



Introduction

This report is provided in response to issues raised in the Applicant's evidence submitted in support of the Plan Change.

Storage of surplus water

The applicant has proposed the use of storage to overcome the limit on the aquifer's water yield. Additional information is provided on the proposed solutions.

Mr Fraser's evidence notes:

'Council's website has information on Oakura Water Usage from 2014 to present. These records confirms that the greatest daily water usage has been 1497 m³/day during this period with an average daily usage of 743 m³/day. Based on this surplus, there is an opportunity for additional storage to be pumped to during low demand periods. This could either be to an additional Council reservoir or trickle feed to tank supply on individual lots.' (Para .44).

Mr Mckie's evidence also notes:

'In addition to this, we will set aside land for the additional water tanks required by the NPDC to future-proof community water storage. The land to be offered adjoins the Oakura Water Treatment and Reservoir and is shown on the attached plan.' (Para. 30).

Mr Comber's evidence notes:

'The Applicant has noted the Council may be requiring additional land in the future on which to locate additional reservoir capacity. Mr McKie has identified additional land within OFPL adjoining the existing water treatment plant site that may serve the Council purposes and would be happy to discuss how this may be acquired. A plan showing the additional available land on offer is shown in Appendix M attached.' (Para. 152).

The type of storage referred to by Mr McKie (tanks) Mr Comber (a reservoir) would be part of our "operational storage" requirements. Operational storage is treated water stored in reservoirs which are connected to the reticulation to cover normal variations in demand such as peaks and troughs during the day and also firefighting requirements.

Oakura has already got sufficient operational storage. If we provided more in an attempt to cover low flow periods the water would be sitting in the reservoirs for long periods of time. This will compromise the quality of the water as the "residual chlorine" (the disinfection method for ensuring the water remains safe to drink when released into the reticulation) drops with time to unacceptably low levels. Council does not believe more operational storage would assist with the issue of providing storage to cover peak demands.

I assume the difference between average daily water use and peak water use quoted by Mr Fraser relate to averages and peaks over a whole year. This suggests he is proposing storage to collect water during low periods such as winter for use during the peak periods which are generally in summer, i.e. this is long term and likely to be large volume storage. This generally is raw water and takes the form of a dammed lake or large open reservoir.

Whilst more raw water storage may provide a method of supplementing normal demand, the volume of water needing storage and consequently the size of the lake is likely to be considerable. Also a suitable stream for damming or level area to construct a raw water reservoir would be needed. Given the location of the Oakura Water Treatment Plant close to the Egmont National Park boundary and



the nature of the surrounding land it is not considered that building a raw water reservoir is a feasible proposition.

Peaking Factor

The applicant proposes a revised peaking factor and consequently a revised number of lots. Additional information is provided on the proposed solutions.

Mr Fraser’s evidence notes:

‘Of interest, based on the approx. 5 yrs. of available data the actual peaking factor at Oakura calculates as 2.10. If this factor was adopted, which is nearer to the NZS 4404 daily peaking factor of 2.00, the residential lot limit given in the Council’s Technical advice would calculate as 1,418 lots. Based on the Council’s data, the attributes of the potable water supply and demand for Oakura are summarised in the following table:

Supply		
	Sustainable aquifer yield	2,503m ³ /day
Demand		
	Daily Average	743 m ³ /day
	Peak Recorded Demand	1,497 m ³ /day
	Reservoir Capacity	2,500m ³
	Water Treatment Capacity	3,500m ³ /day

Adopting the NZS4404 Daily Household Consumption figure of 840l/day (0.84m³/day) together with the Sustainable Aquifer Yield of 2,503m³, and using the differing Peaking Factors discussed, the estimates of additional residential lots at Oakura that could be serviced from the available supply can summarised as follows:

Source	Peaking Factor	Additional Residential Lots
NPDC	2.33	1,279
Actual Historic	2.10	1,418
NZS4404	2.00	1,489

Para. 50-53

Due to staff absence it is not possible to provide comment on the NPDC peaking factor. One thing to note however is for smaller water supplies there is more volatility in demand compared to a large supply, this is why the peaking factor for Oakura is higher than that quoted in NZS 4404.



Firefighting Supply

The applicant has proposed the use of booster pumps and additional storage to address areas of low pressure and shortfalls in firefighting requirements. Additional information is provided on the proposed solutions.

