BEFORE THE HEARINGS PANEL

IN THE MATTER of hearings on submissions concerning the Proposed One Plan notified by the Manawatu-Wanganui Regional Council

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SUPPLEMENTARY EVIDENCE OF DR JONATHAN ROYGARD
REVISION OF RECOMMENDED MINUMUM FLOWS AND CORE ALLOCATION LIMITS FOR THE END OF HEARING REPORT (WATER)
ON BEHALF OF HORIZONS REGIONAL COUNCIL

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1. Mangatainoka Water Management Zone Core Allocation Limits

1. Under SW Rule 2 of the Land and Water Regional Plan (2003), the abstraction of more than 15 m^3/day of water from the Mangatainoka River and its tributaries is a Non-Complying Activity (except for existing municipal water supply takes).

2. Following notification of the Proposed One Plan (POP), the water allocation framework was revised, as outlined in Dr Roygard's evidence, to ensure the framework was based on the most robust science available (submissions from Horticulture New Zealand (357/75) and Federated Farmers (426/187 & 426/234)). These revisions included the use of further hydrological data that enabled the MALF statistics to be updated, and the recommended core allocation limit revised. Further methodological changes were made, including the approach to zones that previously had Local Water Conservation Notices (see Dr Roygard's evidence pg. 51, para 87). Consequently, revised minimum flows and allocation limits for the Mangatainoka were recommended in evidence given on behalf of Horizons.

3. In recommending core allocation limits for the Mangatainoka Water Management Zone (WMZ) and sub-zones for the POP, the intention was to accommodate all existing consented abstractions from that catchment. There were two abstractions that were unintentionally excluded from the analysis. These were highlighted via the Submission of the Eketahuna Community Board (15/1) and Horticulture NZ (357/166), and relate to sub-zones Mana 8c and Mana 8d and consequential cumulative allocation limits.

4. The core allocation limit for Mana 8d was originally calculated in the absence of correct information about current allocation. When the calculation of existing takes was made, the abstraction for the Eketahuna town water supply was under appeal, and was left out of the calculation in error. Table 1 recommends a revised allocation limit for Mana 8d that accounts for this take. Consequentially, the core allocation limits for some downstream sub-zones also need to be revised. These changes are a 1,398 m^3/day[1] increase in the core allocation limit in:
   - Mana 8d from 1,296 to 2,694 m^3/day;
   - Mana 8c from 26,352 to 27,750 m^3/day;
   - Mana 8a + 8b + 8d from 5,184 to 6,582 m^3/day;
   - whole zone Mana 8 from 26,352 to 27,750 m^3/day; and
   - whole zone Mana 7 + Mana 8 from 49,680 to 51,078 m^3/day.

5. In addition to the changes listed above, a consent process for Fonterra to "renew" the full volume of an existing consent has highlighted an issue. This take was previously classified as a groundwater take and has subsequently been identified as a riparian take, therefore the core allocation limit needs to be increased to accommodate all existing consents in this sub-zone. To achieve this, the core allocation limit in Mana 8c would need to be 27,913 m^3/day. Table 1 recommends a revised allocation limit for Mana 8d that accounts for this take. These changes are a 163 m^3/day[2] increase[3] in the core allocation limit in:

- Mana 8c from 27,750 to 27,913 m^3/day;
- whole zone Mana 8 from 27,750 to 27,913 m^3/day; and
- whole zone Mana 7 + Mana 8 from 51,078 to 51,241 m^3/day.

Table 1. Final recommendations for core allocation limits in the Tiraumea and Mangatainoka WMZs.

