

BEFORE THE MANAWATU-WANGANUI (HORIZONS) REGIONAL COUNCIL

in the matter of the Resource Management Act 1991

and

in the matter of Proposed One Plan

STATEMENT OF EVIDENCE OF CHRISTOPHER ALAN PEPPER

INTRODUCTION AND GENERAL EXPERIENCE

1. My name is Christopher Alan Pepper. I am employed as the Water and Waste Services Manager in the Water and Waste Services Division of the City Networks Unit of Palmerston North City Council. I have been in that role for seven and a half years.
2. I hold a tertiary qualification of Bachelor of Engineering (Civil) from the University of Auckland and a Master of Business Administration from Deakin University (Melbourne). I am a member of the Institute of Professional Engineers New Zealand. I have been employed since 1987 as a civil engineer and have been employed in the municipal infrastructure field since 1988.
3. I have read the Code of Conduct for Expert Witnesses (section 5 of the Environment Court Consolidated Practice Note 2006). I agree to comply with this Code of Conduct. This evidence is within my area of expertise, except where I state I am relying on what I have been told by another person. I have not omitted to consider material facts known to me that might alter or detract from the opinions that I express.

PURPOSE AND SCOPE OF EVIDENCE

4. The purpose of this statement is to provide comment in relation to the impact of the Proposed One Plan on Palmerston North City Council and Territorial Authority activities.

5. This statement has been prepared with the assistance of Mr Philip Walker (MIPENZ), Mrs Natasha Simmons (GIPENZ), and Mrs Catherine Stapp (GIPENZ), who are experienced municipal engineers with over 30 years cumulative experience in water and wastewater matters.

INTENT AND IMPACT OF THE PROPOSED ONE PLAN

6. The proposed One Plan includes more stringent environmental guidelines than those that apply at present. I agree fully with the intent of the Plan and wish to make comment about the impact of the proposed Plan on Council activities and planning. One point raised by our legal advisors is whether or not the 'standards' in the POP are in fact standards or guidelines. The advice received is that this will have a significant impact on how future requirements outlined in the plan will impact on individual consents when these come up for consideration.
7. Territorial authorities are required to produce planning documents for infrastructure (known as Asset Management Plans) with at least 20 year timeframes, and are statutorily required to adopt Long Term Council Community Plans with a 10 year timeframe. These plans are intended to give certainty to communities that sufficient funding is available to undertake the range and scope of activities that communities wish territorial authorities to undertake. One issue with the One Plan is that it is difficult to predict timing with regard to when infrastructural improvements will be required. This in turn impacts directly upon the future planning requirements for territorial authorities as indicated above.
8. By way of an example, a \$10 million capital investment for PNCC is estimated to have an annual operational impact (including interest and depreciation) in the following financial years of \$1.5 to \$2.0 million. This represents a rates increase for Palmerston North ratepayers of the order of three to four percent which, if the timing is not accurately determined, will have a significant impact upon territorial authority processes.
9. The other impact upon territorial authorities and communities that need to be considered are the cumulative effects of the proposed One Plan, particularly

given the likely impact of common catchment expiry dates. If territorial authorities are required to upgrade both wastewater and water supply systems to meet proposed One Plan conditions concurrently, the financial impact on communities is magnified.

10. I also note that from the perspective of someone who will need to refer to the POP from time to time as a key part of decision making processes related to infrastructure, that it is not immediately clear which rules will apply to individual activities, and how the objectives, policies, rules and definitions interact. An example of this is how the POP will affect our Turitea consents. Is the water storage lake behind the dam defined as a lake and is the catchment area defined as having significant natural values? If so, this means a different set of rules may apply.
11. I note that it has not been possible for me or my colleagues to assimilate the recent volume of evidence recently produced by Horizons, given the timeframes by which evidence has been required. This means that this evidence may not be complete, or that some of this evidence will be already contemplated by the Horizons evidence produced.

WATER ALLOCATION

12. I support the concept of a water allocation hierarchy which reflects the relative value of various types of water use to communities as at present there is no method of weighting the value of water towards more 'valuable uses' such as municipal supply or stock watering compared to irrigation for instance. I also think that it would be advantageous to set aside amounts of available water for future use, which would cap the amount of water available for use and avoid the risk of over allocation. Therefore the amount of water available can be assessed and allocated accordingly. The table below indicates how a water allocation hierarchy could operate.

Priority Ranking	Allocation
1 Urban Users	Urban use based on the allocation method as per Policy 16-12. Guaranteed take.
2 Rural stock	Rural stock requirements Recommended as 440 litres per hectare per day.

requirements	Guaranteed take
3a Light & heavy industrial users	Light and heavy industrial requirements based upon historic data and growth projections. Guaranteed take for existing industry Future take subject to discretion based upon resource limitations.
3b Wet industrial users	Wet industrial requirements based upon historic data and growth projections. Guaranteed take for existing industry. Future take subject to discretion based upon resource limitations.
3c Horticulture and Agriculture users	Horticulture and agriculture irrigation based upon historic data and growth projections. Guaranteed take for existing horticulture industry. Existing agriculture irrigation subject to annual review. Future takes subject to discretion based upon resource limitations. Takes consented to be constantly under review and adjusted according to resource variations.

