Kāpiti Coast
DISTRICT COUNCIL
Me Huri Whakamuri, Ka Titiro Whakamua

Waikanae River, Recharge and Borefield Annual Report 2022/23 Consent WGN130103 [35973, 35974 & 35975]

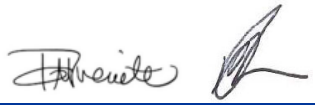
Prepared for Greater Wellington Regional Council
by Kāpiti Coast District Council

[FINAL]

Revision History

Revision Nº	Prepared By	Description	Date
0	T Drewitt	Draft for AMG Review	7/08/2023
1	T Drewitt	Final following AMG review	30/08/2023

Document Acceptance

Action	Name	Signed	Date
Prepared by	T Drewitt / B Thompson, Compliance		30/08/2023
Reviewed by	N Urlich, Senior Asset Planning Engineer		26/09/2023
Endorsed by	R Pillai, Acting Manager, Water & Wastewater Services		26/09/2023
Approved by	S Mallon, Group Manager, Infrastructure Services		2/10/2023
on behalf of	Kāpiti Coast District Council		

Contents

Appendices

Appendix A

Consent Requirements and Documents

Appendix B

Waikanae River Fish Survey Results

Appendix C

Operation and Maintenance Logs Intake and Production Bores

Appendix D

Bore Water Quality Sampling Results

Appendix E

Complaints Record

1 Introduction and Compliance Summary

Kāpiti Coast District Council (the Council) holds resource consents (WGN130103 [35973], [35974] and [35975]) to enable the following activities:

- take groundwater from bores within the Waikanae Borefield for the purpose of supplementing public water supply, through Waikanae River recharge or as an emergency public water source;
- to take water from the Waikanae River for public water supply; and
- to discharge groundwater from the Waikanae Borefield to the Waikanae River for the purpose of river recharge and bore trialling.

The groundwater take consent authorises the abstraction of groundwater from eight production wells within the Waikanae Borefield as part of the Council's River Recharge with Groundwater (RRwGW) scheme. All eight of these wells were operable throughout the 2022/23 year (1 July 2022 to 30 June 2023). The locations of the eight production wells and monitoring bores are shown in Figure 1.

The consents include the requirement to monitor three ecosystems (Waikanae River, Small Coastal Streams and Wetlands) and the Waikanae Borefield. Requirements for annual reporting are detailed in Appendix A. Periodically, there is additional monitoring activity required. In 2022/23, the Council undertook fish species monitoring within the Waikanae River to inform the Year-15 Performance Review, as requested by the Adaptive Management Group (AMG). Monitoring for 2022/23 was carried out in accordance with the approved Ongoing Mitigation Plans (OMPs).

The conditions of consent require the preparation and maintenance of several plans, manuals and reports. These key documents are set out in the diagram in Appendix A.

A summary of compliance for the 2022/23 year is set out below, using the symbols shown in the adjacent key. In summary:

- The report at the final version following consultation with the AMG.
- The river level/ flow rate has not been low enough to require river recharge during this Season.
- There have been no transgressions of ongoing environmental triggers.
- No changes to operational practice have occurred, nor changes to operational documents made.
- The Council suspects an instrument failure of the measurement of stream and groundwater levels and will investigate this further.

Table 1: Compliance Summary

Section	
River	River Abstraction
	River Recharge
	Downstream River Flows
	River Aquatic monitoring
Borefield	Abstraction Volumes and Rates
	Back-up wells PW1 and PW5
	Shallow Aquifer Drawdown Monitoring
	Deep Aquifer Drawdown Monitoring
	Saline Intrusion Monitoring
	Waikanae River Flow Gauging
Wetlands	Wetlands Monitoring
Small Coastal Streams	Small Coastal Streams Monitoring

Key	
	No triggers or actions needed
	Trigger or action
	Exceedance

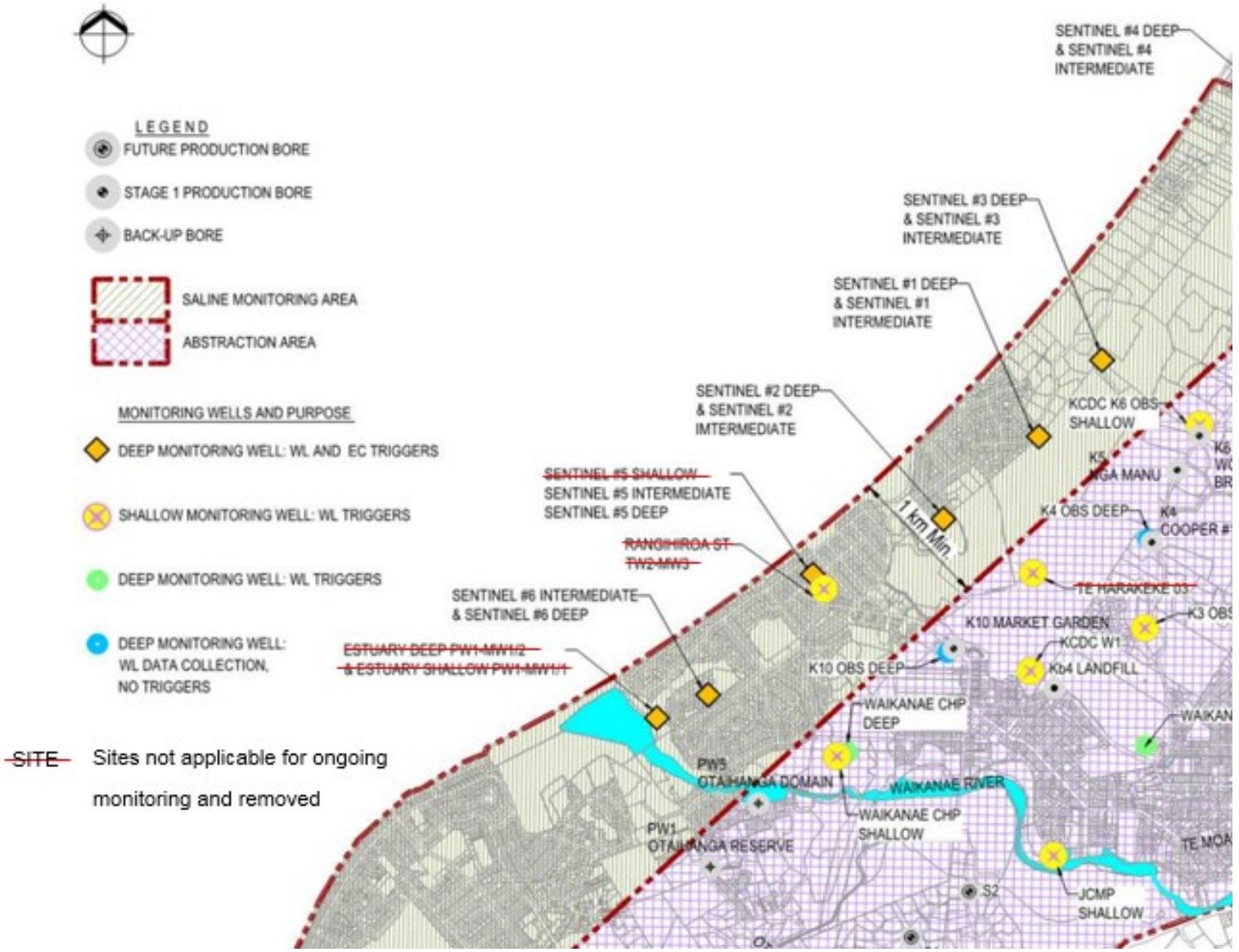


Figure 1: Location Plan - Waikanae Borefield Abstraction Wells and Monitoring Bores

2 Waikanae River

2.1 Waikanae River Flows

The Waikanae River flow is monitored by Greater Wellington Regional Council (GWRC) at a gauging station approximately 200m upstream of the Waikanae Water Treatment Plant (WTP) intake.

The Council's SCADA system receives river flow data from GWRC's SCADA system on an approximately 15-minute basis. The river flow data received and stored by Council is used for managing the water supply abstraction and this data is not back-corrected if GWRC subsequently updates the algorithm for interpreting the level sampling data.

The upstream river flow for the 2022/23 monitoring period is displayed in Figure 2, and the peak and low flow periods are detailed in Table 2 below. The Council did not need to use the river recharge during 2022/23.

Table 2: Upstream Waikanae River Flows

Period	1 July 2021 - 30 June 2022	1 July 2022 - 30 June 2023
Peak flow	139,602 L/s on 6 December 2021	137,019 L/s on 7 August 2022
Minimum flow	801 L/s on 11 April 2022	1,129 L/s on 3 February 2023
Low flow periods when river recharge used	N/A	N/A

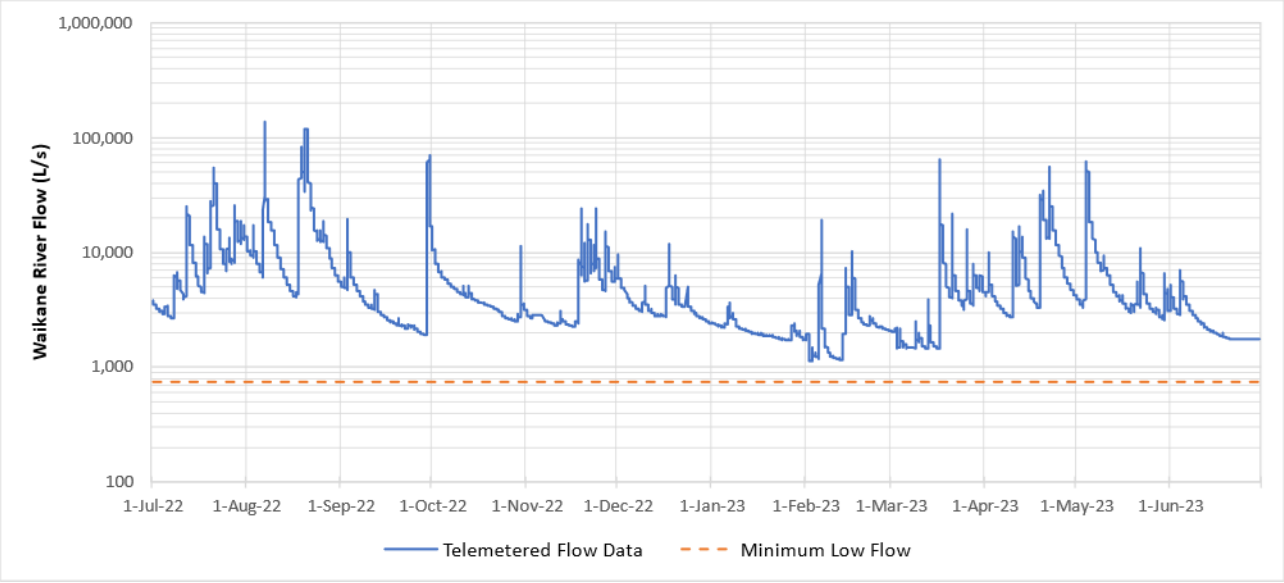


Figure 2: Waikanae River Flow at Water Treatment Plant (July 2022 – June 2023)

Upstream river flows were always above 750 L/s throughout the monitoring period.