Mr Fraser's evidence notes:

'It is acknowledged that the Oakura Water Supply has areas of low pressure which do not provide the required firefighting supply for Council's FW 3 requirements. It is recommended that a mixture of booster pumps and additional storage at areas of need may be a solution to this shortfall. Discussion should be entered into to determine areas where firefighting supply capacity is critical. (Paras .46-47).

Council is aware of areas in existing developed areas of Oakura which do not meet firefighting requirements. A second trunk main is proposed to address these issues. Part of this main has already been installed. Completion to Wairau Road has been put on hold until the final layout of this plan change is confirmed. It will need to be extended to SH45 and then to Wairau Road if the development proceeds. In the future the main will also need to be extended to Russell Drive.

Rain Water Harvesting:

The applicant has proposed the use of rain water harvesting to supplement the Council water supply. Additional information is provided on this proposed solution.

Mr Fraser's evidence notes:

'To ensure that water demand does not exceed aquifer supply, onsite roof water collection may be implemented to augment reticulated supply. Rainwater harvesting with onsite storage by households, supplemented by a restricted flow connection (trickle feed) from the Council mains reticulation would overcome the current limitation of aquifer yield at Oakura. Such a system may require means of backflow prevention to safeguard the Council's potable supply.' (Para. 53)

Mr Mckie's evidence also calls for rainwater harvesting and onsite water storage noting:

'My vision is for each lot to provide for rainwater harvesting and onsite water storage.' (Para. 30).

Mr Comber's evidence notes:

'The Applicant's advisers have concluded there is sufficient proven aquifer capacity to service, with on-demand water supply, 248 residential lots within the Structure Plan Area. The remaining residential 68 lots and all the rural lifestyle lots could have their potable water supply meet from dwelling rainwater harvesting and storage.' (Para. 22).

Mr Comber also notes:

'All of the consideration's about available water supply are predicated on the basis that the Council, pursuant to its Water Bylaw, is required to have an on-demand potable supply available to each lot within any given urban water supply area of the District. The availability is by way of entitlement; it is not mandatory for any premise to connect to an available supply. To mitigate demand on the available potable water the Applicant proposes to promote household rainwater harvesting and onsite storage within Wairau Estate. The technique and technology is well researched, understood and is being adopted by motivated households in



urban areas with public water supply available. Publications from BRANZ and Nelson City Council are attached to my evidence – refer Appendices L1 and L2 attached.

Adopting household rainwater harvesting and onsite storage within Wairau Estate could significantly reduce the need for public supply. As the literature indicates rainwater harvesting off dwelling roofs can be used for 'grey' uses only – (toilet flushing, clothes and car washing and gardens) or used for all household needs including drinking, cooking and bathing. And it can be supplemented with restricted flow (trickle feed) from Council supply for top up only. The Water Bylaw specifically provides restricted flow (trickle feed) connections subject to 'special conditions'. The conditions are not specified in bylaw but presumably they will cover such matters as backflow prevention (to protect the public supply) and minimum storage requirement etc.

In the circumstances the Applicant will accept the capping of residential lots within Wairau Estate Structure Plan area adopting the revised maximum number of 248 lots recognising that in the fullness of time with further aquifer supply being proven that the cap may be able to be increased or lifted altogether. However given the option of rainwater harvesting with onsite storage for water supply being available to all residential lots, it is suggested the cap of 248 lots be qualified as 'a maximum of 248 lots being served by on-demand (unrestricted flow) water supply connected to the Council's Oakura Public Water Supply.' (Para. 147-151).

Using rainwater tanks to supplement the council water supply if this means connecting into the same plumbing is not permitted under the Bylaw (Part 14 Water, Wastewater and Stormwater Services). 9.6.1 (b) of the Bylaw prohibits cross-connection between the Council water supply and any storage tank (this includes rainwater tanks).

For lifestyle blocks within rural designated areas then restricted flow connections are the only option permitted under the Bylaw.

The District Plan requires all Allotments in a residential area to be provided with service connections, including water (Rule Res 61 and Appendix 22.2). Under Section 4 of the Bylaw any premise in an urban water area is entitled to a water supply.

Therefore in accordance with the District Plan the applicant must provide all Allotments within any new residential zones created by this Plan Change with service connections. Council must then provide the water if the person who builds on the Allotment requests it. Therefore Council cannot approve more Allotments within the proposed residential zone than the current limit of the water supply.