13. Review of Policy 16-12 which sets out a methodology of how much water should be allocated to a municipal supply. I would like the Policy to be clarified in the following ways:
- That the allocation be calculated on the connected population only;
 - That the amount allocated be an annual amount not a daily amount.
 - That the rules allow management of more than one source into single system in an integrated manner to allow for situations such as the Palmerston North water supply system where water comes from a combination of sources including a harvested supply.

The effect of these changes would encourage territorial authorities to develop strategies to reduce water demand over time to meet these amounts. It is likely that the mix of strategies required will vary from system to system. For example in Palmerston North our water demand management planning focuses on consumers using appropriate amounts of water for garden usage. Alongside this, Palmerston North City Council has an extensive long term mains replacement programme which will reduce background leakage, and is updating its water loss calculations. Palmerston North City Council is also embarking on an improved water meter replacement programme, one of the effects of which will be to make the water loss calculations more accurate,

and is also intending to develop a more sophisticated water pressure management regime which will also reduce leakage. I note the mix of actions required to meet the allocation policy will be specific to individual water supply systems.

14. I have undertaken a calculation to demonstrate how the allocation would work for Palmerston North and Ashhurst;

	Palmerston North	Ashhurst
Connected Population	70000	1890
300 litres/head/day	21000 cubic metres per day	567 cubic metres per day
Commercial use (20%)	4200 cubic metres per day	115 cubic metres per day
Industrial use (5%)	1050 cubic metres per day	28 cubic metres per day
Growth allowance (10%)	2100 cubic metres per day	57 cubic metres per day
Leakage allowance (15%)	3150 cubic metres per day	85 cubic metres per day
Daily total	31500 cubic metres per day	852 cubic metres per day
Annual Allowance	11,497,500 cubic metres	310,980 cubic metres
Actual Usage 2008	10,153,550 cubic metres	466,266 cubic metres

This table illustrates the issue that smaller population centres may have with high garden watering which is related to lifestyle and section sizes in these smaller urban areas, and the use of large amounts of water for such uses as mains flushing.

The POP policies and rules also assume that an individual water take is for an individual activity, whereas in Palmerston North a number of sources are used to supply water. Therefore it is logical to manage the sources as a whole. PNCC currently, under the number of consents it holds, can abstract 79,000 cubic metres of water per day, compared to a maximum take over time of 43,000 cubic metres in a day.

15. I would also like the water allocation policies to be amended to avoid the imposition of restrictions on supplies that are not subject to seasonal variation in river flows and therefore should not be subject to restriction as indicated in the proposed One Plan Policy 16-19.
16. The concept of water harvesting is not explicitly encouraged or acknowledged in the rules of the POP. Storage of water such as the water stored behind the

Turitea Dams substantially reduces the pressure on water bodies during times of low water availability and high demand.

17. I also note the 'policy call' made in the evidence of Raelene Hurdell to include a base flow in the Turitea Stream at the Ngahere Park Bridge of 50 l/s. Council has employed Opus Consultants to analyse the flows in the Turitea Stream. The conclusions reached are as follows;
- That the only location that flows can be controlled to maintain flows in the Turitea Stream is at the outlet of the lower Turitea Dam.
 - That the PNCC catchment contributes only two thirds of the flow at the Ngahere Park bridge
 - That without the Turitea Dams the flow in the Turitea Stream in a 'dry' year would drop to below 25 litres per second.

It is my conclusion that the policy call has no basis and that given the control and analysis undertaken by PNCC that the flow in the Turitea Stream be maintained by way of a mean minimum discharge of 25 litres per second from the lower Turitea Dam. A mean discharge would allow for periodic flushing of the stream to allow for the bed to move to stop the accumulation of algae on the stream bed.

- 18 I support the intent of the POP with regard to water allocation which is to allow for an equitable allocation of a scarce resource. In my view, allocation policies could work with a hierarchy of water users, an allocation mechanism for users, the development and implementation of demand management plans, and research into ways which water use could be made more effective, especially for irrigation and wet industries. This would facilitate a move away from the current 'first come, first serve' model which encourages tying up available resources through consents to ensure that individual water users have a greater level of certainty about accessing available water resources.

WATER QUALITY

- 19 I support the introduction of water quality 'targets' to ensure that the conditions of aquatic habitats are improved over time. For this to be achieved,

further research needs to undertaken to establish the most effective methodologies to achieve the desired outcome of improved aquatic habitats. For example, is it more effective to control farm runoff upstream of the Manawatu Gorge, than to reduce the nutrient loading from the Palmerston North Wastewater Treatment Plant? And, if this is more effective, how can the downstream 'beneficiaries' contribute; say in a similar fashion to the Sustainable Land Use Initiative (SLUI)?

