Before the Hearing Panel

At Wellington

Under	the Resource Management Act 1991 (the Act)
In the matter of	Proposed Natural Resources Plan for the Wellington Region (Hearing Stream 3)

Statement of A J (John) Barton

Dated 21 November 2017

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Introduction

1. I have been farming at Ongaha near Martinborough for 55 years and have lived on or near the property for most of my life.

2. Together with my wife, and son-in-law we manage the farming operations at Ongaha.

3. My family have farmed this land on the banks of the Ruamāhanga River for 170 years. Not only has this established a deep emotional bond within us, but also provides a strong sense of responsibility to preserve and enhance this heritage in every way. Ongaha is in the process of transferring guardianship to the sixth generation of family and I have full confidence that the feelings I express will continue into the foreseeable future.

Figure 1: Location of Ongaha to the west of the Ruamāhanga River. Two of the five pivot irrigators are towards the left-middle of the image.

4. Our present farming operation employs 5 permanent staff and one seasonal worker.

5. We have been irrigating up to 180 hectares on Ongaha with groundwater from the Tawaha Groundwater Zone since 1963, without any observable or reported adverse effects. We have a consent to irrigate a further 50 hectares but some of the conditions of that consent are subject to an Environment Court appeal yet to be set down for hearing.

6. The purpose of irrigation is to maintain pasture and crop growth predominantly for dairy farming. I would estimate that access to irrigation enables our operation to be about 35% more productive than we would otherwise be. I will say more about that aspect below.

7. The irrigation season generally extends from November through to late March. We practice deficit irrigation which means that only sufficient water is applied to top up soil moisture to optimum levels when they have fallen below through lack of rainfall.

8. Our goal is to achieve efficient pasture and crop growth without unnecessary wastage and typically we apply less water than the maximum allowable under the permits. In our 2015 renewal application we offered a reduction in our total annual abstraction of 300,000m³ to reflect our actual annual need for irrigation water.[1]

9. For added efficiency two of our centre pivot irrigators run through a semicircle only and are configured to apply the full required daily application during the 12 overnight hours. Applying water over-night provides the most efficient irrigation by minimising moisture losses through evaporation. It also provides access to significantly cheaper off-peak electricity.

10. As I understand it, there seems to have been no existing issue that:

    - The volume of water used and the way it's been applied has reflected efficient use of the resource, and has been consistent with GWRC's irrigation rate policy;

[1] Which the Council elected not to take up

- The Tawaha Aquifer has been managed sustainably. Groundwater is recharged at the end of each irrigation season. A logged test bore in this aquifer has been monitored by GWRC since 1986 and I understand that there is no evidence of any long-term decline from over-abstraction, and

- The Tawaha Aquifer has been able to support the rates of abstraction historically consented.

11. The major area of dispute I have in relation to Council's *Proposed Framework for Conjunctive Water Management* and how it translates into proposed rules is the interpretation that any groundwater abstractions at Ongaha are from a Category A aquifer with a direct hydraulic connection to the Ruamāhanga River.

12. Without a direct hydraulic connection to the river, there is no apparent need for rules restricting groundwater take relative to the river level.

13. The advice that I have received from two separate hydrogeologists is that the Council's modelling for the *Framework for Conjunctive Water Management* is unreliable and likely to be mistaken on this point. This has resulted in groundwater categorisation maps that do not recognise the actual circumstances of the Tawaha aquifer at Ongaha and elsewhere in the Lower Valley.

14. Both hydrogeologists have advised me that the evidence supports a Category C classification for the groundwater takes at Ongaha such that restrictions on taking it will provide no positive benefit on surface flows in the catchment.

15. This is consistent with my observations of river levels and bore levels during the irrigation season. Following rain in the ranges a fresh will be apparent in the river, but not in the bore levels. A graph (Figure 2) compiled by Dr McConchie shows no more relativity with our bore levels to the Ruamāhanga river level than is shown from the relativity of our bores to the level of the Tauherenikau river which flows on the opposite side of the impermeable Te Maire ridge that divides the lower Wairarapa valley.

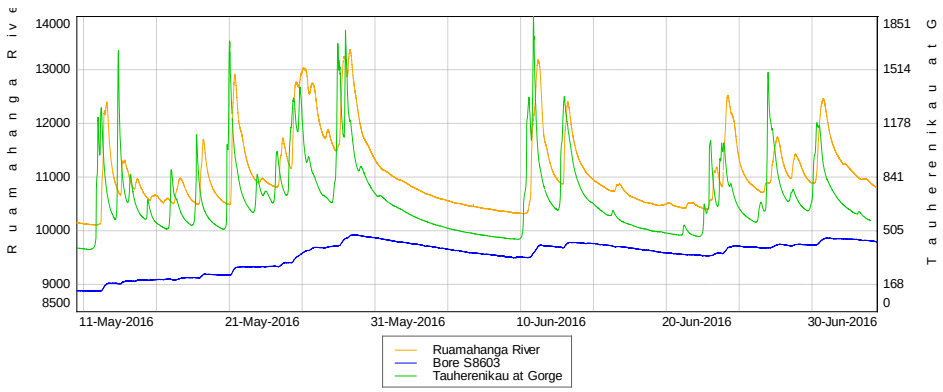

Figure 2: Water level data from the Ruamāhanga River adjacent to Ongaha, the Tauherenikau River @ Gorge, and the 'middle' groundwater bore on Ongaha.