WMZ	Sub-zone	Sub-zone name	Final recommended core allocation limit (m^3/day)	Current allocation in sub-zone only (m^3/day)	Cumulative current allocation within WMZ (m^3/day)	Available allocation (m^3/day)	Status
Mana 7	Mana 7a	Upper Tiraumea	***3,456***	2,926	2,926	531	okay
	Mana 7b	Lower Tiraumea	***23,328***	15,574	18,500	4,829	okay
	Mana 7c	Mangaone River	***1,728***	100	100	1,628	okay
	Mana 7d	Makuri	***8,640***	0	0	8,640	okay
Cumulative Mana 7a + Mana 7c + Mana 7d			***8,640***	**3,026**	**3,026**	**5,615**	**okay**
	Mana 7e	Mangaramarama	***2,160***	2,121	2,121	39	okay
Whole zone cumulative Mana 7a + Mana 7b + Mana 7c + Mana 7d + Mana 7e			***23,328***	**20,721**	**20,721**	**2,608**	**okay**
Mana 8	Mana 8a	Upper Mangatainoka	***1,728***	0	0	1,728	okay
	Mana 8b	Middle Mangatainoka	***5,184***	1,217	1,217	3,967	okay
	Mana 8c	Lower Mangatainoka	***27,913***	24,002	27,913	0	fully allocated
	Mana 8d	Makakahi	***2,694***	2,694	2,694	0	fully allocated
Cumulative Mana 8a + Mana 8b + Mana 8d			***5,184***	**3,911**	**3,911**	**1,273**	**okay**
Whole zone cumulative Mana 8a + Mana 8b + Mana 8c + Mana 8d			***27,913***	**27,913**	**27,913**	**0**	**fully allocated**
Cumulative Mana 7 + Mana 8			***51,241***	**48,634**	**48,634**	**2,608**	**okay**

[1] Eketahuna water supply is currently consented for a maximum daily take of 1,424 m^3/day. An increase of 1,398 m^3/day in the core allocation limit was required to set an allocation limit that incorporated all consented takes in this sub-zone

[2] Eketahuna water supply is currently consented for a maximum daily take of 1,424 m^3/day. An increase of 1,398 m^3/day in the core allocation limit was required to set an allocation limit that incorporated all consented takes in this sub-zone

[3] Assuming changes required to accommodate the Eketahuna Water Supply are already made

2. Turitea Sub-Zone Core Allocation Limit

6. In recommending core allocation limits for the Turitea Water Management Sub-zone for the POP, the core allocation limits were based on efficient use criteria for Palmerston North City Council (PNCC) water supply. Through caucusing, the allocation limits have been recommended to increase. The intention of the caucusing was to accommodate all existing consented abstractions from that catchment.

7. The recommended POP core allocation limit for the Turitea sub-zone following caucusing was 37,000 m^3/day. This is to provide for the PNCC municipal abstraction. When the above recommendation was made, a second small consented abstraction of 100 m^3/day was omitted in error. The revised recommendation is to include that 100 m^3/day in the core allocation limit by increasing that limit to 37,100 m^3/day. Consultation with Dr Jack McConchie, the hydrologist acting on behalf of Palmerston North City Council, indicated that PNCC would be comfortable with this recommended change (see Appendix A).

8. The scope for these recommended changes relates to PNCC's Submission 241; Hort NZ 357/166, and Federated Farmers 426/187 and 234.

9. Table 2 sets out the allocation status of the Lower Manawatu WMZ under these recommended changes.

Table 2. Allocation status of the Lower Manawatu Water Management Zone.

WMZ	Sub-zone	Sub-zone name	Recommended core allocation limit (m^3/day)	Current allocation in sub-zone only (m^3/day)	Cumulative current allocation within WMZ (m^3/day)	Available allocation (m^3/day)	Status
Mana 11	Mana 11a	Lower Manawatu	***336,096***	16,300	16,300	319,796	okay
	Mana 11b	Turitea	***37,100***	37,100	37,100	0	fully allocated
	Mana 11c	Kahuterawa	***864***	354	354	510	okay
	Mana 11d	Upper Mangaone	***432***	0	0	432	okay
	Mana 11e	Lower Mangaone	***864***	0	0	864	okay
Cumulative Mana 11d + Mana 11e			***1,296***	**0**	**0**	**1,296**	**okay**
	Mana 11f	Main Drain	***10% of MALF***	0	0	*0*	n/a
Whole zone cumulative Mana 11a + Mana 11b + Mana 11c + Mana 11d + Mana 11e + Mana 11f			***336,096***	**53,754**	**53,754**	**282,342**	**okay**
Catchment cumulative Mana 1 + Mana 2 + Mana 3 + Mana 4 + Mana 5 + Mana 6 + Mana 7 + Mana 8 + Mana 9 + Mana 10 + Mana 11			***336,096***	**262,484**	**262,484**	**73,612**	**okay**

3. Whanganui Water Management Zones Whai_1 and Whai_2 - Minimum Flow and Core Allocation Limits

10. In the Proposed One Plan as notified, the Water Management Zones (WMZ) in the upper Whanganui Catchment (upstream of the Whanganui at Te Maire flow recorder) were recommended to be based on the "default" method for setting minimum flows and core allocation limits. Fish & Game's submission 33/6 suggested that the core allocation limits for the Whakapapa sub-zones (Whai_2b & Whai_2c) and the Whanganui River WMZs, Whai_1 and Whai_2, should be reduced to zero plus any existing community municipal water supply. King Country Energy's Submission 338/1 suggested that the current capacity is full, and that the sum of the existing takes be set as the core allocation limit.