2.2 River Abstraction

No triggers or actions needed

The Council measures and records the flow rates and volumes of water abstracted from the Waikanae River by way of a flow meter at the WTP intake. The Council regularly submits its river abstraction records to

GWRC, as per Condition 13 of consent WGN130103 [35974]; this is done automatically from Council's SCADA to GWRC's Water Use Data Management System (Hydrotel).

The daily abstraction volumes for the reporting period are provided in Table 3 and plotted in Figure 3 below. The red line is the maximum allowable daily take permitted by the consent.

Table 3: Daily and Annual Waikanae River Abstractions

Period	1 July 2020 - 30 June 2021	1 July 2021 - 30 June 2022	1 July 2022 - 30 June 2023
Maximum daily abstraction	17,723 m^3/day (on 24 February 2021)	17,590 m^3/day (on 1 February 2022)	19,107 m^3/day (on 11 February 2022)
Maximum allowable daily volume permitted by Condition 5 of consent WGN130103 [35974]	30,700 m^3/day	30,700 m^3/day	30,700 m^3/day
Total annual abstraction volume	4,387,133 m^3	4,552,870 m^3	4,812,719 m^3
Equivalent average daily abstraction	12,020 m^3/day	12,474 m^3/day	13,186 m^3/day
Maximum total abstraction volume permitted by Condition 5 of consent WGN130103 [35974]	11,174,800 m^3/year	11,174,800 m^3/year	11,174,800 m^3/year

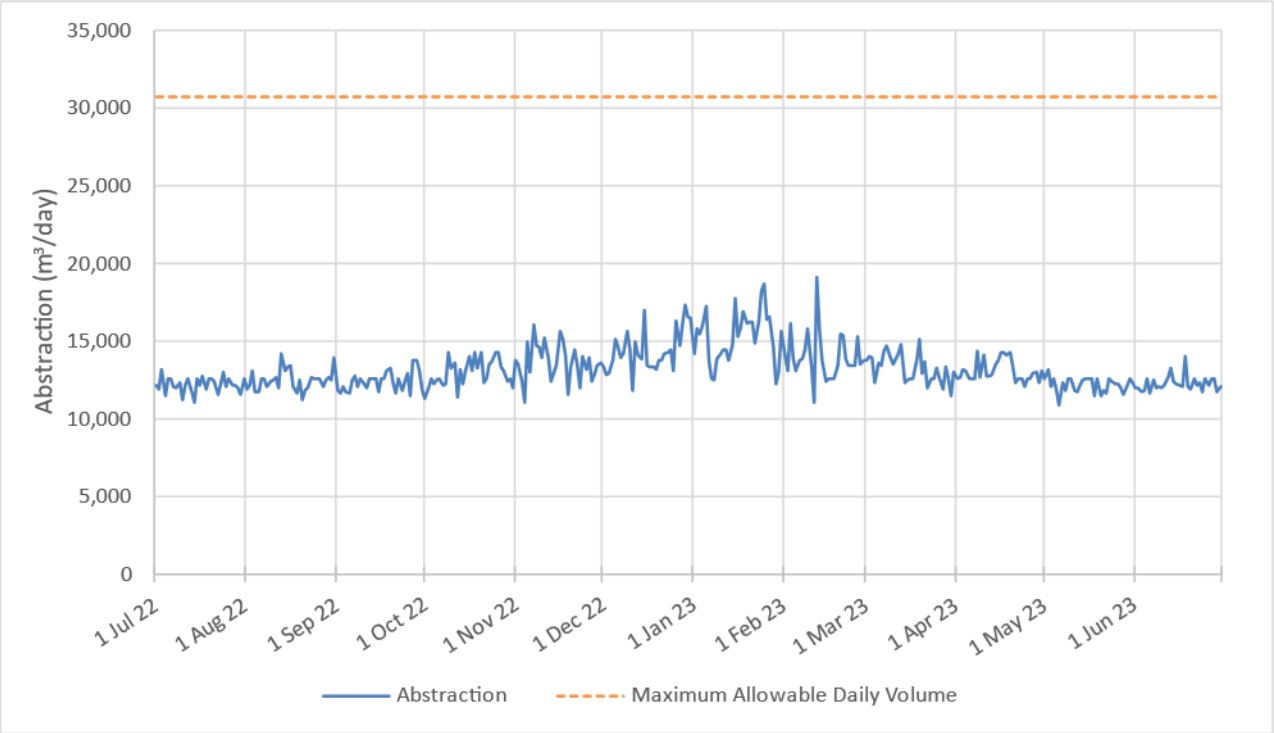


Figure 3: Waikanae WTP River Abstraction Volumes (m^3/day)

No daily abstraction volumes exceeded the consent conditions in the 2022/23 period.

The instantaneous rates of abstraction (recorded at 15-minute intervals) for the reporting period are shown in Table 4 and Figure 4 below.

Table 4: Instantaneous rates of abstraction from Waikanae River

Period	1 July 2020 - 30 June 2021	1 July 2021 - 30 June 2022	1 July 2022 - 30 June 2023
Maximum abstraction rate	240 L/s (on 14 October 2020)	255 L/s (on 1 February 2022)	240 L/s (on 11 February 2023)
Maximum abstraction rate at time of maximum abstraction permitted by Condition 5 [35974]*	463 L/s	463 L/s	463 L/s

** 355 L/s when the flows in the river are below 1,400 L/s and 463 L/s when the flows in the river are above 1,400 L/s. This maximum pumping rate can be exceeded by up to 15% for 15 minutes under certain circumstances.*

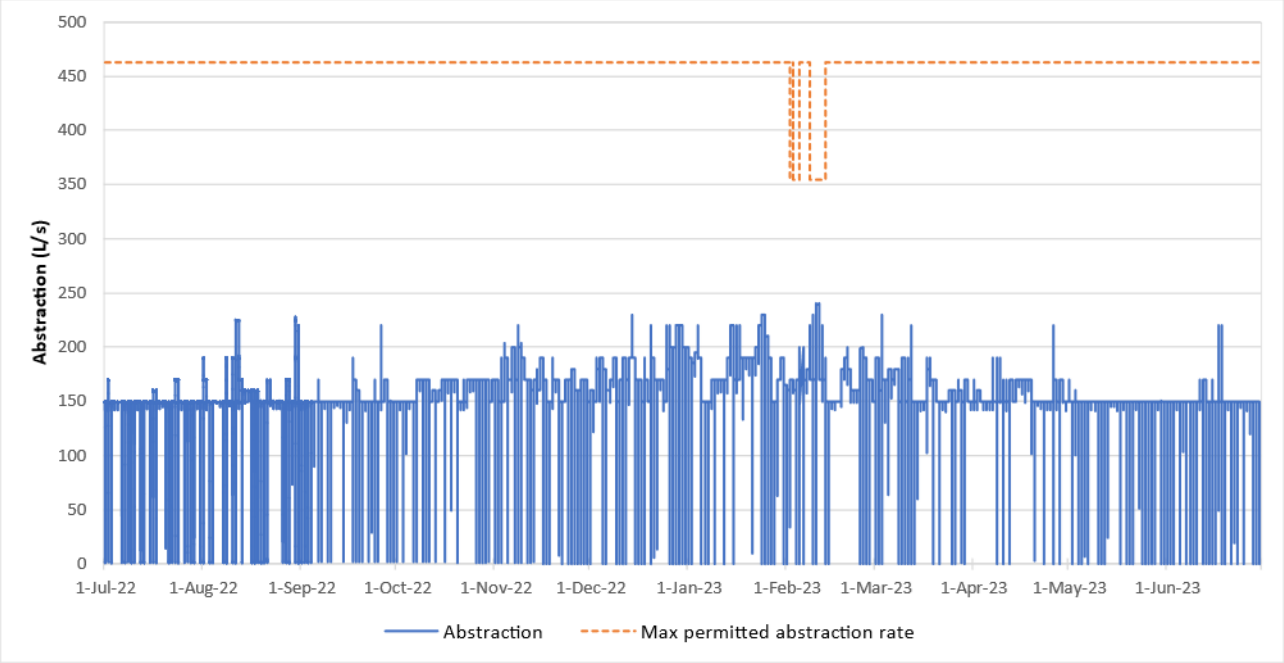


Figure 4: Waikanae WTP River Abstraction Rates (L/s)

The instantaneous abstraction rate was always less than the consent limit conditions.

2.3 River Recharge

No triggers or actions needed

River recharge must be used if required due to low flows in the Waikanae River to maintain the downstream river flow at 750 L/s or at its natural upstream flow rate if less than 750 L/s. The recharge is undertaken in accordance with the approved Bore Preference Hierarchy Plan (BPHP) and approved Waikanae River OMP.