16. As I understand the graph, it demonstrates that the overall climate is the dominant factor that determines river and aquifer levels.

17. Earlier this year I arranged for and was present when test pits were dug adjacent to Ongaha's 3 bores. The specifics of that process are referred to by Mr Williamson in his evidence, but I can confirm that I observed and photographed a very obvious layer of impermeable clay in each of the three pits as shown in the attached photographs.

Figure 3

Figure 4

18. I understand that this evidence of clay is consistent with bore log data from bores between the Te Maire Ridge and the river, upstream and downstream of Ongaha.

19. To my observation, the presence of thick clay at these locations is at odds with Dr Gyopari's desk-top modelling which depends on more permeable materials covering the Tawaha aquifer at these locations. Mr Williamson's evidence explains this in more detail as does his own analysis of bore log data from 183 bores in the Lower Valley.

20. To me, this is not surprising because Dr Gyopari's 2010 study acknowledges (page 112) that, *"The model can therefore only reliably provide useful information at a regional or sub-regional scale and will be unable to accurately simulate small areas in detail."*

Figure 5

Other Surface Water

21. Other surface water features on Ongaha include the Whakawiriwiri Drain[2] and a natural pond situated 70 metres from the Ruamāhanga River and outside the stop bank. Neither of these go dry when the river level drops to summer low flows for sustained periods and conversely the pond, which is brim filled whenever the river floods over it, remains full after the river drops back to normal flow level. These surface characteristics demonstrate no connection to the river from either of these features.

    I have assisted the experts with bore water collection at Ongaha and elsewhere in order to test it and compare it with the river water. Mr

[2] Known locally as the Waka Drain

Williamson will speak to the results, but I can say that the bore water is highly mineralised, very corrosive to steel water pipes and irrigation equipment, and has a distinctive smell and taste whereas the river water, apart from when in flood, is relatively pure with a fresh taste and no smell.

Low Flow Restrictions

22. If there is no direct connection or very little connection between groundwater and the Ruamahanga River, then restricting groundwater use during periods of low river flow will not have any beneficial effect on the river and its ecosystem. The most significant impacts will be economic with knock on effects in the local community.

23. I have engaged Mr Williamson's firm to provide a thorough review of the proposed provisions as they relate to groundwater categorisation and the modelling on which they are based.

24. Plan provisions restricting abstraction when flows in the Ruamāhanga River at Waihenga Bridge drop below 8.5m^3/s could see irrigation constrained for considerable periods, including periods over 30 consecutive days' duration making any residual water allocation ineffective.

25. Although the soils are highly fertile, their moisture storage capacity and the elevated evapotranspiration rate, which can rise to 10mm per day in dry hot weather, means that soil moisture levels can rapidly drop to wilting point causing cessation of plant growth.

26. During February and March, the two most consistently dry months, a lactating dairy cow is also four to five months pregnant and any restriction of her feed requirements results in nature moving to protect the developing foetus by closing down lactation. Once a milk producing animal dries off, it cannot resume lactation until it has calved in the following spring.

27. If an entire dairy herd is affected by irrigation constraints, farm losses could readily include the entire milk production for the balance of the season. For example, if production dried up in February, losses could

conceivably amount to 100% of milk revenue for the balance of that month together with March, April and May. Our milk production during the last three months of the season has over the years typically ranged between 25,000 and 30,000 kg of Milk solids. At an average price of $6.75 per kg it is not hard to calculate potential losses[3].

28. On the plus side of the equation we might save around $20,000 from avoiding the electricity bill for pumping half the irrigation water and running the milking shed. But the farm staff would still have to be paid and all other farm operating expenses met. Even though half the water allocation would remain available under the proposed restrictions to enable half the land to be irrigated, the other half receiving no water would grow no feed so effectively the feed supply would be halved. As there would be nowhere else to put the cows, the whole herd would need to remain on the farm. The cows would have to go onto half rations which should be just enough to maintain their live-weight without producing any milk. But it would take the total area of remaining irrigated land to grow their daily feed requirements for maintenance as pregnant dry cows.

29. We have considered a possible option of buying in supplementary feed such as grass silage and/or maize silage to satisfy the requirements of half the milking herd. During a drought such feed would be very unlikely to be available and if it was the price would be high. We could possibly buy in feed during spring and keep it as insurance. The cost to do that this season was quoted by our local agricultural contractor as $115,000 for the amount we would need.

30. There is also the further cost of daily feeding silage to the herd which requires the use of a tractor and feed wagon and an hour or two of time, plus the investment of extra capital in a suitable tractor and feed wagon. All this would be an additional cost to our business which would not be incurred if we could continue to rely on our allocated water takes without the restrictions deemed to be required for river protection.

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[3] 168,750 - $202,500 (at Fonterra's current price of $6.75 per kilo).

