Water Permit – s92 Further Information Request

Compiled and Updated Response

HRC APP-201802028.00

2020–02-26

File Ref: 5-wt514.01

Note:

This response replaces that submitted and dated 14 February 2020 and should be read in conjunction with:

1. The original application and where inconsistent this new document should prevail. The annual volumes of water sought to abstracted is now proposed to increase but is still well within the natural flow rates of the bore. For this reason, no change in environmental effects is noted and so the AEE as submitted and amended by the document referred to in 2 below is to be relied on.

2. The Policy Assessment in Appendix 1 and Engagement Feedback and Application Revisions in Appendix 2 of the Report No. 5-wt514.01 dated 2019-11-01.

Table 1 - Indicative Market Demand Estimate (Conversions 1kg=1 litre, 1 litre = 0.001m3, 1 tonne = 1000kg)

Pack type and size		**Process water used/ litre**	**Estimated product/week**			**Total water for product** (litres/ week) **(a)**			**Total water used in manufacturing/ production** (excluding for washdown/cleaning water from WDC reticulated network) (litres/ week) **(b)**			**Total abstraction volume** (litres/ week) **(a) + (b)**		
			Year 1	**Year 2**	**Year 3+**	**Year 1**	**Year 2**	**Year 3+**	**Year 1**	**Year 2**	**Year 3+**	**Year 1**	**Year 2**	**Year 3+**
PET bottle	250 ml	25mls	20,000	60,000	120,000	5,000	15,000	15,000	500	1500	1500	5,500	16,500	16,500
20 foot dry container	20,000 litres	100mls	2	6	12	40,000	120,000	180,000	4,000	12,000	18,000	44,000	132,000	198,000
Ice	Naked block (1kg bags)	<50mls	10,000	30,000	60,000	10,000	30,000	30,000	0	0	0	10,000	30,000	30,000
Glass bottle	1 litre	100mls	80,000	240,000	480,000	80,000	240,000	459,545	8,000	24,000	45,955	88,000	264,000	505,500
Total (litres/ week)						135,000	405,000	684,545	12,500	37,500	65,455	147,500	442,500	750,000
Total (m3/ week)						**135**	**405**	**684.5**	**12.5**	**37.5**	**65.5**	**147.5**	**442.5**	**750**

Table 2 – Indicative Water Take – Likely long term use of bore ** (To be confirmed in Management Plan)

Year /abstraction rates Formula or source		Natural Flow/hr* (m3) (a)	Indicative Water Abstraction Duration** (rounded)		Abstraction Volumes (rounded)		
			Hours per week (e) (c)/ (a)	Days/week (Indicative only) (f) (e)/ days/wk	Daily (m3) (b) (a)* (f) hours or (a)* 12 hours	Weekly (m3) (c) (from Table 1)	Annual (m3) (50 weeks/yr) (d) ((c)*50)
Year 1	Maximum	26	5.8	1	150	150	7,500
	Anticipated		5.7	1	147.5	147.5 (from Table 1)	7,375
Year 2	Maximum		29	9.6hr *3 days	312 (a)* 12 hours	750	37,500
	Anticipated		17	8.5hrs *2 days	221 (a) * (f) hours)	442.5 (from Table 1)	22,125
Year 3 onwards	Maximum		29	9.6hr * 3 days	312	750	37,500
	Anticipated		29	9.6hr * 3 days	312	750 (from Table 1)	37,500

* Fixed factors

** Distinct from and not equivalent to business operation hours

The table below should replace information provided to HRC and dated 1 November 2019.

