

The Commissioners,

CPWES hearing,

Dear Sirs,

Thanks, I'm Robin Heslop and I and my wife, Suzie currently farm 150ha between Southbridge and the Rakaia Huts. You've heard some of the issues I believe will arise as evidence presented by the Lowland Farming Group, 7-8-2008, which I belong to.

This submission started off as concerns any extra take from the Rakaia would have an effect on the Tentburn and Jollie's Brook, lowland streams either side of our farm. With all Canterbury a red zone, i.e. irrigation capacity fully allocated, and ECan looking to impose low water cutoffs on the streams, water is a concern. The initial low flow proposed for the Tentburn, 200l/s, would have prevented our using any of our bores for irrigation last season as the Jenkins model as used by ECan states this will cause stream depletion. While I don't accept this as a reliable model, I do believe any decrease in river flow will show as a decrease in our stream's flows.

All information on the groundwater in our area was anecdotal prior to 2002 – the Regional Council used to monitor a lot more wells than is currently done but this was wound back somewhere in the 80's – in 2002 Helen Grant was involved with an in depth study of the area culminating in ECan Report No. **U03/35**, The surface and groundwater resources of the Little Rakaia Zone (Lee River, Tent Burn and Jollies Brook).

Fig 6.1 pg 40, shows how the resource interrelates – river water lost from the riverbed along with river water diverted from the river and lost back to groundwater as irrigation and stockwater leakage/leaching contributes approx. 470,000m³/day, with rainfall contributing 75,000m³/day. A reduction in river flow will show as a reduction in the water lost from the riverbed – the Northbank scheme and stockwater schemes have priority over CPW so their influence will not change.

My fear is that reducing flows even when the river is running high enough to allow CPW to take water will lower the head in the lower river reaches that provides the pressure to run the shallow aquifer – I'll point out the highlighted section of **Discussion, section 6, pg39**, and then move **Appendix 5**, particularly my father, John's, observations.

Well, I had my fears but after attending a Federated Farmers meeting convened to allow CPW to outline the likely effect on our region I realised there was a lot more to worry about. At this meeting in the Leeston Hotel, Pat Morrison and Cliff Tipler explained that the likely result of CPW going ahead would be a significant rise in the water table, with Cliff showing us a projection of Selwyn District showing our farm as a yellow zone i.e. groundwater raised to ground level, and others close to us being red – groundwater above ground level. Cliff stated – “Think of the 70`s (a very wet period) and double it”. This projection was similar to **Figure 6-4, pg.50** of the Aqualinc, Julian Weir/T. Krom authored report, June 2006. Naturally this alarmed me as farming would be completely untenable, it being impossible to establish, fertilise or harvest anything, although irrigation would become superfluous. Current sewage systems, both septic tank and Oasis Clearwater types will not work if the ground is saturated, nor will the scheme serving Leeston, Southbridge and Doyleston.

I notified that I would be submitting against the scheme and attempted to find the data Cliff and Pat were using in their presentation – this proved tricky as no other submitters had any idea where it came from, either. I approached the Leeston headquarters of the Selwyn District Council and asked to view the CPW applicants` evidence as my understanding was that a copy was required to be held for submitters to study. There wasn`t, but a copy of the files held by the SDC was provided to me. This was 2 days before the Selwyn headquarters moved to Rolleston, so it would have been November, 2007. Reading anything was almost impossible as the pdf. format would crash the computer I was using as soon as I started to scroll through documents. Even now with 2 gigs of ram I`ve spent longer with a frozen screen than actually reading data.

Groundwater Modelling

What I found was frightening – File 23, the groundwater modelling by Thom Krom and Julian Weir of Aqualinc prepared for URS NZ Ltd. I`ll refer to page 50 to show the concerns Pat and Cliff alluded to. These are outlined on page **63** and **64**.

However, earlier this year a CD arrived in the mail labelled Central Plains Officer Reports Applicants Evidence. **File 15** contains evidence by Julian Weir outlining the background **pg7** of the Canterbury Groundwater Model, and in item **31 pg.8** asks us to ignore previous versions and rely only on the 2007 model – coincidentally, somewhere prior to this CPW ran low on funds and

needed an injection of money from dairying sources. A look at the model shows it has been funded in part by vested interests – my understanding of events is that the Ritso Society formed from the Dunsandel Groundwater Users Assn. and then advanced money to the Selwyn District Council for a feasibility study, the money and an exorbitant? useful? amount of interest to be repaid if the scheme looked like being a runner. Could someone from CPW clarify just how this worked? Also coincidentally, Selwyn`s previous mayor, Michael McEvedy along with his brother sold their interests in the family farm, Wedderburn, and moved to Lincoln and Ladbrooks respectively. Michael was appointed an interim director of CPW in May, 2003, and the family farm is in one of Cliff`s red zones.