31. I have looked for acknowledgement of losses in the PNRP assessment undertaken by Ms Hammond and the supporting economic work of a Mr Harris. In his report Mr Harris calculates and assigns on-farm losses on the basis of seasonal loss of stock feed (represented as dry matter or 'DM') which would otherwise have been grown had the low flow irrigation restrictions not been applied. It is represented by the formula:

> *Irrigation days lost X Weighted Average Daily Growth = Total Growth Lost.*

32. In section 2.4.1 of his report Mr Harris explains that his model *"is set up to convert the utilisable feed grown to milksolids using the conversion factor of 11, in that it takes approximately 11 kg DM for every one kg of milksolids produced"*, and he then claims that *"all other revenue and variable expenditure items are driven by the feed consumed".*

33. This approach is unrealistic and fails to account for either the scenario I have outlined above or the flow on effects of lowered production on the community, the region and ultimately, the nation's export income.

34. In table 2, page 8 of his report[4] Mr Harris identifies a total of 2647 hectares of irrigated dairying land within the Wardells and Waihenga area which would be subject to low river flow restrictions under the DNRP. Given average seasonal production from irrigated dairy land of at least 1100 kilograms of milk solids per hectare, and that production from the months of March, April and May would normally be around 25% of the annual total, it is my estimate that a potential economic loss to the wider area could be as high as:

> 2647 ha x 1100kgs x 25% =727,925 kgs/ms.
>
> Fonterra's milk price for the 2017/18 season is currently $6.75 per kg/ms
>
> 727,925 kgs/ms x $6.75 = $4,913,493.75

[4] Harris, April 2017, LWP Report No. 2016 -017

35. My concern is that Mr Harris appears to seriously underestimate the economic flow on effects of the proposed irrigation restrictions.

36. Even a loss of half this magnitude would have serious impacts on the regional economy. To illustrate the wider benefits of irrigation and potential cost of restrictions I refer to a report prepared for the Ministry of Primary industry by NZIER and AgFirst Consultants dated November 2014 entitled 'Value of Irrigation'[5]. The report draws statistical information from the 2011/12 year. Relevant extracts from this document include:

The on-farm sector contributes $2.17 billion to GDP due to being irrigated

If irrigation had never occurred, some resources are effectively left idle and the remaining resources are put to their second-best, dry land alternative. The net effect remains negative – the on-farm sector sees its contribution to real GDP falling by $2.17 billion.

Irrigation contributes to New Zealand economic activity in a number of direct and indirect ways:

- *it lifts agricultural production, which boost farm gate returns*
- *this additional production draws in additional inputs such as agricultural services and transport*
- *the extra on-farm volumes also lead to more activity in the primary processing sectors.*

Irrigation is also felt more widely through higher employment, wages and returns to capital and land, all of which boost household spending on other goods and services.

Irrigation contributes to New Zealand GDP. In our central scenario, if irrigation had never occurred:

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[5] Reference via hyper link: https://www.mpi.govt.nz/dmsdocument/5014-value-of-irrigation-in-new-zealand

- *New Zealand's real GDP would be 2.4% lower (or $4.8 billion less)*

(These figures demonstrate a multiplier effect of 2.215 from farm gate value of $2.17 bn to total NZ GDP of $4.8 bn)

37. With regard to the Wellington Wairarapa Region, Table 1 on page 8 of the report includes:

Table 1 Farm gate value of irrigation, by region in million NZ$

Source: AgFirst Consultants NZ

(A) Current (2011/12) Farm gate value of irrigation

(B) Farm gate value if irrigation never occurred or were to cease

(C) = A – B: Net farm gate value of irrigation

	A	*B*	*C*
Wellington region	*$76.7*	*$53.6*	*$23.2*

Flow on value: $23.2 x 2.215 = $51.38 million per annum regional GDP gain

38. The only indication of significant impacts conceded by Mr Harris is his table 23 for impacts on the Lower Ruamāhanga (Waihenga Bridge) where he translates the restrictions to actual job losses (from the modified 2017 provisions), which appear to be about 50%.

39. Either way, the supporting PNRP documentation does little to attempt to properly compare community impacts from on-farm losses with recreational or cultural values. I am not aware of any long term detrimental impact in the river from periodic low flows which have always been a natural occurrence during drought conditions.

40. My overriding concern is that the PNRP regime for assessing constraints on the use of groundwater is problematic in ways that Mr Williamson will illustrate. At the heart of this is Dr Gyopari's

modelling at a regional or sub-regional scale which Mr Williamson has reviewed and tested.

41. I understand that the PNRP has a process for the development of catchment scale provisions to be known as the Whaitua but from my experience of engaging experts to conference with Council experts through an Environment Court process, I have no confidence that the intended scope for flexibility will enable any worthwhile change.

42. In this respect, if the categorisation maps are wrong from the outset, the proposed Whaitua processes could be hamstrung. It will mean that some water users are in an unfair starting position. I understand that Mr Williamson shares this view and is able to speak to it.

43. If the regime for assessing constraints on the use of groundwater is flawed and in ways that could have serious economic consequences for our rural communities, then that should be properly addressed.

John Barton

21 November 2017