The daily and instantaneous discharge of groundwater from the bore field to the river are outlined in Table 5 and plotted in Figure 5 and Figure 6 below. Condition 10 of consent WGN130103 [35973] authorises the Council to take and discharge bore water where required to maintain the production and monitoring bores and pipeline in a state of operational readiness (e.g. pump and groundwater quality testing) or for short term flushing flows in the Waikanae River to mitigate algal growth with GWRC approval. The Council therefore continues to take and discharge bore water, even when the river recharge is not required, to meet operational requirements. Table 5 shows that 27,723m^3 was discharged into the river, even though river recharge was not required in 2022/23.

Table 5: River recharge discharges into the Waikanae River

Period	1 July 2020 - 30 June 2021	1 July 2021 - 30 June 2022	1 July 2022 - 30 June 2023
Number of days of river recharge	4 days - 4th to 6th March, and on 21st April.	25 days between 19 March and 15 April	No river recharge required, short-term discharges only.
Maximum river recharge	4,507 m^3/day (on 5 March 2021)	13,244 m^3/day (on 4 April 2022)	3,337m^3/day (on 18 January 2023)
Ecological monitoring trigger exceeded? *	Trigger not exceeded	Trigger not exceeded	Trigger not exceeded
Number of days of short duration discharges	14 days	54 days above 0 m^3/day 29 days above 1 m^3/day	16 days above 0 m^3/day 35 days above 1 m^3/day
Total volume of bore water discharged to the Waikanae River (river recharge and additional short-term discharges)	41,400 m^3	179,400 m^3	27,723 m^3

**recharge exceeds 225L/s for 48 hours or greater.*

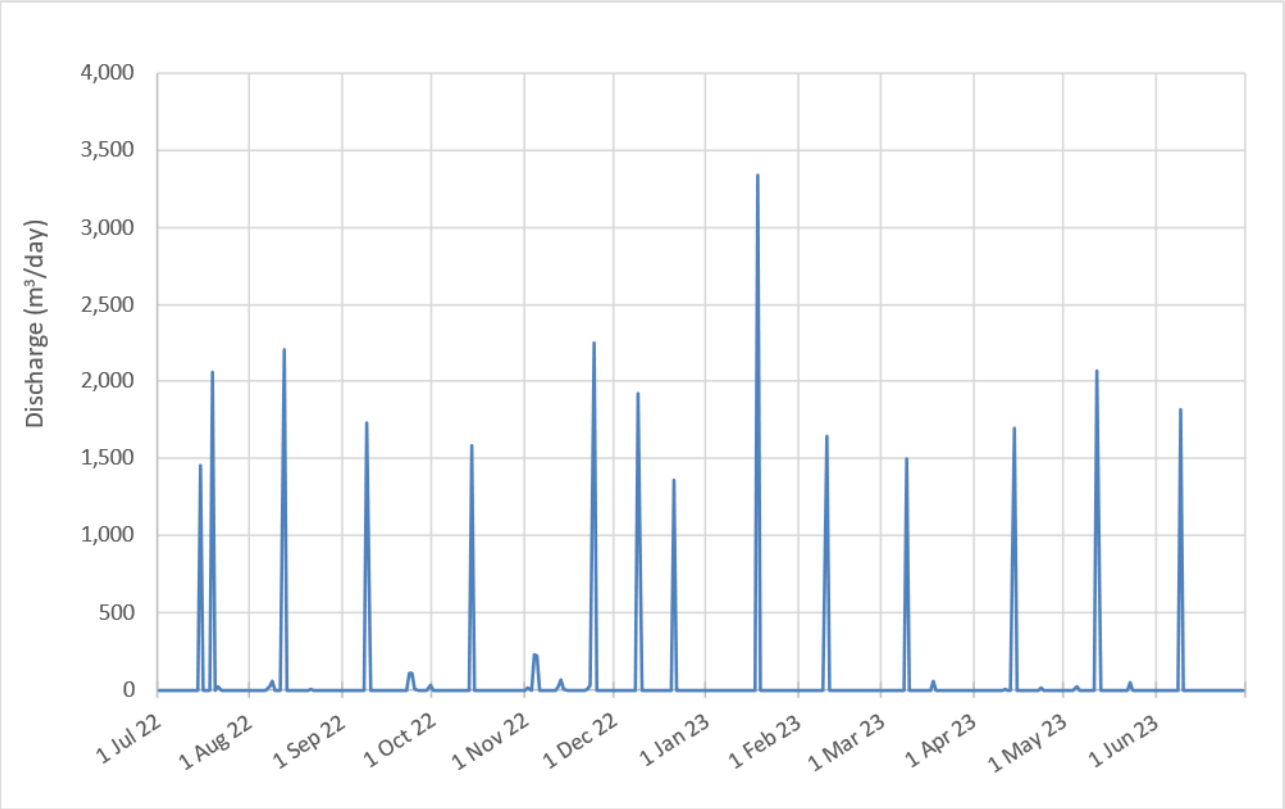


Figure 5: Daily Waikanae River Recharge (and Short Duration Discharges) for 2022/23 (m³/day)

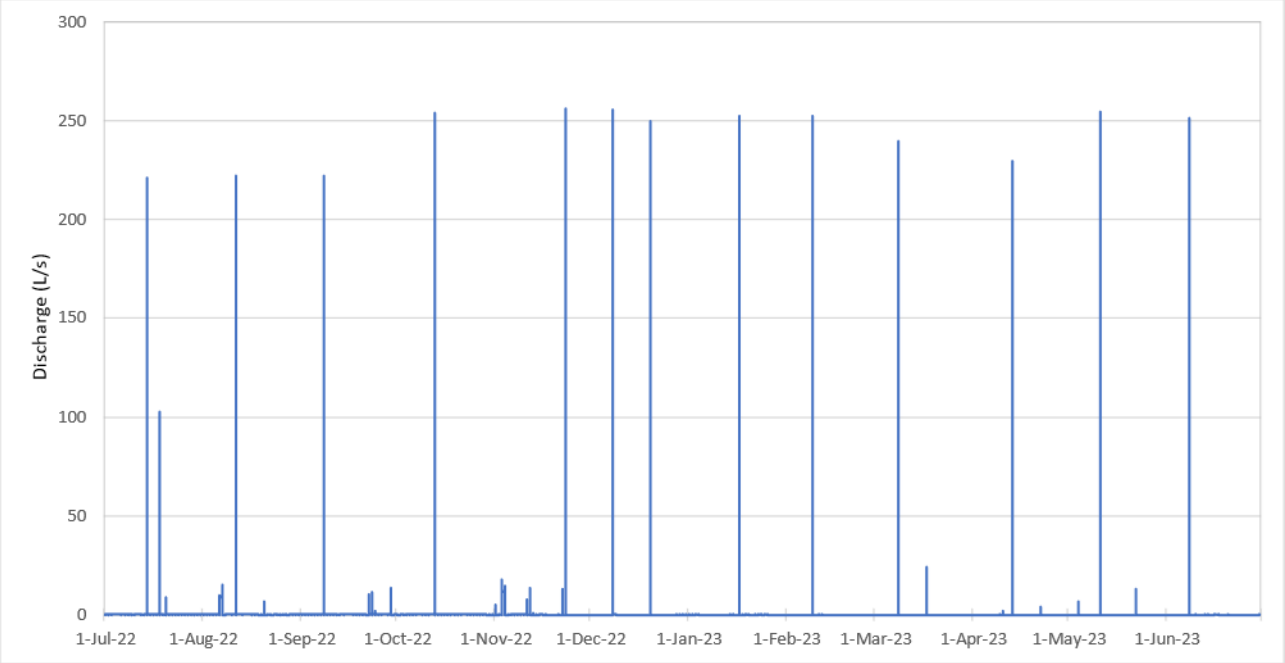


Figure 6: Instantaneous Waikanae River Recharge (and Short Duration Discharges) 2017/18 (L/s)

The trigger for periphyton monitoring and water quality sampling in the river is when discharge of bore water to the river exceeds 225 L/s for at least 48 hours. This trigger was not exceeded during this period.

2.4 Downstream River Flows

No triggers or actions needed

The flow immediately downstream of the Waikanae WTP's river recharge discharge structure is calculated as required by Condition 6 of consent WGN130103 [35974] and Condition 12 of WGN130103 [35975]. During low flow periods, a minimum flow of 750 L/s is to be maintained downstream of the WTP unless the river naturally falls below this level upstream of the river intake to the WTP. The low downstream Waikanae River Flow data is detailed in Table 6.

Figure 7 overleaf shows the river flow at the GWRC gauging site upstream of the WTP (grey line), the WTP abstraction (yellow line), the river recharge (purple line) and the resulting calculated flow immediately downstream of the WTP (blue line) during the river recharge season of 2022/23 year. The flow in the Waikanae River was sufficient during the period therefore the Council did not have to use the Waikanae Borefield for river recharge.