20 Another issue facing existing discharge holders is that it is not clear when the 'standards' in the POP will apply. As TAs work their way through the processes described in Paragraph 8 above the timing and impact of potential consent reviews will become difficult to manage with respect to the long term planning processes that TAs undertake. I therefore suggest that policies be developed to give a clear indication on when consent conditions will be reviewed. This can then be incorporated into the river condition monitoring process. For instance if a consent holder is meeting all consents conditions or if there is no demonstrable effect, then there should be no review of conditions.

21 I note that research commissioned by PNCC and conducted by Massey University as part of our WWTP consent conditions was not conclusive in establishing a clear link between nutrient levels and aquatic conditions. I suggest that more research in this area is required.

22 I have also read Mr Hamill's evidence and I believe that the key points in his evidence that are relevant to PNCC's wastewater treatment are as follows;

- His comments that efforts to reduce nutrient discharges where they are most needed
- That average or median values for many parameters have more relevance than maximum values
- The results of the NZ National Water Quality Monitoring Network programme indicate that periphyton cover at Teacher's College (above the WWTP) and Opiki (below the WWTP) between June and November have only exceeded the guidelines once in 18 years and all other exceedances occurred at low flows (less than median).

23 The requirement to meet in-river standards up to three times median flow would require significant additional investment for PNCC at the Totara Road WWTP for phosphorus, nitrogen and e coli removal. The recently completed facilities have been designed to meet the requirements of the Manawatu Catchment Water Quality Regional Plan with its emphasis on water quality in the Manawatu River at flows below half median. The current phosphorus removal process at the Totara Road WWTP cannot be operated economically on an extended basis. The proposed requirements mean that the Dissolved Reactive Phosphorus (DRP) removal process operated by PNCC will need to operate an estimated 200 days a year more than the present consent conditions. The chemical cost of operating the phosphorus removal is \$5000 a day, which produces 14 wet tonnes of sludge which has an estimated disposal cost to landfill of \$230 per tonne. This amounts to an extra \$1,740,600 per year in direct operating costs alone. Ultimately further investment in a more cost effective biological treatment plant is likely to be required, possibly incorporating nitrogen removal as well. Together with

further extension of the disinfection plant, an investment of the order of 20 to 30 million dollars may be required. I am concerned that insufficient research is currently available to justify the need for, and confirm the benefits of, meeting the proposed standards at the higher river flows indicated given the level of expenditure likely to be required. Having certainty that the new standards will not be required during the course of the current consent will help.

24 The alternative to this is a land based discharge. PNCC has previously investigated this option and I note that significant potential effects need to be addressed with this option such as identifying appropriate soil types, the amount of land required, managing soil capacity and water table capacity in the wet times of the year, impacts on groundwater and potential cumulative effects on both the soil and groundwater from repeated discharges over a long period of time. The sheer volume of wastewater effluent produced from a population the size of Palmerston North magnifies these issues.

25 I note that Horizons Section 42A evidence refers to data collected between 1993 and 2006 with respect to contamination levels. This evidence may mislead the committee as since that time PNCC has commissioned a \$14 million treatment upgrade project which has resulted in the PNCC effluent discharge into the Manawatu River meeting the bathing standard during the summer months by reducing the amount of E Coli in the effluent by more than 99% and reducing the amount of Dissolved Reactive Phosphorus discharged by PNCC into the river by 95% when river flows are below half median (37 cubic metres per second). I also note that the DRP standard in the current Manawatu Catchment Water Quality Plan came into effect on 1 June 2009, a date which the PNCC consent superseded but which PNCC has met.

26 I note that the current impact of Palmerston North treated effluent discharge is as follows;

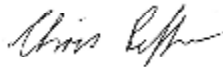
- At half median flows in the Manawatu River (37 cubic metres per second, daily DRP flow at Teachers College 32 kg, discharge from WWTP 7.5 kg (DRP removal process operating)
- At half median flows in the Manawatu River (37 cubic metres per second, daily SIN flow at Teachers College 1280 kg, discharge from WWTP 787 kg (no specific removal process)
- At median flows in the Manawatu River (74 cubic metres per second, daily DRP flow at Teachers College 100 kg, discharge from WWTP 125 kg (DRP removal process not operating)
- At median flows in the Manawatu River (74 cubic metres per second, daily SIN flow at Teachers College 4270 kg, discharge from WWTP 787 kg (no specific removal process).

27 I see the way forward as follows;

- That the 2030 date for improved river values is accepted
- That the water quality standards proposed are the appropriate way in which the values are to be measured
- That appropriate research be undertaken to identify the most effective actions required to improve aquatic habitats
- That the water quality standards remain as guidelines for discretionary activities after 2030.

In my view, this will mean that incremental improvements to aquatic habitats will continue to occur, whilst attention can be focused on solutions to problems that are

not so easy to solve in the shorter term. For Palmerston North, this would mean that our current consent conditions would remain valid until our current consent expires in 2028, unless improvements in river conditions required further discharge improvements. At some point before 2030, a range of actions to improve water quality to meet the standards should be developed, along with means for the whole community affected to fund the required actions, which could be reviewed at the time of catchment review dates.

A handwritten signature in black ink, appearing to read "Chris Pepper".

Chris Pepper
WATER AND WASTE SERVICES MANAGER