#	Further Information Requested	Revised Information responses and additional clarification 2020-02
1	Please provide a detailed breakdown of the abstraction volume sought (both the annual and daily volume) to reflect the likely long-term use of the bore.	Refer to Table 1 and 2 above Natural flow/hr = 26m³/hr <u>Year 1</u> Based on anticipated contract demand: 1. maximum daily abstraction volume = 150m³ being half a day abstraction/week. 2. Maximum annual volume (50 weeks) = 7,500m³ but 3. Anticipated annual volume (50 weeks) = at least 7,375m³. <u>Year 2</u> 1. Maximum daily abstraction volume = 312m³ based on 12 hours extraction per day, 2. Anticipated daily abstraction volume = up to 221m³/day for 2 -3 days a week. 3. Maximum abstraction volume/ week =750m³; 4. Anticipated abstraction volume/ week = approximately 442.5m³. 5. Maximum annual abstraction volume (50 weeks) = 37,500m³; 6. Anticipated annual abstraction volume = at least 22,125m³. <u>Year 3 onwards</u> 1. Maximum daily abstraction volume = 312m³ based on 12 hours extraction per day, 2. Anticipated daily abstraction volume = up to 312m³/day for 3 - 4 days a week. 3. Maximum abstraction volume/ week = 750m³; 4. Anticipated abstraction volume/ week = approximately 750m³. 5. Maximum annual abstraction volume (50 weeks) = 37,500m³; 6. Anticipated annual abstraction volume = 37,500m³. Hours of operation will be a maximum of 6am to 6pm Monday – Saturday. This would equate to a maximum 12hour shift per day. Water will be abstracted at the natural flow rate of the bore. This natural flow rate is 7.26L/second being~26m³/hour. **The maximum water that could be abstracted in a single day's operation (12-hour shift), is ~312m³.** Acknowledging that within a week the maximum abstraction proposed is 750m³, the maximum daily take will not occur more than 2 days in any week with a number of days where no water is abstracted. In reality, the extraction process is unlikely to occur for 12 hours in any one day, as staff will need time for associated tasks including start up and shut down time, truck loading and unloading and delivery of equipment and other such associated tasks. Table 1 provides an indicative breakdown of volumes by product. However the weekly volumes will potentially be used in various combinations across those products to meet demand.

#	Further Information Requested	Revised Information responses and additional clarification 2020-02
	Also, please provide a justification as how the proposed amount of water is consistent with Policies 5-12 and 5-13 of the One Plan (2018);	Refer to Policy Assessment below. Appendix 1 A condition requiring preparation of a management plan to manage and monitor the ongoing scale and efficiency of water take activities is recommended by the applicant to facilitate ongoing efficient and reasonable use of water as set out in the policies.
2	If the proposed annual abstraction volume is predicted to increase in the future, please provide a breakdown of the how this water usage has been calculated to ensure the predicted volumes are accurate and justifiable.	Refer to Tables 1 and 2 The prediction of future volumes is based on a business plan, based on a confidential market assessment. Given it is for a business the volume abstracted would be determined by the market, if the market does not take up supply then water would not be abstracted. The conservative start-up volumes and limited total volumes are well within the assessed market demand. A condition requiring preparation and maintenance of a management plan would enable ongoing monitoring of the demand for and abstraction of water from the bore.
2a	What is the 150m3 based on?	Refer to Table 1 for detailed breakdown of products types and volumes. The 150m^3/week is sought for year 1 only. A maximum of 750m^3/week is sought for all other years. The information in Tables 1 and 2 is indicative only based on the productivity of medium sized bottling equipment to be installed and staffing requirements to allow for initial start-up operation for ice and water bottling and on the applicant's knowledge of the market. A condition requiring preparation and maintenance of a management plan for the water take activity will best enable ongoing monitoring and management of the applicant's actual water abstraction rates and volumes over the duration of the proposed consent period.
	Do you have expectation of contracts to use that volume initially?	Discussion with customers have progressed positively and the volumes are relatively modest compared to potential demand. Contracts will be signed once HRC consent has been approved given uncertain approval timeframes. Note, land use consent approval has been obtained from Whanganui District Council. (granted on 16 January 2019 – expiry five years after date of commencement).