Table 6: Downstream Waikanae River Flows

Period	1 July 2020 - 30 June 2021	1 July 2021 - 30 June 2022	1 July 2022 - 30 June 2023
Lowest downstream river flow	742 L/s (on 25 February 2021)	767 L/s (on 13 April 2022)	938 L/s (on 12 February 2023)
Minimum flow of downstream river in accordance with Condition 6 of consent WGN130103 [35974] and condition 12 of WGN130103 [35975]*	750 L/s	750 L/s	750 L/s
Maximum percentage recharge flow of river flow downstream	20%	27%	19%

**750 L/s unless upstream flow naturally falls below this level*
***river re-gauging undertaken on this date by GWRC*

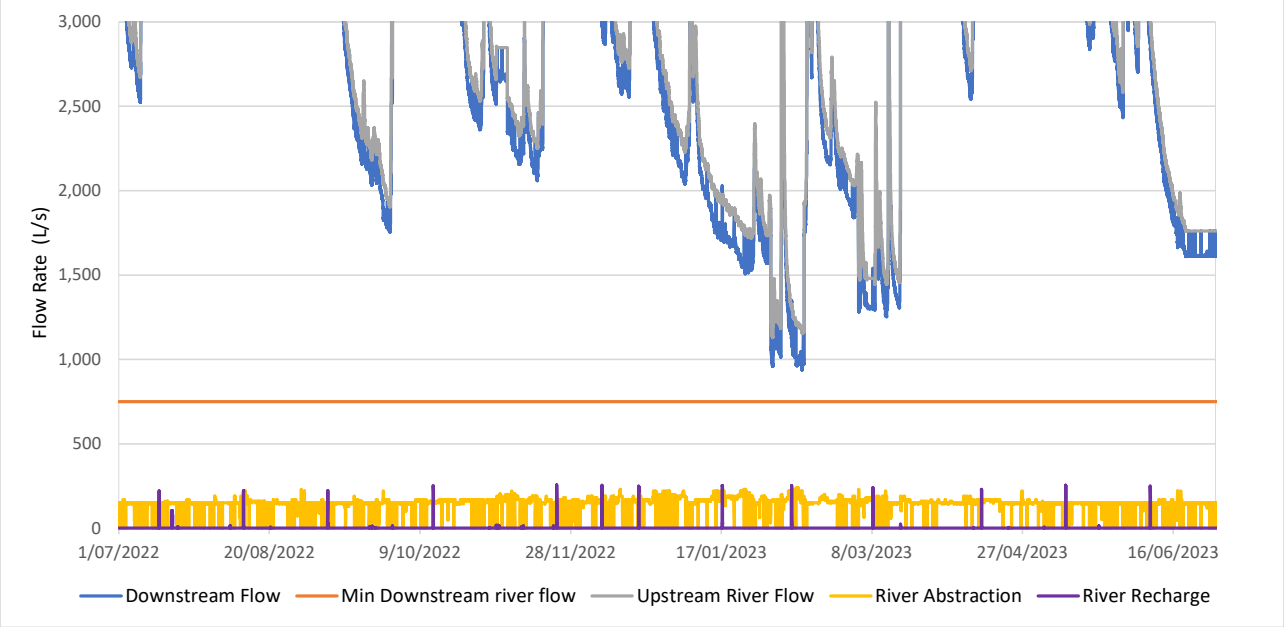


Figure 7: River flow upstream and downstream of WTP during low flow period December 2022 to February 2023.

While we anticipate downstream flow to typically be less than the upstream flow due to the abstraction, downstream flow can sometimes exceed upstream flow when the Council is recharging with bore water.

2.5 River Aquatic Monitoring

No triggers or actions needed

The Waikanae River OMP states that periphyton and water quality monitoring in the Waikanae River is required when recharge of bore water exceeds 225L/s for 48 hours (section 3.4.1). Macroinvertebrates samples are taken when the level of periphyton in the river reaches high or very high levels using the methodology described in the Waikanae River OMP. As shown in Section 2.3, the periphyton trigger was not exceeded in 2022/23. As such, periphyton and water quality monitoring was not required over the 2022/23 period. This is consistent with previous years.

Table 7: River aquatic monitoring

Period	1 July 2021 - 30 June 2022	1 July 2022 - 30 June 2023
Periphyton monitoring	Not required	Not required
Water Quality Sampling- DRP	Not required	Not required
Water Quality Sampling- Conductivity	Not required	Not required
Temperature	Not required	Not required

Fish surveys have previously been undertaken in the river above and below the Waikanae WTP. However, in 2018/19, the AMG agreed to cease fish surveys and re-consider the inclusion of a fish survey from Year 10 to inform the Performance Assessment Report (PAR) requirement for the 15th anniversary of the consent. The River OMP now provides that the need for further fish monitoring will be revisited by the AMG at Year 10, being 2022/23.

The AMG agreed at the 2021/22 annual meeting to undertake a one-off fish survey in the summer of 2022/23. The fish survey was undertaken by Boffa Miskell in March 2023 and reported to the AMG in April 2023. The results of the fish survey are presented in Appendix B. The fish survey report found that, while there was no recharge in the 2022/23 season, the presence of the same fish species in similar densities in R1 riffle is evidence that the river recharge of the past has not adversely affected the in-river fish fauna downstream.

The Council also took the opportunity to ascertain whether the main weir was obstructing fish passage, as this had been raised at the annual AMG meeting. The results of the fish survey suggest that, while river recharge is not a migration barrier, the reduction is smaller sizes of species above the main weir suggests that there is a recruitment issue above the weir. Passage is likely to be challenged, and some modifications could be undertaken to improve passage at this location.

The trigger for periphyton monitoring has not been exceeded since baseline monitoring. The Waikanae River OMP suggests that the AMG discuss the appropriateness of the periphyton alert trigger in the five years leading up to the PAR (i.e. from 2022/23) and consider if there is a benefit of the alert trigger level being reviewed. The Council will review the trigger in 2023/24 and provide the results of the review to the AMG for discussion at the 2023/24 annual meeting.

3 Waikanae Borefield

3.1 Abstraction Volumes and Rates

No triggers or actions needed

Abstraction from each production well (L/s and m³/day) is measured and recorded in accordance with Conditions 13, 14 and 20 of consent WGN130103 [35973]. The Council submits full abstraction records automatically via SCADA to GWRC as required by Condition 18. A summary of the abstraction for this reporting period is provided in Table 8. The total daily abstraction from the Waikanae Borefield is plotted in Figure 8.

Table 8: Total daily and annual volumes pumped from the production bores

Period	1 July 2020 - 30 June 2021	1 July 2021 - 30 June 2022	1 July 2022 - 30 June 2023
Total annual volume pumped	41,211 m^3	45,600 m^3	33,139 m^3
Annual permitted volume (Condition 8 of WGN130103 [35973])	2,300,000 m³/year	2,300,000 m³/year	2,300,000 m³/year
Maximum total daily take volume and date	3,867 m³/day (on 30 October 2020)	13,200 m³/day (on 21 March 2022)	3,347 m^3/day (on 17 January 2023)
Maximum daily take permitted by Condition 6 of WGN130103 [35973]**	23,600 m³/day	23,600 m³/day	23,600 m³/day

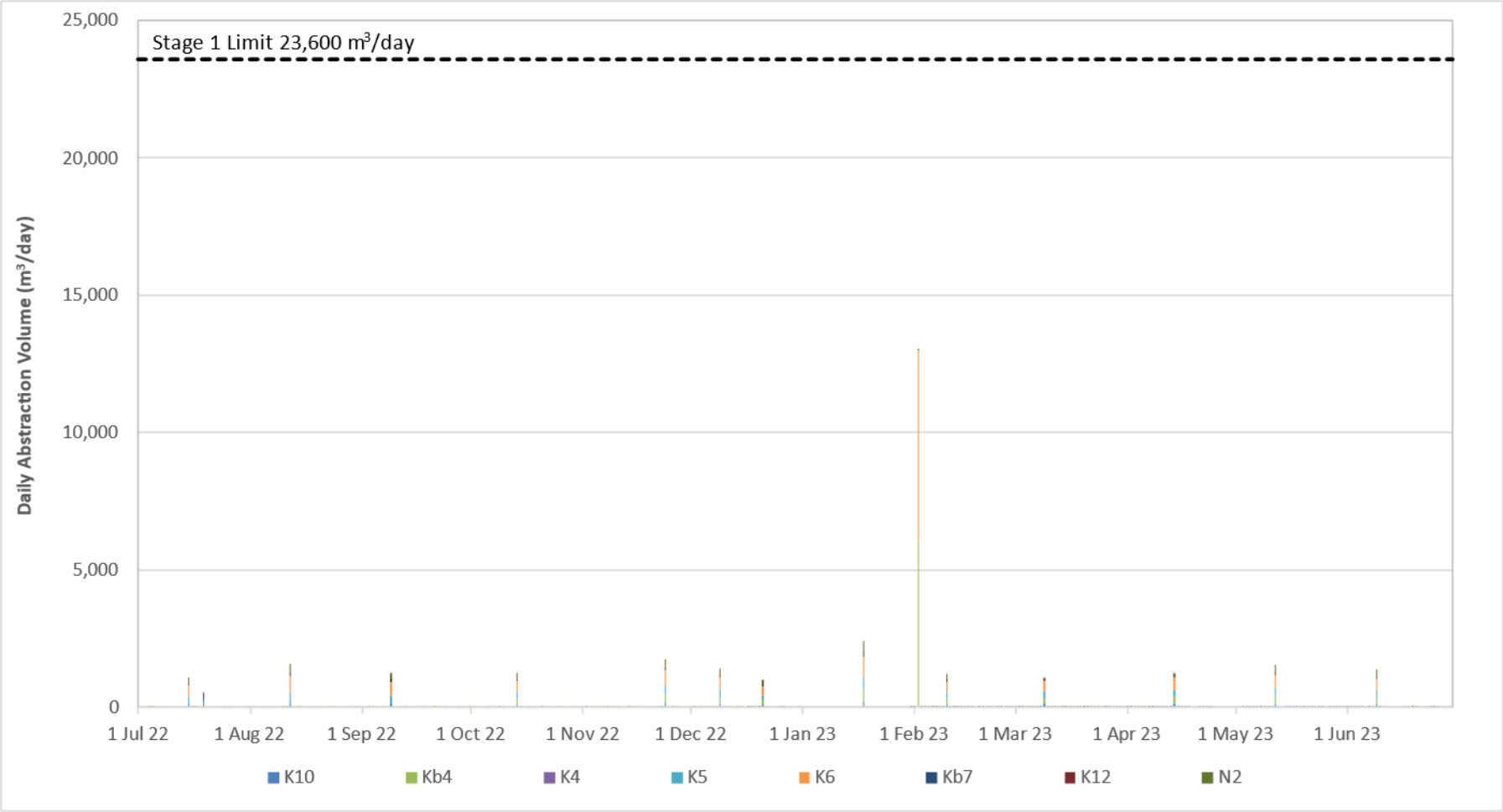


Figure 8: Daily Abstraction Volumes from Production Wells

The total instantaneous abstraction rate from the production wells is shown in Table 9 and plotted in Figure 9 below.