11. Subsequently, further work was done to clarify the allocation regime in these zones. The findings were reflected in the recommendations of the Supplementary Evidence from Clare Barton, and in Schedule B. The recommendation was to use the existing allocation levels in these catchments (excluding hydro electricity takes) to set the core allocation limits and that the numerical representation of the minimum flow for these zones be equivalent to the value specified in the resource consents for the Tongariro Power Scheme.

12. Following further consultation with Genesis, NIWA was commissioned to prepare a report calculating the Mean Annual Low Flow (MALF) (simulated natural) for the Whanganui at Te Maire site for the full period of record available. This report (Henderson, 2010, Appendix B[4]) established a MALF for Whanganui at Te Maire to replace the originally notified minimum flow of "MALF". Henderson (2010) established the 1-day MALF to be 26.6 m^3/s.

13. It is now recommended that this value of 26.6 m^3/s be utilised as the minimum flow for Whanganui at Te Maire as it is the translation of the words in the POP into a number. Under the proposed wording of the One Plan the 26.6 m^3/s only applies to the water abstraction takes that are part of the core allocation in these zones. It has no bearing or relationship to the hydro electricity consents within these zones. The takes that are currently part of these core allocations are listed in Table 3 below.

[4] A draft of this report, commissioned by Horizons Regional Council, was provided by Jarred Bowler to the Hearing Panel. The final report differs primarily in the final format (correct dates on front cover and is signed by the reviewers).

4. Recommendation

14. As a part of this End of Hearing Report. It is recommended that Schedule B include the value of 26.6 m^3/s for the minimum flow at the Whanganui at Te Maire flow monitoring site for Water Management Zones (Whai_1, Whai_2a, Whai_2b, Whai_2c, Whai_2d, Whai_2e, Whai_2f and Whai_2g).

15. The allocation limits for these zones were recommended in the version of Schedule B provided in the Supplementary Evidence of Clare Barton. Some of the allocation limits have been updated to reflect recent allocation of a consent in sub-zone Whai_2f and to reflect the correct calculation of cumulative allocation in Whai_2c. These changes also transfer through to other zones as a part of the cumulative allocation calculation, as per the calculations shown in Table 4. These updated values are recommended as shown in the recommended updated version of Schedule B.

Table 3. List of consents within the Water Management Sub-zones upstream of Whanganui at Te Maire.

Water Management Zone	Water Management sub-zone	Water Management sub-zone name	Consent number	Consent holder	Consented maximum daily volume (m^3/day)	Purpose
Whai_1	Whai_1	Upper Whanganui	101760	Central Plateau Developments	500	Bottling for export
			4200	Outdoor Pursuits Centre of NZ	17.5	Drinking water/domestic requirements
Whole zone cumulative Whai 1					**517.5**	
Whai_2	Whai_2a	Cherry Grove	100039	Ruapehu District Council (Taumarunui)	34	Piriaka community supply
			102415	Associated Auctioneers Ltd	118	To washdown the Taumarunui Sale Yards following stock sales
			103928	Waimiha Trust	86.4	For the purpose of investigating the viability of bottling water for commercial purposes
			104205	Piriaka Farms Ltd	80.4	To provide stock-drinking water and dairyshed washdown for 650 dairy cows and to provide water for domestic use for three households on the property
			4195	Dept of Conservation (Mt Ruapehu)	345	For the purpose of supplying Whakapapa Village water supply
			7196	Ruapehu District Council (Taumarunui)	7,000	Taumarunui town water supply
	Whai_2b	Upper Whakapapa	100724	Ruapehu Alpine Lifts Ltd	130	For water supply to the Knoll Ridge Chalet located at Whakapapa Ski Field
			100725	Ruapehu Alpine Lifts Ltd	3,307	For use in the making of snow at Happy Valley, Whakapapa Ski Field
			6888/1	Ruapehu District Council (Taumarunui)	500	Water supply for National Park township.
	Whai_2c	Lower Whakapapa	101514	Ruapehu District Council (Taumarunui)	1,500	Water supply to Owhango Township and surrounding rural properties.
	Whai_2d	Piopioteo	102036	Raurimu Residents & Ratepayers Soc	80	Town water supply at Raurimu Village.
	Whai_2e	Pungapunga	nil	nil	nil	nil
	Whai_2f	Upper Ongarue	100698	F J Ramsey (Trading) Ltd (Te Kuiti)	900	For supply to a meat processing facility
			104422	Hinewai Dairies Ltd	90	Dairy shed and stock watering
			104763	Hillside Ltd	280	Dairy shed and stock watering
	Whai_2g	Lower Ongarue	100328	Triple S P/Ship	152	For a bottled water and bulk water supply operation
Whole zone cumulative Whai_2a + Whai_2b + Whai_2c + Whai _d + Whai_2e + Whai_2f + Whai_2g					**14,603**	
Catchment cumulative Whai_1 + Whai_2					**15,121**	