#	Further Information Requested	Revised Information responses and additional clarification 2020-02
	What is the max volume of 750m3 based on?	Based on realistic processing and packing line capacity, along with the associated logistics of moving containers to the inland port at Heads Road, Whanganui. This volume is assessed to be well within the assessed market demand. The proposed maximum weekly abstraction volume of 750m^3 and maximum daily flow are detailed in Tables 1 and 2 above. These volumes are still well within the daily natural flow limits and the applicant's conservative assessment of market demand.
	How soon do you expect to need access to the maximum volume of 750m3?	One to 2 years from start up date depending on actual demand for product. Anticipated abstraction volumes due to demand are detailed in Table 1 and 2 above..
	Are you able to state if you have contracts or expectation of contracts to supply 750m3 volume per week within 6 months or 1 year of commencement? This would need to be based on something credible like contract expectations.	No signed contracts as stated above. Discussions with prospective clients lead the applicant to have confidence and expectation that contracts will be achieved to supply ~~750~~750m^3 per week within 1 – 2 years from start date. The first year will allow realistic timeframes to obtain and commission equipment and establish the operations necessary to obtain larger contracts to supply ~~750~~750m^3 per week. The applicant seeks approval to abstract 7,500m^3 in Year 1 and up to 37,500m^3 in all other years based on the information in Tables 1 and 2 above with allowance for growth and demand acceleration after Year 1.
3	Ngā Tāngata Tiaki o Whanganui have indicated further discussions are needed to identify any cultural concerns as a result of the proposed water abstraction for the purpose of bottling. Therefore, please discuss the proposal with Ngā Tāngata Tiaki o Whanganui to identify and discuss any cultural concerns in relation to this application. I have attached a written approval form if you get this stage. Otherwise, please provide an assessment regarding the potential cultural effects on Ngā Tāngata Tiaki o Whanganui in order for me to fully assess the effects of the proposal.	Refer to revised application Section 6 and 7 appended to ~~this~~ the document submitted as Appendix 2 and dated 1 November 2019.

Information provided to HRC on 22 November 2019 has been updated (strikethrough and yellow) below to align with the information above and for clarification is set out below:

Further Information Requested	Revised Information responses and additional clarification 2020-02
Efficiency and Reasonable Use Assessment A detailed breakdown of the water usage has not been adequately provided. It is expected that a breakdown of the water usage would provide approximate estimates of the number of water bottles produced at the water bottling plant per day versus how much water is needed for manufacturing / processing purposes. It is understood that there are high food safety standards in place to be able to manufacture ice and bottled water. What practices will be carried out to ensure standards are met whist ensuring water is being used efficiently? Please demonstrate how the volumes of water proposed to be taken will be used with very little waste. For instance, what percentage of water abstracted is bottled versus the percentage of water not bottled and/or discharged into the storm water network? Does the water bottling operation need water for cleaning purposes? I understand that this data is part of a business plan being a confidential assessment, however in order to assess the proposal against Policies 5-12 and 5-13 and understand the effects of the proposal, more detail is required.	1. Approximate estimates of the number of water bottles produced at the water bottling plant per day Refer to Table 1 above ~~(note: approximately and market driven)~~ • ~~125 m^3 per day = 125,000 litres per day which then would be~~ • ~~75,000 bottles x 1 litre per bottle~~ • ~~2 x 20,000 litre bladder containers~~ • ~~5,000 litres of ice~~ 2. How much water is needed for manufacturing / processing purposes? • Nil is required for routine cleaning and wash down. The premises is connected to the Whanganui urban potable water system, the cleaning and routine hygiene process would use the potable urban water which is chlorinated. • Refer to Table 1 for details of water required for manufacturing/ processing purposes. 3. How will you ensure minimum discharge of water to waste? • The premises are connected to the Whanganui urban effluent waste system. Any waste would be disposed of to that system and not into the storm water system that leads to the Awa (river). • The Company will have an audited and approved food safety system in place that will monitor and ensure efficient water use and safe products are produced that meet the guidelines mentioned below. (New Zealand Beverage Council web site). • The percentage of water required for manufacturing, identified in Table 1, is approximately 10%, of the total take sought. The bottling machinery is to be an enclosed system and the water used to rinse bottles is not waste it is a necessary component of the manufacturing process. Refer to Appendix 1 below for details about the proposed bottling and ice machine. 4. What percentage of water abstracted is bottled versus the percentage of water not bottled and/or discharged into the storm water network? • As above in 1 and 3 and refer to Table 1. 5. Does the water bottling operation need water for cleaning purposes? • As above in 2

Information supplied to HRC on 3 February 2020 –has been updated (strikethrough and yellow) for consistency with Table 1 and 2 above.