Now, I don`t know what inputs have been tweaked, but no real data from stream or well monitoring in our area can have been added.

Getting back to the CD, if we look at the increases in groundwater levels now, they look a lot less drastic – **file 15 pgs 118-123**. However, if we compare table **6-2 pg.52/53** in the 2006 Aqualinc report with **file 15 appendix L pg. 132** the average stream flows of most have gone up significantly. These creeks and streams are the groundwater “relief valves” as Walter Lewthwaite puts it, and flow more as groundwater levels rise – if they`re flowing more then that is what is happening, and the size of the area affected must go up. I don`t understand para. 119 pg 33 – does this mean we don`t like what our model says so we`ll get an answer from a different approach?

Modelling appears to be highly inaccurate, comparing Aqualinc 07 and 08 examples, authored by the same person.

Scheme Size

The area already being watered inside the scheme keeps increasing – do nothing and it will be fully watered in about 4 years.

- July 2005 24,000ha, Aqualinc June 06 report, **pg.58**
- June 2006 33,6000ha, Julian Weir, Applicants evidence, file **15 pg 37 para 131**.
- November 2006 approx 30,000ha, **Urbis, pg. 100**
- August 2008 43,000ha if pending consents are included, Applicants evidence presented to hearing, 7-8-2008.

This suggests a single large scheme is not necessary or even desired to irrigate the CPW zone – currently consents are argued for and granted or otherwise on their merits – if unexpected detrimental effects show up it will be very hard to enforce remedial measures. Stopping the water will send all but corporate farms broke, and any increase in nitrates or bacteria will be very hard to isolate and mitigate. If an existing consent breaches conditions ECan can act, but a single large entity, with the legal representation available to it, will be a difficult target.

Whether this zone should already be intensively irrigated is another matter, and outside the brief of this hearing. When discussing nitrate leaching in the 06 Aqualinc report, J.Weir uses the 24,000ha July 05 area to establish current nitrate leachate levels, then goes on to show CPW as doubling this, **pg.59**.

However, if we use the existing consents plus those pending, and assume the increase is mainly dairying, that has probably already happened. So, where is this nitrate? Reading **6.3 pg 63** Aqualinc outlines what happens to nitrates – flushed below the root zone, they get pushed down by subsequent leachate until they intercept an aquifer and get transported elsewhere, appearing much later as a pollutant, and with a nitrate loading continuing behind them for at least as long as it has taken for them to appear. All the nitrate going below the root zone will end up in a waterway eventually, be that a creek, a lake or the sea. All extra water does is dilute the concentration, the volume of N delivered will not change.

If CPW goes ahead, how large an area will end up getting irrigated? The scheme suggests 60,000ha of 82,300 – **pg37, para 131 file 15**. However, with up to 43,000ha of existing consents, significant shareholder numbers must have a foot in each camp – if CPW goes ahead these existing consents could be operated in addition to the scheme water – (**Urbis, pg.100**, giving 75,000ha, J. Weir Applicants Evidence, **file 15 pg.38**), and still leave 28,000ha of consents to transfer elsewhere .If this area is transferred to land in Selwyn then the water and leachate loading heading for the coast will be massive, 3 to 4 times status quo.

Economic Benefits

Looking at **file 22**, On farm economic impacts, by Macfarlane Rural Business Ltd, April 2006, items 1.7 and 1.8 grab the eye – returns of 2.15 and 5.09% for pre and post development return on capital.

This compares with a 1.5% after tax return as demonstrated by DairyNZ (CHCH Press, June) – Canterbury farms would be above this.

The benefits of the dairying boom have ended up in the pockets of those already in the industry – returns to new entrants have been crippled by the astronomical rise in land price, driven by the boom. This means a positive cash flow is very difficult. Corporate and established farms can buy land and reduce tax obligations, benefitting from the capital gain as well. The high land price virtually reserves land for them.

To Conclude

If Pat Morrison felt the Malvern hills were too unstable for rubbish disposal, why are they so suitable for water storage? A dam breach will be far more serious than some plastic bags escaping and refuse leachate can be contained and neutralised much easier than thousands of tons of N leachate heading downhill.

The benefits of the scheme will be outweighed by the costs and restraints imposed on those downhill – mention is made about mitigating additional drainage costs, but not about sewage schemes and septic tanks in Ellesmere. If these fail the cost of pumping to Christchurch will be huge.

My initial fears of reduced creek flows – who knows how the myriad of variables that influence our groundwater will be affected. I have very little faith in a computer model based on so little lowland data. We may suffer low flows until the dam is filled and groundwater levels build up, then find we can't farm at all due to excess water.

Yours, Robin

Heslop.