Table 4. Current cumulative consented volumes for the sub-zones in Water Management Zones Whai_1 & Whai_2 showing how the cumulative allocation has been calculated.

Water Management Zone	Water Management sub-zone	Water Management sub-zone name	Current allocation in sub-zone only (m^3/day)	Current allocation in sub-zone only (m^3/s)	How the cumulative allocation is calculated through the WMZ	Cumulative current allocation within WMZ (m^3/day)	Cumulative current allocation within WMZ (m^3/s)
Whai_1	Whai_1	Upper Whanganui	518	*0.006*	Whai_1	518	*0.006*
Whole zone cumulative Whai 1			**518**	***0.006***	**Whai_1**	**518**	***0.006***
Whai_2	Whai_2a	Cherry Grove	7,664	*0.089*	Whai_1, Whai_2c and Whai_2e flow into Whai_2a, so 2a = 2a + 1 + 2c + 2e + 2g	15,121	*0.159*
	Whai_2b	Upper Whakapapa	3,937	*0.046*	Whai_2b is itself	3,937	*0.046*
	Whai_2c	Lower Whakapapa	1,500	*0.017*	Whai_2b and Whai_2d flow into Whai_2c, so Whai_2c = 2b + 2c + 2d	5,517	*0.064*
	Whai_2d	Piopioteo	80	*0.001*	Whai_2d	80	*0.001*
	Whai_2e	Pungapunga	0	*0.000*	Whai_2e	0	*0.000*
	Whai_2f	Upper Ongarue	1,270	*0.015*	Whai_2f	1,270	*0.015*
	Whai_2g	Lower Ongarue	152	*0.002*	Whai_2f flows into 2g, so 2g = 2g + 2f	1,422	*0.016*
Whole zone cumulative Whai_2			**14,603**	***0.169***	**Whai_2a + Whai_2b + Whai_2c + Whai_2d + Whai_2e + Whai_2f + Whai_2g**	**15,121**	***0.175***
Catchment cumulative Whai_1 + Whai_2			**15,121**	***0.175***	**Whai_1 + Whai_2**	**15,121**	***0.175***

5. Appendix A

Dear Raelene,

That sounds fine to me. Just as a matter of interest where is the take located? Is it upstream or downstream of Ngahere Park?

Cheers

Jack

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From: Raelene Hurndell [mailto:Raelene.Hurndell@horizons.govt.nz]
Sent: Friday, 12 March 2010 4:46 p.m.
To: Jack McConchie
Cc: Jon Roygard
Subject: Turitea allocation (POP)

Hi Jack,
We're just in the process of pulling all our recommended changes together for the end of hearing plan, and in doing so, have discovered a small take (100 m3/day) in the Turitea, that we had not counted in the total allocation in the Turitea sub-zone.

Adding this to the PNCC take volume would bring the core allocation limit to 37,100 m3/day. Are you comfortable with us recommending this (37,100 m3/day) as the core for the Turitea, based on the intention that we had to include all existng takes in the core?

Look forward to hearing your thoughts.
Hope you've got an exciting weekend planned.

Cheers
Raelene :)

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5. Appendix B