

EXPERT WITNESS CONFERENCING

Proposed Natural Resources Plan

Topic: Allocation

Date: 06 September 2017

Venue: Conference Room 515, Copthorne Hotel, Masterton

Witnesses Present:

Name	For
Dr Mark Gyopari	Greater Wellington Regional Council
Brydon Hughes	Greater Wellington Regional Council
Mike Thompson	Greater Wellington Regional Council
Jon Williamson	Wairarapa Water Users Society & Ongaha Farms Ltd

Note taking: Mike Thompson

Environment Court practice note:

It is confirmed that all present:

- Have read the Environment Court Practice Note 2014 Code of Conduct and agreed to abide by it

And in particular

- Have read the Environment Court Practice Note 2014 Code of Conduct Appendix 3 – Protocols for Expert Witness Conferencing and agreed to abide by it

Joint Conferencing Statement

1. Assumptions

- Limited to consideration of the Lower Ruamahanga Groundwater Management Zone only. Consensus that the issue in the Lower Ruamahanga zone is unlikely to crop up elsewhere (other than potentially at localised scales) because sediments become coarser up the valley and have characteristics more consistent with unconfined aquifers directly connected to rivers.

2. Points of agreement

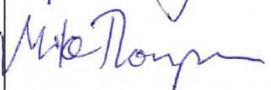
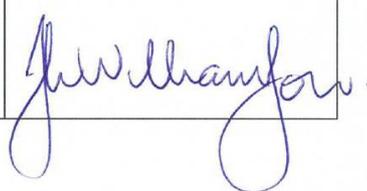
- Consensus that groundwater level and aquifer test analyses are inconclusive regarding degree of connectivity of groundwater and surface water resources.
- Consensus that the interpretation of water quality data to assist with characterising hydraulic connectivity is not straightforward. Mr Williamson considered that water quality results indicating reduced groundwater (elevated iron and manganese) and evolution with distance from the Moiki Zone provide strong evidence to indicate a progressively lower degree of hydraulic connection to the Ruamahanga River in the Lower Ruamahanga Groundwater management zone. Experts for GWRC considered the water quality results more equivocal until they can be considered in the context of further scenario modelling (described below).
- Consensus that there is greater aquifer confinement than previously thought based on new agreed interpretation of geology.
- Consensus, due to the above three points, that there is justification to review classification for Lower Ruamahanga Groundwater Management Zone.
- Consensus that currently there is insufficient technical information to support a robust review and reclassification process and that further work is required in this respect.

3. Further work and timeline

- Further numerical modelling is required. This will entail:
- Agreed model objective is *to assess the localised and cumulative effect of groundwater pumping from the Lower Ruamahanga Groundwater Management Zone on the Ruamahanga River in the vicinity of Waihenga Bridge*. The focus on cumulative effect is necessary because a potential consequence of reclassifying groundwater abstractions is that surface water allocation amounts may have to be redefined and a groundwater allocation volume established (there is no groundwater allocation in this zone).
- Model to incorporate a new agreed interpretation of aquifer confinement and have the set up conditions listed in Appendix 1.

- Consensus that Williamson Water Advisory Ltd (WWA) will undertake the modelling work including the scenario runs with review by and input from Dr Gyopari. Dr Gyopari to provide existing model files to WWA. Independent peer review will be commissioned if necessary.
- Further technical expert conferencing may be required in the period between model results becoming available and initial report back to the hearing panel.
- Two reports will be produced;
 - The first will be a joint statement/summary report (from WWA & GWRC) to the hearing panel regarding any recommended reclassification of groundwater categories in the Lower Ruamahanga Groundwater Management Zone. Model results will be appended. This will be delivered to the hearing panel by 20 October 2017.
 - The second will be a GWRC report documenting justification for any reclassifications and outlining implications for allocation amounts. Allocation amounts for the Ruamahanga River in Table 7.3 of the PNRP may need to be amended to reflect recommendations in this report. The hearing panel will be advised of any suggested revisions to allocation amounts at the start of Hearing Stream 4 (12 February 2018)

Signed

Name	For	Date	Signed
Dr Mark Gyopari	Greater Wellington Regional Council	6/9/17.	
Brydon Hughes	Greater Wellington Regional Council	6/9/17	
Mike Thompson	Greater Wellington Regional Council	6/9/17	
Jon Williamson	Wairarapa Water Users Society & Ongaha Farms Ltd	6/9/17	

Appendix 1

Agreed model set up conditions and parameters

Geometry	<p>Adopt from existing GWRC model</p> <p>Four sub zones: Moiki, Waihenga, Pukio, Lake</p> <p>Simulating two hydro-stratigraphic units; Q1 and Q2-Q4</p> <p>Three layers (1,2 and 3)</p> <p>Boundary between Moiki and Waihenga at Huangarua River confluence</p> <p>Boundary between Walls and Waihenga at south facing oxbow (George bore)</p>
Hydraulic conductivity Kv (vertical) and Kh (horizontal)	<p>Vary across zones</p> <p><u>Layer 1&2</u></p> <p>Moiki zone Kh = existing (400 m/d)</p> <p>Waihenga zone Kh = [1, 0.1,0.01], Kh/Kv = 100</p> <p>Pukio zone Kh/Kv = existing (100)</p> <p>Lake zone Kh = 0.001</p> <p><u>Layer 3</u></p> <p>Kh = 330 m/d (all zones)</p> <p>Waihenga zone Kh/Kv = 10</p> <p>Pukio zone Kh/kv = 10</p>
Storage	<p>Moiki Sy = 0.1, Ss = 0.001</p> <p>Waihenga Sy = 0.02, Ss = 0.001</p> <p>Pukio Sy = 0.01, Ss= 0.0001</p>
Boundary conditions	<p>Top/bottom fixed heads as per existing GWRC model (Top = 22m and Bottom = 2-3m)</p> <p>Flux on south eastern boundary (20,000 m3/d)</p>
Recharge	<p>250 mm/year (variable)</p> <p>30% in Moiki zone reducing to <10% in Pukio</p>
Pumping conditions	<p>Seasonal average rate applied over 150 day period</p>
Scenarios	<p>All existing consents pumping</p> <p>With and without Waihenga zone pumping</p> <p>Simulated bores 1km chainage</p>