Table 9: Total instantaneous abstraction rate from production wells

Period	1 July 2020 - 30 June 2021	1 July 2021 - 30 June 2022	1 July 2022 - 30 June 2023
Maximum combined abstraction	261 L/s for 15 minutes on 12 May 2021	256 L/s for 15 minutes on 17 February 2022	255L/s for 15 minutes on 8 December 2022
Maximum instantaneous abstraction permitted by Condition 8 of WGN130103 [35973].	273 L/s	273 L/s	273 L/s

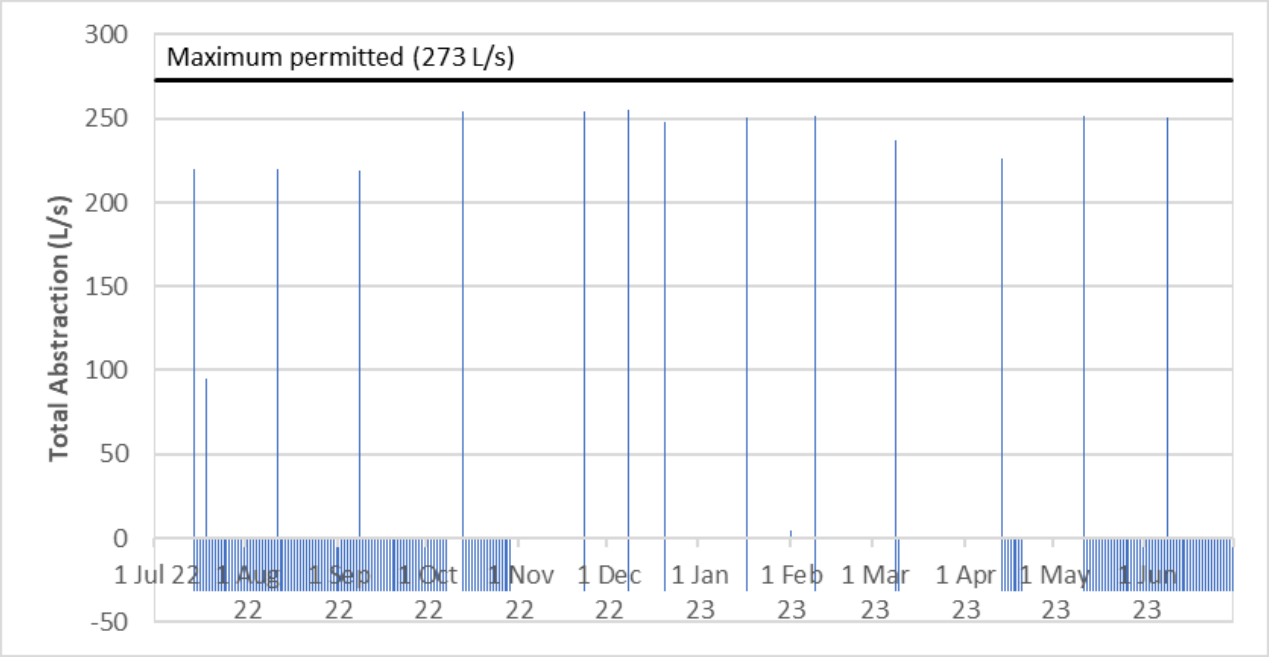


Figure 9: Total Instantaneous Abstraction from Production Wells

The combined instantaneous abstraction from the Borefield was below the maximum abstraction permitted by Condition 8 of WGN130103 [35973] during the 2022/23 period. The maximum instantaneous abstraction rates for the individual production bores are detailed in Table 10 below.

Table 10: Maximum Instantaneous abstraction rates for the individual production bores

Maximum instantaneous abstraction	Stage 1 Maximum yield (Condition 8 of WGN130103 [35973])	1 July 2021 – 30 June 2022	1 July 2022 – 30 June 2023
K10	36 L/s	17 L/s	17 L/s
Kb4	35 L/s	38 L/s	35 L/s
K4	65 L/s	77 L/s	65 L/s
K5	36 L/s	36 L/s	35 L/s
K6	58 L/s	58 L/s	58 L/s
Kb7	8 L/s	6 L/s	6 L/s
K12	10 L/s	8 L/s	8 L/s
N2	25 L/s	25 L/s	25 L/s

The individual bore abstractions were below the Stage 1 maximum yield values in Condition 8 of WGN130103 [35973].

3.2 Flow Gauging

No triggers or actions needed

Measurement of Waikanae River flows at Jim Cooke Memorial Park are undertaken when the bore field abstraction exceeds 23,000 m³/day for a three-day period as outlined in approved River and Borefield OMPs.

Table 11: Flow gauging of the Waikanae River

Period	1 July 2021 - 30 June 2022	1 July 2022 - 30 June 2023
Flow Gauging Trigger Status	Borefield abstraction of 23,000 m³/day for a three-day period was not exceeded.	Borefield abstraction of 23,000 m³/day for a three-day period was not exceeded.

This trigger was not reached during the 2022/23 period.

3.3 Back-up Wells PW1 and PW5

No triggers or actions needed

The Council holds a separate resource consent WGN050025 [33147] for two groundwater bores in Otaihanga (PW1 and PW5) for back up water supply. The Back-up wells PW1 and PW5 were not connected to the reticulation and therefore were not used for back up water supply in the 2022/23 period.

Table 12: Combined abstraction from wells PW1 and PW5 for back up public water supply to the surrounding communities

Period	1 July 2021 - 30 June 2022	1 July 2022 - 30 June 2023
Combined abstraction from wells PW1 and PW5	Wells not used for back up water supply	Wells not used for back up water supply
Maximum combined abstraction permitted by Consent WGN050025 [33147].	7000 m³/day	7000 m³/day

3.4 Borefield Monitoring Programme

The Borefield Monitoring Programme is set out in the approved Borefield OMP. The Council undertakes drawdown monitoring of shallow and deep aquifers and saline intrusion monitoring. The Borefield OMP sets out how the Council is to respond when monitoring detects a trigger exceedance. The Council responds to several notifications each year, including notifications outside the river recharge season. In most instances, notifications are investigated and found to be due to instrumental error or maintenance.

Tables 13, 15 and 17 list the monitoring sites, applicable trigger levels and the minimum water level (for drawdown monitoring) or maximum saline level (for saline monitoring) during 2022/23. Where the Council has investigated a notification, and the notification is due to instrument failure or maintenance, the level in the tables has been adjusted to reflect the “true” level as opposed to the recorded level. Tables 14, 16 and 18 provide a summary of notifications received and actual trigger exceedances identified following investigation.

The Borefield OMP requires the Council to monitor notifications during the river recharge season (from 1 December to 30 April inclusive) or when the borefield is used for river recharge or water supply. Table 19 provides an assessment of all notifications received during the river recharge season.

3.4.1 Shallow Aquifer Drawdown Monitoring

No triggers or actions needed

Table 13 lists the shallow aquifer monitoring sites, the applicable trigger levels and the minimum water level (daily average) recorded during the reporting period compared to last year. Table 14 shows the number of notifications received in 2022/23 and the number of actual trigger exceedances. Following investigation, all notifications were found to be because of instrument error or maintenance. There were no actual exceedances.

GWRC is responsible for the GWRC Nga Manu monitoring well (R26/6991). The trigger exceedance and 0 L/s recording was investigated and found to be because of a fault with the equipment. The management of this equipment is outside of the Council’s control. We understand that upgrading the GWRC Nga Manu bore is not a priority for GWRC. A wider discussion with GWRC may be required regarding the ongoing viability/suitability of using GWRC monitoring wells for this consent.

Table 13: Shallow Aquifer Drawdown Monitoring Wells and Trigger Levels

Well Name	GWRC Bore Number	Trigger Level			Min level reporting period 2020/21 (mm AMSL)	Min level reporting period 2021/22 (mm AMSL)	Min level reporting period 2022/23 (mm AMSL)
		Alert (mm AMSL)	Action (mm AMSL)	Cease (mm AMSL)			
KCDC K6 Obs Shallow	R26/6992	2180	1980	1780	3314	3504	3258
GWRC Nga Manu	R26/6991	7138	6938	6738	7801	8049	8040
KCDC W1	R26/7025	4350	4150	3950	4970	4931	5052
Waikanae CHP Shallow	R26/6916	1445	1245	1045	2259	2389	2366
K12 Obs Shallow, Smithfield Rd	R26/6300	5035	4835	4635	5714	5820	5766
JCMP Shallow, Jim Cooke Memorial Park	N/A	6641	6441	6241	7409	7433	7507
K3A Obs Shallow, Cemetery	R26/6290	6964	6764	6564	7868	8010	8153
Greenhill North Shallow, Greenhill Rd North	N/A	6387	6187	5987	7071	7146	7156
Greenhill South Shallow, Greenhill Rd South	N/A	11829	11629	11429	12732	12988	12898

Table 14: Shallow Aquifer Triggers

Period	1 July 2021 - 30 June 2022	1 July 2022 - 30 June 2023
Total number of notifications	20	12
Total number of actual triggers	0	0

3.4.2 Deep Aquifer Drawdown Monitoring

No triggers or actions needed

Table 15 lists the deep aquifer monitoring sites, the applicable trigger levels and the minimum water level (daily average) recorded during this year's reporting period compared to last year. Table 16 shows the number of notifications received in 2022/23 and the number of actual trigger exceedances. Following investigation, all notifications were found to be because of instrument error or maintenance. There were no actual exceedances.