Further Information Requested	Revised Information responses and additional clarification 2020-02
How often the water abstracted may breach water quality standards and therefore must then be disposed of. You mentioned that at other bottling centres, if a grain of sand is found, companies have specific process in place.	Contamination is anticipated to be a rare occurrence as the system for water bottling is largely enclosed. Refer to the attached report for machinery details and snip from Appendix 1 of the original RCA – "Appendix 1: Memorandum - Assessment of Environmental Effects (AEE)" for details of water quality assessment. *2.2.3 Flow Test* A 24-hour flow test was undertaken on 3-4 July 2018, where the discharge rate was measured over the duration of the test (Figure 2.14). At the start of the test, the flow rate was 9.485L/s. The rate decreased, and then stabilised at 7.26L/s after 24-hours (Figure 2.15). Over the duration of the test, there was no visual evidence of an increase in turbidity. An Imhoff cone was used to observe, and measure, any suspended material which settled. No material was observed during the test, and the water was very clear. An odour of 'sulphur' was noted while discharging the water. This is typical of water encountered at this depth throughout the wider Taranaki and Manawatu regions. At the completion of the flow test, a sample was taken for water quality and turbidity testing. The results of the testing are summarised in Table 2.2 and the full laboratory analysis is appended. All parameters tested for meet the guidelines set out in the Drinking water Standards for New Zealand (2008).
Does the applicant have a process around ensuring the water quality is sufficient and if not, what process is undertaken to ensure there is no poor water quality being bottled. Has the Applicant carried out some due diligence to ensure the water quality from the bore is unlikely to breach the standards?	The work that WSP did confirms the water quality – refer to the ~~attached~~ report (20180717 Final Well Condition Assessment results Memo) specifically section 2.2.3 Flow test and section 3- conclusion attached to the original consent application as Appendix 1

Aquifer 182 Ltd

This document outlines the methodology proposed for the bottling activity and whilst in the early planning stage generally takes into account the process and water management to be utilised to achieve reasonable and efficient use of water. Table 1 above is a summary of much of the information below and provides additional detail.

Water take:

It's inevitable some water will be lost during the daily start up and flushing operation however this will be minimised by the use of ultraviolet light sterilisation of bottles (**refer to Appendix 1, page 4**). Any plant or factory cleaning will use the Whanganui District Council (WDC) potable water supply which is connected to the factory. This wash water would then enter the WDC wastewater system and not the storm water system that flows into the AWA which mitigates concerns over the two waters meeting.

Potential for water quality standards breach and process to address

Water quality has been tested as referenced in the WSP report dated 20180717 ~~attached~~[1]. Refer to original application Appendix 1.
A contingency plan would be developed as part of activity commencement, with a set of actions to be implemented if water quality standards are breached to minimise water waste. The plan would include one decision process for selecting the action to be taken for addressing the water quality standard breach and a second process for determining the type of additional best management practice or other control, if any, to be employed in response to a water quality standard breach.

Bottling Machinery:

It's proposed the line will be a 12,000bph (bottle per hour) machine (**refer to Appendix 1, page 4**) which will rinse / fill and cap glass bottles. This modern machine will minimise water waste and provide a safe operation for workers as it's an enclosed unit with an operator panel. For PET production it's estimated approximately 30mls of process water for every litre of water bottled and for Glass 100-400mls is required to flush prior to filling (if a 250ml glass bottle industry best practice would be 25mls). Some of the flushing stage could utilise the WDC supply but this needs to be engineered into the plant design, this would reduce the bore water waste but needs to be confirmed.

Processing water for plastic or glass bottles where possible will be recycled to a replenished tank where ozone or ultraviolet treatment will take place.

Ice Production:

Refer to Appendix 1, page 5.

How ice production process will address the risk of contamination of water and thus waste.

The ice equipment will be cleaned and sanitised on a regular schedule (I.e. at the start of production and after shutdown) in order to address the risk of contamination of water and thus waste. A regular maintenance programme for the water filters would also be established. A sticker or tag would be placed on the filter that can be easily seen that indicates when the filter was serviced and when it is due to be serviced again. Records of filter maintenance and icemaker cleaning and sanitising would be maintained in the plant to document that the work has been done. To further assure the quality of ice used in production, the equipment purchased would treat water used for ice making with ozone. This helps assure that the ice is of good microbiological quality and can even help control the microbial load. Ice would be handled with tools and equipment dedicated for use with only ice.

