted applicant changes).
7. I would like to reiterate, that the change overall has reduced the annual volumes sought, hence is within the effects envelope considered by the modelling, both in terms of cumulative impact and drawdown (which in effect are the same thing given how it was assessed).
8. The Council's calculation of annual volume using 400 mm per year per property was accepted. However, I'd like to point out that you can arrive at this figure a number of different ways, two of which are as per:
  - (a) the Council's calculation: 25 m<sup>3</sup>/ha/day x 160 days; or
  - (b) my calculation: 40 m<sup>3</sup>/ha/day x 100 days.
9. My concluding remark in all of this is that if the Council want to apply area using canopy hectares, the daily rate for the purposes of seasonal volume should be 40 m<sup>3</sup>/ha/day, but if the area is property hectares, then the appropriate rate (to account for unplanted areas) is 25 m<sup>3</sup>/ha/day.
10. To place this into context by reiterating my point made to the Commissioners on the first day of the hearing, for pasture irrigation under a centre pivot (which is equivalent to canopy hectares) a typical irrigation rate across New Zealand is 50 m<sup>3</sup>/ha/day +/- 5 m<sup>3</sup>/ha/day.

**Table 2. Summary of MWWUG water applied for and suggested changes.**

App #	Name	Area (ha) [Property Area]		Max Inst Rate (L/s)	Max. Daily Vol (m3)	Annual Vol (m3)			Comments
		As Submitted	Applicant Change	As Submitted	As Submitted	As Submitted	Officers' Report Recommen dation	Applicant Final Request	
APP.038610.01.01	Mapua Avocados Limited, C/o Murray Forlong	160 [204]	200	115.7	5,000	745,000	624,000	745,000	Change to property area.
APP.038471.01.01	Honeytree Farms Limited, C/o Tony Hayward	110 [93]	93	81.0	3,500	521,500	200,000	372,000	Change to property area.
APP.038410.01.01	Georgina Tui and Mate Nickolas Covich	70 [98]		34.7	1,500	223,500	223,000	223,500	
APP.038420.01.01	Largus Orchard Limited Partnership, C/o Murray Forlong (Changed from Matijevich)	60 [76]		30.1	1,300	193,700	193,700	193,700	
APP.038513.01.01	Te Runanga o Ngai Takoto, C/o Rangitane Marsden	60 [945]		30.1	1,300	193,700	193,700	193,700	
APP.038454.01.01	Elbury Holdings Limited, C/o Kevin and Fiona King	30 [200]		17.7	763	113,700	113,700	113,700	
APP.039332.01.01	Candy Corn Limited, C/o Bryan Candy	20 [26]	21.5	12.4	537	80,000	80,000	80,000	Change to property area.
APP.027391.01.02	Ivan Anthony Stanisich	17 [59]		10.0	430	64,070	64,070	64,070	
APP.039244.01.01	Kevin and Dani Thomas	16 [17]		9.3	400	59,600	59,600	59,600	
APP.038589.01.01	Neil & Alma Violet Thompson and Steven & Josephine Suzanne Thompson	9 [9]		7.4	320	47,680	39,350	39,350	
APP.038591.01.01	Cypress Hills Limited, C/o Alan Anderson & Carolyn Dawn Smith	9 [10]		6.5	280	41,720	41,720	41,720	
APP.038650.01.01	Tony and Diane Hewitt	10 [11]		6.3	270	40,230	40,230	40,230	
APP.038328.01.01	Bernard Kim & Sheryl Dianne Shine	10 [12.5]	12.5	6.2	268	40,000	40,000	50,184	Property area has been increased by subdivision (Nov 2017) with adjacent block - see FNDC resource consent.
APP.039345.01.01	Ian McLarnon & Jason McLarnon	6 [22]		4.6	200	29,800	23,370	24,000	
APP.038732.01.01	Kathy Valadares	8 [140]	12	3.5	150	22,350	22,350	48,000	Change to property area.

App #	Name	Area (ha) [Property Area]		Max Inst Rate (L/s)	Max. Daily Vol (m3)	Annual Vol (m3)			Comments
		As Submitted	Applicant Change	As Submitted	As Submitted	As Submitted	Officers' Report Recommen dation	Applicant Final Request	
APP.038380.01.01	Daimen & Katherine Holloway	4 []		2.3	100	14,900	14,900	14,900	
APP.039381.01.01	Johno and Carol Brien (Lamb Road)	4 []		2.3	100	14,900	14,900	14,900	
					TOTAL	2,446,350	1,988,590	2,318,554	Overall volume is less than what was applied for originally and what was modelled in the effects assessment work.

## **2.4. Higher Peak Daily Rate or Weekly Volume**

11. The Commissioners asked a question relating to the applicant's desire for the ability to take higher peak daily rates during very hot dry days, while not exceeding their annual volumes (paragraph 167 of EIC). My response in relation to the Commissioners question of how this is within the envisaged effects profile, was not particularly useful, hence I seek to clarify it here.
12. The reason I consider a higher peak daily rate to be within the effects profile assessed by the model relates to the manner in which the bore interference effects assessment was undertaken. The bore interference effects analysis was for the point in time at the end of the highest irrigation use season from the historical record. This is the time when maximum drawdown was obtained.
13. The point being, that it takes a full season of pumping for interference effects to materialise to their maximum extent. A week of heavier groundwater pumping than is normal during the peak of the season from the deep aquifer (typically in January) will accelerate the rate of drawdown at that time, but after the peak the rate of drawdown will reduce, yet still drawing down to the maximum impact on neighbouring bores at the end of the season.

## **2.5. Pumping as Percentage of Recharge (Without Recharge in the Wetlands)**

14. Mr Wagener in paragraph 8 of his submission made a very astute observation, in that "the studies all refer to a dense soil structure of an impermeable nature preventing the water under pressure from coming to the surface, but surely the same structure prevents the surface water from recharging the aquifer".
15. Commissioner Colander during his questioning of Mr Baker asked the question whether Mr Baker agreed with the point that the abstraction (combined current and proposed) was small proportion of recharge. Then after hearing Mr Wagener, Mr Callander asked me if I could recalculate the value for pumping as a percentage of recharge, assuming no recharge reaches the deep aquifer in the wetland zone.
16. I have done this calculation and the value changes from 5.1 % (paragraph 153 EIC) to 5.6% of recharge. The reason for only a small change this is that the model recognises that surface runoff in the wetland area is a greater proportion of rainfall than outside the wetland area (i.e. the recharge rate is lower in the wetland to begin with).



J.L. Williamson

28 March 2018

**Attachment A. Draft Bore Monitoring Map**

# Draft Monitoring Bore Location Map