Table 15: Deep Aquifer Drawdown Monitoring Wells and Trigger Levels

Well Name	GWRC Bore Number	Trigger Level			Min level reporting period 2020/21 (mm AMSL)	Min level reporting period 2021/22 (mm AMSL)	Min level reporting period 2022/23 (mm AMSL)
		Alert [mm AMSL]	Action [mm AMSL]	Cease [mm AMSL]			
Sentinel #1 Deep, Rutherford Drive	R26/6378	-1537	-3787	-5475	3388	2065	3517
Sentinel #1 Intermediate, Rutherford Drive	N/A	-2526	-4776	-6463	2080	1663	2053
Sentinel #2 Deep, Hodgkins Rd	N/A	-898	-2698	-4048	2952	2466	3044
Sentinel #2 Intermediate, Hodgkins Rd	N/A	-1757	-3557	-4907	1839	1436	1845
Sentinel #3 Deep, Old WWTP	R26/6776	-2090	-4490	-6290	3203	1553	2858
Sentinel #3 Intermediate, Old WWTP	N/A	-2547	-4947	-6747	2603	2317	2418
Sentinel #4 Deep, Peka Peka Rd	N/A	1832	932	257	4033	3778	4113
Sentinel #4 Intermediate, Peka Peka Rd	N/A	284	-616	-1291	2230	2290	2251
Sentinel #5 Intermediate, Taiata St	R26/6955	-393	-1443	-2231	1907	1876	1907
Sentinel #5 Deep, Taiata St	N/A	19	-1031	-1819	2200	2089	2318
Sentinel #6 Deep, Tamati Place	N/A	560	-190	-752	2155	2202	2329
Sentinel #6 Intermediate, Tamati Place	N/A	599	-151	-714	2161	2176	2246
Waikanae CHP Deep	R26/6594	540	-510	-1298	2755	2634	2686
Waikanae Park	R26/6284	4611	2511	936	8814	8818	8884

Table 16: Deep Aquifer Triggers

Period	1 July 2021 - 30 June 2022	1 July 2022 - 30 June 2023
Total number of notifications	15	10
Total number of actual triggers	0	0

3.4.3 Saline Intrusion Monitoring

No triggers or actions needed

Table 17 lists the saline intrusion monitoring sites, the applicable trigger levels and the maximum electrical conductivity (daily average) recorded during this year's reporting period compared to last year. Table 18 shows the number of notifications received in 2022/23 and the number of actual trigger exceedances. Following investigation, all notifications were found to be because of instrument error or maintenance. There were no actual exceedances.

Table 17: Saline Intrusion Monitoring Wells Electrical Conductivity Trigger Levels

Well Name	GWRC Bore Number	Trigger Level			Max last reporting period 2020/21 (µS/cm)	Max this reporting period 2021/22 (µS/cm)	Max this reporting period 2022/23 (µS/cm)
		Alert (µS/cm)	Action (µS/cm)	Cease (µS/cm)			
Sentinel #1 Deep, Rutherford Drive	R26/6378	1500	1875	2188	933	2361	1286
Sentinel #1 Intermediate, Rutherford Drive	N/A	521	651	760	461	467	462
Sentinel #2 Deep, Hodgkins Rd	N/A	1532	1915	2234	1397 (5094)	1195	1198
Sentinel #2 Intermediate, Hodgkins Rd	N/A	1699	2124	2478	879	840	961
Sentinel #3 Deep, Old WWTP	R26/6776	1342	1677	1956	1303	1026	1305
Sentinel #3 Intermediate, Old WWTP	N/A	2789	3486	4067	530	1094	906
Sentinel #4 Deep, Peka Peka Rd	N/A	866	1082	1262	712	707	828
Sentinel #4 Intermediate, Peka Peka Rd	N/A	761	951	1110	732	870	673
Sentinel #5 Intermediate, Taiata St	R26/6955	3642	4553	5311	3318	3261	3564
Sentinel #5 Deep, Taiata St	N/A	5818	6518	7218	5066	5109	5114
Sentinel #6 Deep, Tamati Place	N/A	8693	9393	10093	7583	7844	7947
Sentinel #6 Intermediate, Tamati Place	N/A	1684	2105	2455	1514	1467	1652

Table 18: Saline Intrusion Monitoring Triggers

Period	1 July 2021 - 30 June 2022	1 July 2022 - 30 June 2023
Total number of notifications	12	8
Total number of actual triggers	0	0

3.4.4 Analysis of Monitoring Bore Notification Alerts (Monitoring Equipment Outages)

The OMPs require the Council to monitor triggers during the recharge season and report on these triggers to GWRC. The Council received a total of 30 notifications of a trigger event for the RRwGW monitoring wells during 2022/23. Of these, 12 notifications were received during the river recharge season (1 December to 30 April). Table 19 summarises the in-season notifications, including the date, monitoring point and alert level. In all cases a Council or GWRC monitoring asset was found to have failed, or it had been affected by a maintenance or power outage event.

Table 19: Summary of Notified Monitoring Point Failure Events

Date	Monitoring Point	Alert Level
3/11/2023	Nga Manu Wetland Level	Level 1
22/12/2022	Nga Manu Wetland Level	Level 2
22/12/2022	GWRC Nga Manu Level	Level 1
22/12/2022	GWRC Nga Manu Level	Level 2
22/12/2022	Waikanae CHP Shallow Level	Level 2
22/12/2022	Waikanae CHP Shallow Level	Level 3
22/12/2022	Nga Manu Wetland Level	Level 1
16/01/2023	Nga Manu Wetland Level	Level 1
26/01/2023	Nga Manu Wetland Level	Level 1
26/01/2023	Nga Manu Wetland Level	Level 2
15/03/2023	KCDC W1 Level	Level 1
15/03/2023	KCDC W1 Level	Level 2

3.5 Bore Water Quality Monitoring

No triggers or actions needed

3.5.1 Production Bores

Following the approved BoMM:

- Bore water quality samples are taken from production bores at the start of the abstraction season.

- Water quality sampling is compulsory at the conclusion of the monitoring season if the abstraction from the bore field reaches 23,000m³/day for three consecutive days or reaches a volumetric measure of 540,000m³ or more.

Bore water quality samples were taken from production bores at the start of the 2022/23 season. Bore Water Quality Sampling results from Eurofins' analysis of samples can be found in Appendix D. No non-compliance indicators are noted.

The abstraction from production bores during the 2022/23 season did not exceed 23,000m^3/day for three consecutive days or reach 540,000m^3 or more, meaning monitoring at the conclusion of the season was not required.

3.5.2 Blended Bore Water

Blended Bore Water sampling is no longer required going forward, as per the approved Borefield OMP.

3.6 Potentially Affected Existing Private Wells

Condition 7 of consent WGN130103 [35973] requires work to be undertaken to identify potentially affected existing authorised wells (and actions (b)-(d) listed in the condition) prior to implementing each stage of the project as referenced in Condition 6. GWRC confirmed on 21 July 2016 that Council has met all requirements of Condition 7 for Stage 1.

A website provides education information, live groundwater level monitoring information and has contact details if private well users wish to discuss issues arising or make complaints. KCDC upgraded this website for 2020/21 year; now hosting live operating data, with geospatially represented bore information, on Council's own platform (it was operated for Council by consultant Beca, in the past).

Refer to the web pages found at the following address:
https://www.kapiticoast.govt.nz/services/a-z-council-services-and-facilities/waters/water-supply/where-it-comes-from/private-bores/

3.7 Complaints

Condition 45 of consent WGN130103 [35973] requires Council to maintain an on-going record of any complaints received alleging adverse effects from, or related to, abstraction from the Waikanae Borefield, including complaints of any adverse effects on private bores. The Complaints Record is attached in Appendix E. There were no complaints received alleging adverse effects from, or related to, abstraction from the Waikanae Borefield in the 2021/22 year.

Table 20: Complaints Record

Period	1 July 2021 - 30 June 2022	1 July 2022 - 30 June 2023
Number of complaints	0	0

4 Wetlands Monitoring

No triggers or actions needed

As required by the approval of the Wetland OMP, wetland triggers are applicable to Nga Manu wetland.

A graph presenting the Nga Manu wetland groundwater levels for the wetland monitoring period (Dec 2022 - May 2023) is presented in Figure 12, which includes regression analysis of the trigger levels based on the district wide shallow groundwater effects. Figure 12 also shows the 0 L/s trigger recording due to a technical fault in the monitoring equipment (discussed in the previous section).

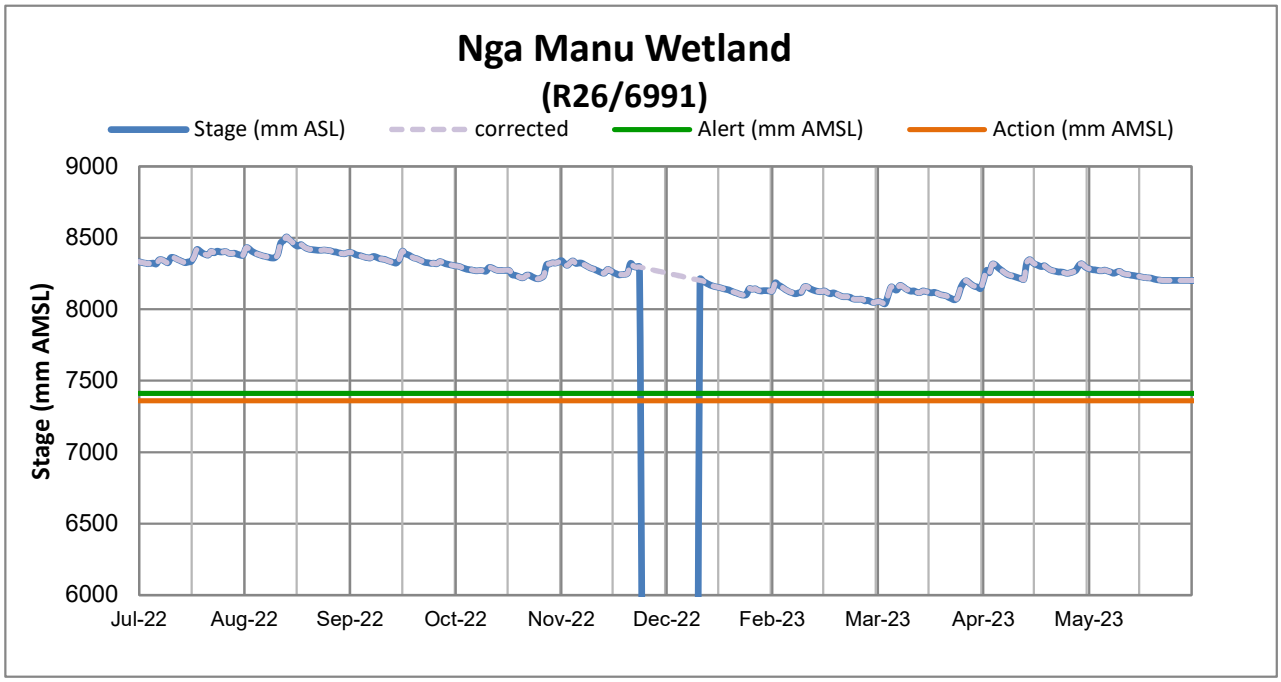


Figure 10: Nga Manu Wetland Regression Analysis

Te Harakeke wetland is to be included in an updated Wetland OMP if access can be regained. GWRC is to be advised when access is regained, and the Council will implement triggers and environmental monitoring in accordance with requirements at the stage when access is regained.