Year 1 Summary of Water Take and Use (approx ~~136.5m^3~~ 135m^3 per week): Refer to Table 1 above.

[1] 20180717 Final Well Condition Assessment Results Memo.pdf

~~Pack type~~	~~Pack size~~	~~Process water used per litre~~	~~Estimated packs~~	~~Total produced~~	~~Total litres~~	~~Total waste (by type)~~
~~250 ml PET bottle~~	~~250 ml PET bottle~~	~~25mls~~	~~20,000~~	~~20,000 PET bottles~~	~~5,000~~	~~500 litres~~
~~20 foot dry container~~	~~20,000 litres~~	~~100mls~~	~~2~~	~~40,000 litres~~	~~44,000~~	~~4,000 litres~~
~~Ice~~	~~Naked block~~	~~<50mls~~	~~5 tonne~~	~~5,000 litres~~	~~5,000~~	~~0~~
~~1 litre glass~~	~~1 litre glass bottle~~	~~100mls~~	~~75,000~~	~~75,000 litres~~	~~82,500~~	~~7,500~~
~~**Total**~~					~~**136,500**~~	~~**12,000**~~

~~The table above~~ Table 1 above is an approximation and provides guidance as to how the applicants will utilise/ stay within the 150m3/week limit sought for the first year and utilise/ stay within the specified water take limits for the duration of the consent.

Below is an extract from the resource consent application, as amended via s92 further information document:

4.2 "Reasonable and Efficient Use

The applicant aims to bottle and ice the groundwater abstracted for distributing purposes to national and international markets. The expected numbers of bottled water are not yet known. However, the applicant aims to:

- *Bottle water into a range of plastic bottles sizes (starting at 20L), targeting the restaurant and large hotel kitchen market.*
- *Bottle water into glass bottles (starting at 250ml) targeting the smaller high-end restaurant market.*
- *Harvest and pack ICE into consumer packs targeting both retail and food service customers.*

The applicant aims to abstract only 150m^3/week (i.e. 150,000L/week) of groundwater for the first year of the factory in production. It is proposed to gradually increase to 750m^3/week within 1-2 years of the factory in production. The increase in the yield of abstraction to 750m^3 per week will be determined by the success and demand of the business as it matures overtime."

Production is generally anticipated to increase as indicated in Tables 1 and 2 above.

Conclusion:

In order to ensure that any potential adverse environmental effects are avoided, remedied or mitigated, the applicant proposes that the following conditions of consent (or similar) be imposed on any consent granted:

- The location, design, implementation and operation of the works shall be in accordance with the consent application and its associated plans and documents lodged with the Horizons Regional Council.
- The system shall be designed, operated and maintained so that water does not run to waste.
-
- If any modifications are made to equipment or intake, the applicant shall notify the Manager, Consents Management, Horizons Regional Council within one month of the modifications occurring
- The applicant shall meter all abstraction and the meter shall be accurate to +/- 2%
- The applicant shall record the daily abstraction volumes and forward a copy of those records to the Horizons Regional Council monthly
- If requested by the Manager, Consents Management, Horizons Regional Council, the applicant shall make the bore available for monitoring of water levels and water quality
- The Horizons Regional Council may review conditions of this consent by giving notice of its intention to do so under section 128 of the Resource Management Act (RMA,1991), at any time within 6 months of the fifth, tenth, fifteenth, twentieth and twenty fifth anniversaries of the commencement of this consent for the following purposes:

- to deal with any adverse effect on the environment, which may arise from the exercise of this consent and which it is appropriate to deal with at a later stage
- to review the adequacy of any monitoring programme requirements and if necessary to amend those requirements

This proposal is considered consistent with the relevant objectives and policies of the Operative One Plan regarding managing the aquifer within the safe yield. Further, the proposal is consistent with the purpose and principles of the RMA (1991).

Based on the initial application, assessment and further information provided to Horizons Regional Council since September 2018 the applicant considers that this proposal meets the tests of the RMA (1991) to be processed without public notification under s95A and s95B of the RMA (1991).

The environmental effects of this proposal are considered less than minor and able to be sufficiently managed and mitigated by conditions of consent.

