

MEMO

Proposed Plan Change 9 (TANK)

To: Ellen Robotham / Jeff Smith – Hawkes Bay Regional Council
From: Hearing Panel PPC9
CC: PPC9 website
Date: 20 September 2021
Re: **GROUNDWATER**

We have read the staff memorandum from Ellen Robotham dated 4 August 2021 outlining why in her view a prohibited activity status is appropriate for any new take of groundwater from the Heretaunga Plains aquifer, along with a possible non-complying activity rule. We observe that NCA rules provide for only two very limited circumstances where consents may be granted, with no new takes allowed for commercial activities.

One of the questions we have posed to ourselves is whether such a restrictive approach is justified by the information available about the groundwater resource, and so whether some water could be made available for new commercial users without jeopardising the sustainable use of the aquifer.

The Interim Groundwater Allocation Limit

At Paragraph 1332 the Officer's Report says:

"The interim limit is essentially our best estimate of consented actual and reasonable use across the Heretaunga Plains, including consented and permitted takes." It goes on to say that the rationale for this is given in Appendix 11.

And at 1333 it says:

"Setting an interim limit at the estimated actual and potential use helps achieve OBJ 16, 17 and 18, and aids in implementing a "sinking lid" approach by providing a point of reference for the POL 42 review."

Objectives 16 to 18 talk broadly about outcomes from implementing this regime, including avoiding future over-allocation and phasing out existing over-allocation (which is consistent with NPSFM Policy 11).

Policy 37 says the Council "will adopt" an interim allocation limit of 90 million m³/y based on the actual and reasonable use test, and "manage the groundwater resource as an overallocated management unit and prevent any new allocations of groundwater". We well understand that the resource is presently over-allocated, but we have doubts that it is over abstracted.

Policy 42 says that after water has been re-allocated and consents reviewed the Council will commence a review of these provisions within 10y. By this we understand that the "interim limit" is

proposed to stay in place for up to 10y, and during that time no new uses of groundwater will be allowed for via the proposed prohibited activity, and very few via the possible NCA rule.

Current Abstraction Volumes

The estimates of annual current water use are given on pp7 of the updated Appendix 11. It says that:

- As of 2015 about 22.5 million m³/y are abstracted for public water supplies, and that has stayed reasonably stable since 1980.
- Industrial use has been about 13M m³/y since about 2000.

The information on irrigation abstraction is much less certain. On pp7 the Appendix says:

A major review of metered pumping data for irrigation was undertaken in preparation for groundwater modelling efforts, from which numerous problems were encountered. Metered data is likely to underestimate the total abstraction for irrigation use due to metering requirements being relatively recently introduced.

Though there is large year-to-year variability in groundwater abstraction due to climate and other factors, in summer periods up to 50% of all groundwater abstraction from the Heretaunga Plains is estimated to be for irrigation. On average, approximately 35 M m³/year was estimated to be abstracted for irrigation between the years 2006 and 2014. (we note this was changed from 50M m³/y in the original Appendix 11 and seek confirmation the 35M m³/y is correct).

Justification for the Proposed Interim Limit

We consider that Appendix 11 provides some quite contradictory information on what sustainable limit should be imposed on the aquifer. For instance, on pp6 the Appendix says.

Long-term changes in groundwater levels may be difficult to detect as they may be masked by the natural variability in groundwater levels between seasons. Monitoring of groundwater levels in the Heretaunga Plains groundwater system shows that declines have occurred slowly over time. Persistent declines are mainly located in the area northwest of Hastings, notably in groundwater levels between Roy's Hill and Fernhill. Overall, Heretaunga Plains groundwater levels during summer have declined by an average of 5 centimetres per year between 1989 and 2018. While climatic influences may have played a part in the groundwater declines, abstraction from the aquifer system has increased substantially over this period.

But in talking about the groundwater model Appendix 11 says on pp 15:

A dry climate scenario was run to repeat conditions from the dry year 2012–2013 every year for the next 100 years. Results indicate that groundwater levels and river flows remain at low levels, but there is not a long term declining trend, provided the groundwater pumping continues at the rates applied in 2012–2013 (90 Mm³/ year across the Heretaunga Plains groundwater system), which is about 20% higher than average pumping between 2005–2015 (76 Mm³/ year).

Our reading of this is that the model predicts that 90M m³ could be taken every water year for the next 100y without significant adverse effects. We cannot reconcile this with the observed very gradual long term declines in water levels at much lower estimated rates of abstraction. But nor can we see how this modelling justifies “a cautious approach to re-allocation” nor does it appear to support the

statement “enabling further allocations could exacerbate overallocation and stream depletion effects” (Officer’s Memo Paragraph 9).

Further on pp16 Appendix 11 says:

For the time span used in the Heretaunga Plains groundwater systems model scenarios report this year was particularly dry, hence abstraction activities for 2012–2013 exceeded those of the other years shown for data available up to that time. In round terms, this amounts to an annual maximum of 90 Mm³ for the Heretaunga Plains groundwater system. As (noted elsewhere in the Appendix) 90 Mm³ is about 20% higher than the annual average for groundwater pumping between 2005–2015. PPC9 refers to the number of 90 Mm³ as an interim allocation limit.

We know that if 90M m³/y is allocated, it will only be abstracted fully in dry water years, with lower demand in other years. Given that about 35.5M m³/y is abstracted by combined public water suppliers and commercial users, the interim limit implies that up to about 54.5M m³/y would be allocated to irrigation users, which is about 20M m³/y more than was used on average between 2006 and 2014. We understand that this does not predict future abstraction demand, with climate change likely leading to more frequent dry or drought years on the Heretaunga Plains. Given recent history however, it seems that the 90M m³/y proposed as an interim allocation limit will not often be abstracted in full from the Heretaunga Plains groundwater system.

Our Questions

Based on the above discussion we would like the following questions answered please:

1. How much water is currently **allocated** from Heretaunga Plains groundwater to each of:
 - Public water supplies
 - Industrial users
 - Irrigators
2. In round terms, how much water is **proposed to be allocated** to each of these three groups of users for the upcoming 10 year period during the consent reviews anticipated by PPC9?
3. Can the Council provide an estimate of the volume of how much water is taken from the aquifer in each water year by permitted activities (such as domestic water supplies)?
4. Is it correct that the proposed 90M m³/y interim allocation limit is based primarily on the estimated water use during the 2012/2013 water year? If so, what are the 80th and 90th percentile confidence limits of this estimate?
5. The proposed new definition of “actual and reasonable use” includes almost all of the 2020/21 water year, which we understand to be the driest in the recent record. Can an estimate be provided of total water use from the aquifer in this water year please, and if so, what are the 80th and 90th percentile confidence limits of this estimate?
6. Finally, and most importantly, how is the proposed 90M m³/y interim allocation limit justified by the current scientific knowledge of the Heretaunga Plains groundwater system? In particular, we cannot reconcile observed gradual declines in seasonal groundwater levels when actual average abstraction was about 15-20 M m³/y less than this, with a groundwater model that essentially says “it seems to be broadly sustainable to take 90M m³/y for each of

the next 100 years". On the face of it the science appears to be contradictory, with some support for a hard allocation limit however, the modelling would suggest otherwise.

Timing of Responses

Can a written response to these questions be provided by 5pm 24th September 2021 or make contact with us to make suitable arrangements. We would like both of you to attend the reconvened hearing on Monday 27 September to discuss these matters.

Thank you