The number of notifications and actual triggers from the alarm notifications are shown in Table 21. The analysis of these triggers is provided in Table 3.4.4. As discussed, all notifications were due to technical faults with monitoring equipment, meaning no actual triggers were exceeded.

Table 21: Wetland Automated Triggers

Period	1 July 2017 - 30 June 2018	1 July 2018 - 30 June 2019
Total number of notifications	3	8
Total number of actual triggers	0	0

Wetland condition monitoring for Nga Manu Wetland is scheduled for summer 2023/24.

5 Small Coastal Streams Monitoring

No triggers or actions needed

One small coastal stream site, Ngārara Stream has been monitored this year as defined in the Small Coastal Stream OMP. The required monitoring period is from 1 December 2021 to 1 May 2022. The ground water and stream level for the small coastal stream are shown in Figures 11 and 12. There were no triggers notified for the Ngārara coastal stream in this period.

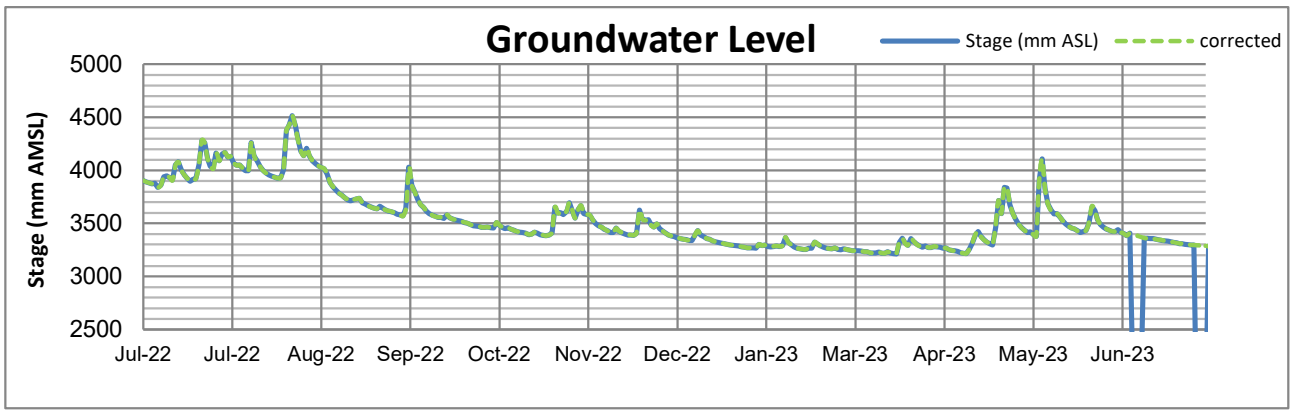


Figure 11: Ground water levels for Ngārara Small Coastal Stream

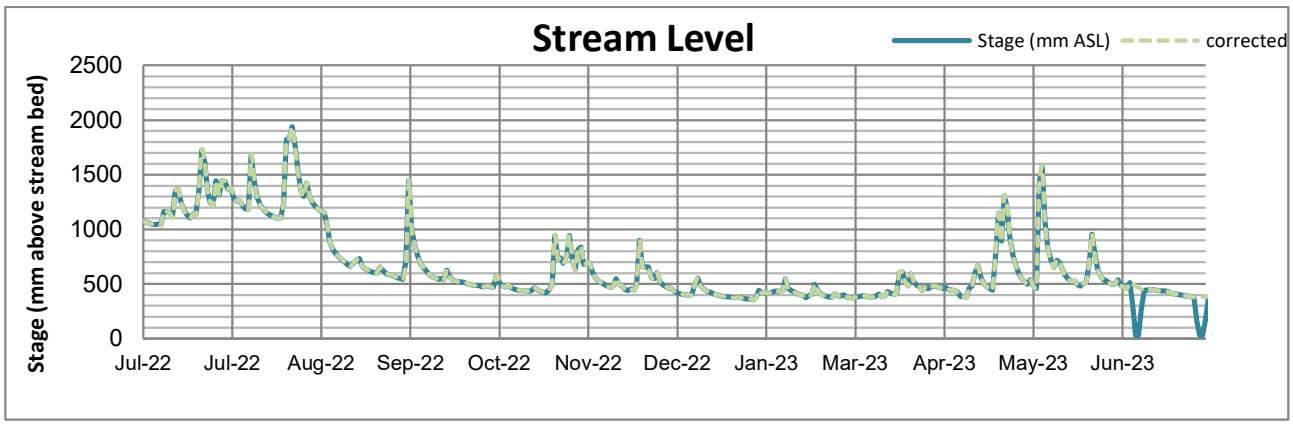


Figure 12: Stream levels for Ngārara Small Coastal Stream

Trigger levels apply from the 25 February 2019 approval of the Small Streams OMP. These are outlined in Table 22. Triggers use data from both the stream and groundwater measurement points – those from the prior monitoring period are included here. The notes to Table 22 indicate that statistical conditioning, based on historical data, is to apply to the measured values. For 'Action' and 'Cease' levels the caveat "assuming at least one correlation exercise has been undertaken for the current "event" with the measured 35th percentile depth" is noted.

Table 22: Historic Trigger Levels for Small Coastal Streams

Location	Trigger Level (2022/23Year)			Min Value this reporting period 2022/23
	Alert (mm -)	Action (mm -)	Cease (mm -)	(mm -)
Ngārara Groundwater Level (mm AMSL)	2550 *			3212
Ngārara Stream Level (mm above stream bed)		300 #	150 +	

* 200mm below the lowest recorded shallow groundwater level for historic monitoring results minus 15% of the range in water levels recorded.

35th percentile stream depth is less than 300mm determined from staff gauge measurement.

+ 35th percentile stream depth is less than 150mm determined from static staff gauge measurement.

The approved OMP indicates an adaptive management approach to assessment of applicable triggers, which applied this year. Trigger levels calculations benefit from the broader data set acquired from a further field data since the 2018/19 report ("historic data" is considered as that commencing from the first viable historic data point collected; date-stamped 00:00hrs 18/06/2018). In Table 23 historic data is used to calculate the actual trigger level to be applied for this data series for this period.

Table 23: Analysis of Adaptive Management Trigger Levels - Small Coastal Streams 2022/23

Location	Minimum Level [1] (mm -)	Maximum Level [1] (mm -)	35th Percentile [2] (mm -)	Refined Trigger Level			Min or Recalculated [2] Value for period 2023/24 (mm -)
				Alert [3] (mm -)	Action (mm -)	Cease (mm -)	
Ngārara Groundwater Level (mm AMSL)	2940	4984		2550			3212
Ngārara Stream Level (mm above stream bed)	350	1539	739		300	150	

1. Data was taken from the SCADA archive for period 00:00hrs 1/011/2018 thru 23:00 30/04/2023
2. The 35th Percentile is calculated by ranking all data values in the set noted above, in order, then assessing the data point at which 35% of all points are of lesser value.
3. Trigger levels as described in Table 22 notes.
4. During 2022/23 Council did not breach the alert level and there was no sustained pumping from the Waikanae Borefield. Trigger levels for 2023/24 will remain the same as 2022/23. We would only lower the Alert Level if exceeded without any environmental affects identified while using the bores for production.

Figures 11 and 12 show a decreasing trend in groundwater and surface water level towards the later half of FY 2022/23. The Council did not use the bore field for water production in 2022/23 so this trend is unexpected. The trend is further illustrated in Figure 13. Council staff suspect instrumentation error may have created this trend, as opposed to any actual decrease in water levels. The Council will investigate the cause of this trend over the coming months.

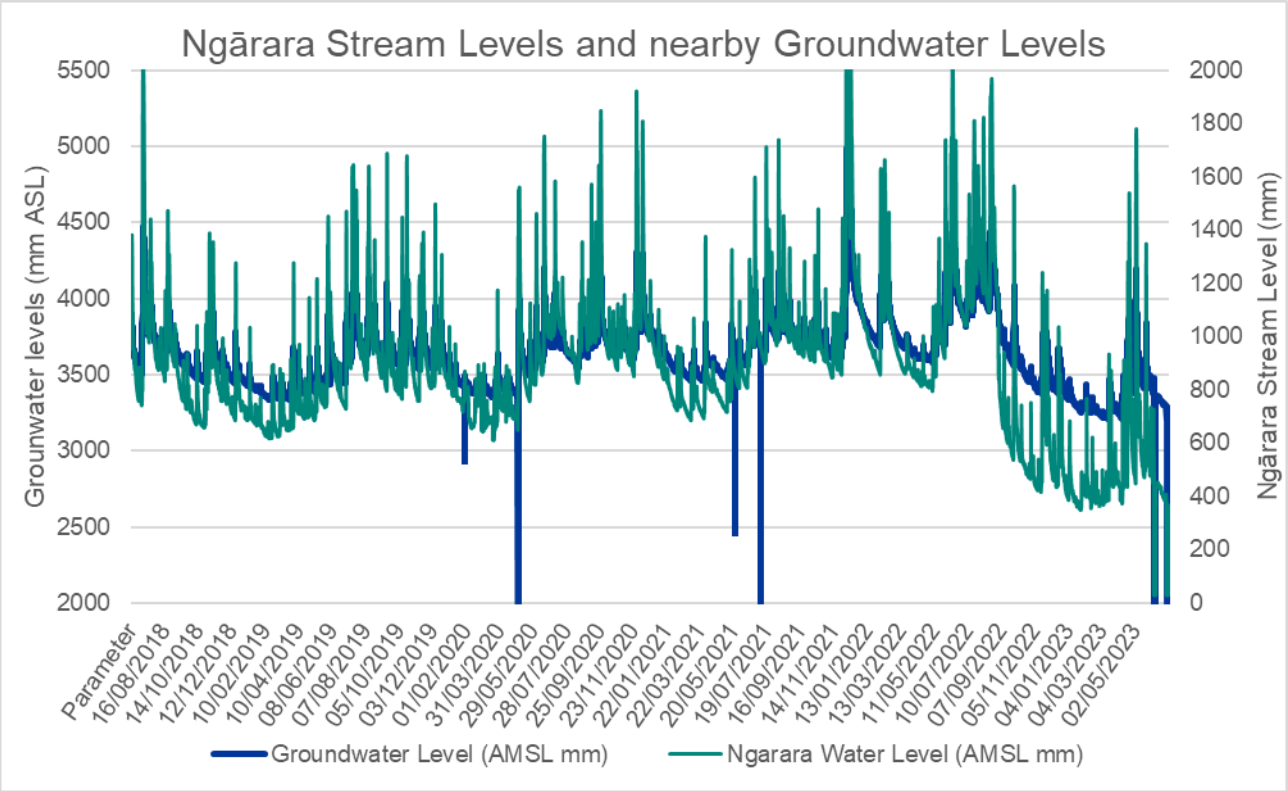


Figure 13: Comparing stream and groundwater levels at the Ngārara Small Coastal Stream site (2018/23)