Appendix 1.

https://www.mountainfresh.co.nz/ultraviolet-sterilisation.html

Automatic system – 12000bph for glass

Automatic systems for processing and packaging bottled beverages of any size both in PET and in glass. The range of available machines allows to cover the production requirements within an availability ranging from 4000 bottles/hour to 12000 bottles/hour.

These systems are designed to carry out automatically the rinsing cycles, the filling cycles and capping of bottles ones; these plants can be completed with transport systems and ancillary equipment complying with the requirements of customers and respecting the spaces available in the installation rooms.

Both the technology and the components used to produce this type of equipment are the same used in plants with high productivity.

An operator panel allows to control all the operation parameters of the plant.

- Co.Mac. S.r.l.
- Via G. Garibaldi, 34N
- 24040 Bonate Sotto (BG) - Italy

https://www.comacgroup.com

Koller TV50 Tube Ice Machine (5tons capacity):

Koller tube ice machine structure and ice making theory:

Koller TV series tube ice machine is a type ice machine, which produces cylinder shape ice with a hole in the middle; it adopts flooded evaporator model, which improves ice making efficiency and capacity. Meanwhile, compact structure design can save installation space. Ice thickness and hollow part size can be adjusted according to customer requirements. Under PLC program control system to work automatically, the machine has high capacity, low-power consumption and minimal maintenance.

Koller Tube Ice Machine Features:
The ice tube looks like hollow cylinder. Tube ice outer diameter is 20mm, 28mm, 34mm, 40mm; tube ice length: 30mm, 35mm, 40mm, 45mm, 50mm. The inner diameter can be adjusted according to the ice making time. Usually it's between 5mm-10mm in diameter. If you need completely solid ice, we also can customize it for you.
The mainframe adopts SUS304 stainless steel. It can put the food directly into the production room which cover a small area, low production cost, high frozen efficiency, save energy, short installation period and easy to operate.
The ice is quite thick and transparent, beautiful, long storage, not easy to melt, fine permeability.
Main application: daily using, vegetable fresh-keeping, pelagic fishery fresh-keeping, chemical processing, building projects and other places need to use ice.

Koller Tube Ice Machine Technical Parameter:

Item \ Model		TV10	TV20	TV30	TV50	TV80	TV100	TV150	TV200
Capacity (Tons/24hours)		1	2	3	5	8	10	15	20
Refrigerant		R22/R404A							
Compressor Brand		Bitzer/Bock							
Cooling Way		Water/Air	Water/Air	Water/Air	Water	Water	Water	Water	Water
Compressor Power (HP)		4	9	14 (12)	23	40 (44)	50HP	2*40 (44)	2*50HP
Ice Cutter Motor (KW)		0.37	0.37	0.55	0.75	1.1	1.1	2.2	2.2
Circulating Water Pump (KW)		0.37	0.75	1.1	1.5	1.5	1.5	2.2	2.2
Cooling Water Pump (KW)		0.75 (Water)	1.1 (Water)	1.5 (Water)	2.2	2.2	2.2	4	5.5
Cooling Tower Motor (KW)		0.37 (Water)	0.37 (Water)	0.55 (Water)	0.75	1.5	1.5	1.5	1.5
Cooling Fan Motor (KW)		0.36(Air)	0.9 (Air)	1.56 (Air)	/	/	/	/	/
Size	Length (mm)	1600	1550/1650	1680/1700	1790	2200	2200	2650/1600	2800/1600
	Width (mm)	1350	910/1090	950/1400	1080	1900	1900	2130/1250	2130/1250
	Height (mm)	2010	2010/2300	2200/2430	2270	2400	2550	2100/3200	2100/4800
Machinery Unit Weight (Kg)		900	1400	1750	2070	3000	3200	tube ice maker part & refrigeration system are separate	

Refrigerant : R22/R404A;

Supply Power: 380V~420V, 50Hz/, 3P; 220V~240V/380V, 60Hz, 3P; 440V~480V, 60Hz, 3P;

Working Conditions: Input Water Temp: 21℃; Evaporating Temp: -15℃; Condensing Temp: 40℃; (Notice: the actual ice production will be changed with input water temp and ambient temp.)