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(doc to be accompanied by flow diagram)

Since Central Plains Water (CPW) lodged its resource consent application last year, we have continued to commission numerous scientific studies. The following is the most up to date summary of the scheme's environmental effects that relate to water.

NO THREAT TO CHRISTCHURCH DRINKING WATER

Our city's pristine drinking water is drawn from aquifers which are like giant, underground lakes layered on top of each other. In Canterbury, this vast water resource extends from the mountains to the sea. Gravity, water pressure and the general shape of the Canterbury Plains, causes water in the aquifers to flow in a south easterly direction.

As the diagram shows, water draining from the CPW scheme area into aquifers will bypass Christchurch City. This is based upon ECan's understanding of the Christchurch groundwater recharge zone. The city's drinking water supply will continue to be sourced from water which has its origins in localised rainfall draining into groundwater and water which originally drained into the aquifers from the lower reaches of the Waimakariri. Its purity is further protected by the fact that nitrates do not penetrate to the depths of aquifer that most Christchurch bores pump from.

CPW is unaware of any evidence that the scheme will create the substantial risk of microbial contamination of Christchurch city's drinking water supply, as suggested by a recent front page article in The Press. Such potential for severe health impacts has not been borne out by the reports or evidence obtained by the company to date and we are anxious to address the public's concerns about such effects.

GROUNDWATER VOLUME & LOWLAND STREAMS

In 1990, 100 million cubic metres of groundwater per year were allocated to farmers for irrigation in the central Canterbury Plains but that figure is now 350 million.

Central Canterbury's aquifers will therefore be significantly better off 'with the CPW scheme than without' – that's because CPW will source water from the Waimakariri and the Rakaia rivers, not out of the ground. By adding all this river water to the land, and fewer farmers drawing irrigation water from aquifers, the scheme will restore the region's groundwater resource to about its 1990 state. Around 200 million cubic metres of water will be fed back into the aquifers, some of which will rise 8m as a direct result of the CPW scheme.

Increased groundwater pressure due to increased water volumes will also restore the natural flows in lowland streams, especially in drought years. The impact will be most significant in the Irwell and Selwyn rivers, with flows at iconic swimming holes such as Coes Ford returning to their 1990 volumes.

Other beneficiaries of all this additional groundwater are farmers and rural households closer to the coast. Many have seen their groundwater supplies for irrigation dwindle and house wells run dry due to over-abstraction by farmers higher up the plains and climatic influences impacting on the rate of aquifer recharge.

NITRATE CONTAMINATION

The vast majority of farmers in central Canterbury source their irrigation water from aquifers. Increased drainage to groundwater amounts to 50% of the irrigation water applied and therefore the application of fertiliser means excess nitrates can be carried with it. As groundwater in the aquifers flows across and under the plains,

previously contaminated water is pumped out by other farmers 'downstream' – a 'recycling' process that can progressively increase nitrate concentrations.

In contrast, while the CPW scheme will result in more intensified farming, the effect of any additional nitrate entering the groundwater will be offset by the sheer volume of additional fresh water the scheme will introduce from the Waimakariri and Rakaia rivers.

Despite opponents' claims to the contrary, the latest scientific studies show that nitrate contamination in groundwater across the central Canterbury Plains will not rise because of the Central Plains scheme. The current level is a median of 3.2g/m³ compared with the maximum allowable level in drinking water of 11.3g/m³. This is welcome news for rural householders who source their drinking water from house wells.

As a result of the scheme, nitrate concentration levels in Te Waihora / Lake Ellesmere will also remain unchanged. The volume of water passing through the lake will increase, however this will be managed by opening the outlets an average of 1.2 times more per year.

MINIMAL EFFECT ON THE WAIMAK

The CPW scheme will have no effect on the braided character of the Waimakariri because, like the Rakaia River, it has predetermined minimum flow levels which are protected and enforced by ECan.

CPW has commissioned numerous studies on the effect of the scheme on birds, fish and vegetation within the Waimakariri. The conclusions are that the effects will be minor and some may even be positive, notably for the habitat of black fronted terns.

As it refines the scheme's design, CPW is continuing to consult with numerous recreational user groups and can develop highly flexible approaches that preserve the natural highs and lows in river flows for fishermen, avoid extended periods of 'flat-lining' for kayakers and would shut its intake altogether for special events such as the Coast-to-Coast.

To conclude, I can say with confidence that our environment will be worse off if the proposed community-owned CPW scheme does NOT proceed. That's because numerous individual and corporate farming interests are literally lined up behind us to access the last of the water available for allocation in the Waimakariri and Rakaia. CPW's applications for water rights have already been challenged by Synlait and by Ngai Tahu, both of which plan specifically to use their water for dairy farming. However neither make claim to provide hundreds of farmers with an alternative to continuing to deplete our aquifers, to restore flows in our region's lowland streams or control nitrate contamination in groundwater.

Opposing the CPW scheme because one thinks that will call a halt to dairying and farming intensification in our region is naïve. For our environment's sake, CPW is a one-off opportunity to get things right for future generations.