6 Operations

6.1 Operations Log and Maintenance Undertaken

The Council has confirmed that its existing SCADA system together with the NCS system are an 'electronic data management system' that records and stores the information required by Condition 20 of consent WGN130103 [35973] and Condition 18 of consent WGN130103 [35974]. Borefield abstraction, river abstraction and river recharge data is automatically transmitted from Council's SCADA system to GWRC's Water Use Data Management System. The Council has implemented Water Outlook as a system to store and report data and operational information relating to the Waikanae Borefield. Council is also using Water Outlook to store and report data and operational information relating to the Waikanae River take and recharge.

A copy of the site logs for each production bore is included in Appendix C. Appendix C also includes the Waikanae River take and recharge operational records.

6.2 Operation and Maintenance Manuals

6.2.1 Approved Documents History

The Waikanae Borefield Operation and Maintenance Manual (BOMM) and current Waikanae River Take Operations and Maintenance Manual (ROMM) have been approved by AMG & GWRC and were last updated on 19 December 2018.

The following have also been approved by GWRC:

- Borefield OMP (dated 29 November 2018),
- Wetland OMP (dated 9 March 2018),
- Small Coastal Streams OMP (dated 21 February 2019), and
- River OMP (dated 15 October 2018).

6.2.2 Updated Documents

Council offers no document updates in this 2022/23 Season.

7 Mitigation/Adaptive Management

The Adaptive Management Group (AMG) for the RRwGW scheme comprises members who include representatives of GWRC, Council, and Te Āti Awa ki Whakarongotai. AMG members meet annually to discuss the performance of the RRwGW programme.

The 2022/23 monitoring activities have been completed in accordance with the approved OMPs. The AMG annual meeting will be held in August 2023.

7.1 Changes to Mitigation Plans

7.1.1 Operating Documents and Consent - active

The consents and the related operating documents were deployed as unchanged for the 2020/21 season, in the now normalised operating mode. No new consent amendments are proposed.

7.1.2 Operating Documents – revision control

7.1.2.1 Operation and Maintenance Manuals

There have been no revisions to documents this season (including BoMM, RoMM, O&M Manuals, and so on).

7.1.2.2 Operation Management Planning

Council offers no new operations management amendments for review.

7.1.3 Reports

The AMG reviewed and provided recommendations on the draft Annual Report and Water Conservation Report, before these reports were finalised.

7.2 Recommendations of the Adaptive Management Group

The AMG made the following recommendations:

- The Council is to investigate options for improving fish passage over the main weir and present these to the AMG at the next annual meeting, if not before.
- Follow up fish surveys to the 2022/23 survey are not required for the time-being, and this will be reviewed at the next annual meeting.

Appendix A

Consent Requirements and Documents

An annual Waikanae River, Recharge and Borefield report is required by Condition 42 of consent WGN130103 [35973], Condition 24 of consent WGN130103 [35974] and Condition 26 of consent WGN130103 [35975]. This report to Greater Wellington Regional Council (GWRC) covers the period from 1 July 2017 through to 30 June 2018. The requirements of these conditions are listed in the tables below (Table 23, Table 24, and Table 25) with cross-references to the relevant sections in this report.

Table 24: Requirements for Annual Waikanae River report

Condition 24 of Consent WGN130103 [35974]	Section in this Annual Report
The consent holder shall, by 30th September each year, submit an Annual Waikanae River report to the Manager, or by another date as agreed with the Manager. The annual Waikanae River report shall report on the year 1 July to 30 June inclusive, and include the following information:	
a) Records of the instantaneous rate of take (L/s), and total daily volumes (m^3);	Section 2.2
b) Flow and river recharge information to demonstrate compliance with Condition 6 (Waikanae River low flow);	Sections 2.1, 2.3 and 2.4
c) Provide information to demonstrate compliance with Condition 18 of this consent	Sections 2.1, 2.2 and Section 6.1
d) Results of all monitoring undertaken that year required by Conditions 19, 20 and 21 of this consent (if applicable), including a comprehensive analysis of the monitoring results, assessment against any relevant guidelines and comparison with previous years' results (i.e. trend analysis);*	Section 2.5 and Section 3.2
e) Details of any trigger levels or compliance limits that were reached (if occurred that year);	Section 2.5
f) Details of any actions and/or mitigation/adaptive management taken in response to trigger levels or compliance limits being reached, including an assessment of the effectiveness of these actions and/or mitigation/adaptive management;	Section 2.5 and Section 3.2
g) Any recommendations for changes to the Waikanae River Baseline Monitoring Plan or the On-going Mitigation Plan (as relevant), including triggers, compliance limits or actions and/or mitigation measures or changes to the operations and maintenance manual, including recommendations of the Adaptive Management Group (referred to in Condition 26 of this consent);	Section 6.2 and Section 7, 7.1.1 and 7.2
h) A discussion on any mitigation/adaptive management that may be required in the coming year;	Section 7
i) Summary of any maintenance undertaken.	Section 6.1
The annual Waikanae River report can be combined with the annual River Recharge report required by the conditions of discharge permit WGN130103 [35975]. The annual Waikanae River report shall be made available to the public on the Kāpiti Coast District Council website no later than 30 September each year, or by another date as agreed with the Manager. Note: The consent holder is only required to report on the listed requirements of this condition if they have occurred during that compliance year (1 July to 30 June inclusive). Note: The consent holder may request, with the Manager's approval, an extension of time to submit the annual report to the Manager and make it available to the public on the website, if the Adaptive Management Group requires more time to consider the draft annual report and provide their recommendations as required by part (g) of this condition.	Refer www.kapiticoast.govt.nz

**Conditions 19 and 20 due to completion of Baseline monitoring*

Table 25: Requirements for Annual River Recharge report

Condition 26 of Consent WGN130103 [35975]	Section in this Annual Report
The consent holder shall, no later than 30 September each year that a discharge to the river occurs, submit an annual River Recharge report to the Manager, or by another date as agreed with the Manager. The annual River Recharge report shall report on the year 1 July to 30 June inclusive, and include the following information:	
a) Records of the instantaneous rate of discharge (L/s), and total daily volumes (m^3) of discharge	Section 2.3
b) Dates, times and duration of discharge	Section 2.3
c) Information to demonstrate compliance with the rate of discharge specified in Condition 5	Section 2.3
d) Flow and river recharge information to demonstrate compliance with the Waikanae River low flow specified in Condition 12 of this consent	Section 2.4
e) Results of all monitoring undertaken that year required by Conditions 22* or 23 of this consent (if applicable), including a comprehensive analysis of the monitoring results, assessment against any relevant guidelines and comparison with previous years' results (i.e. trend analysis)	Section 2.5 and Section 3.2
f) Details of any trigger levels or compliance limits that were reached (if occurred that year)	Section 2.5
g) Details of any actions and/or mitigation/adaptive management taken in response to trigger levels or compliance limits being reached, including an assessment of the effectiveness of these actions and/or mitigation/adaptive management	Section 2.5 and Section 3.2
h) Any recommendations for changes to the Waikanae River Baseline Monitoring Plan or the On-going Mitigation Plan as relevant), including triggers, compliance limits or actions and/or mitigation measures or changes to the operations and maintenance manual, required by Condition 17 to be discussed with the Adaptive Management Group (as required by Condition 27 of this consent)	Section 6.2 and Section 7, 7.1.1 and 7.2
i) A discussion on any mitigation/adaptive management that may be required in the coming year	Section 7
j) Summary of any maintenance undertaken	Section 6.1
The annual River Recharge report may be combined with the annual Waikanae River report required by consent WGN130103 [35974]. The annual River Recharge River report shall be made available to the public on the Kāpiti Coast District Council website by 30 September each year, or by another date as agreed with the Manager. Note: The consent holder may request, with the Manager's approval, an extension of time to submit the annual report to the Manager and make it available to the public on the website, if the Adaptive Management Group requires more time to consider the draft annual report and provide their recommendations as required by part (g) of this condition.	Refer www.kapiticoast.govt.nz

**Condition 22 is not applicable due to completion of Baseline monitoring.*

Table 26: Requirements for Annual Waikanae Borefield report

Condition 42 of Consent WGN130103 [35973]	Section in this Annual Report
The consent holder shall, by 30 September each year, submit an annual Waikanae Borefield report to the Manager, or by another date as agreed with the Manager. The annual Waikanae Borefield report shall report on the year 1 July to 30 June inclusive, and include the following information:	
a) A copy of the records to demonstrate compliance with Condition 20 of this consent;	Sections 3.1 and 3.3
b) Details of the use (including daily and total volumes of groundwater abstracted) and reasons for that use of the water from the Borefield;	Section 3.1
c) A summary of Waikanae River flow gauging required by Condition 25 of this consent, if undertaken that year; *	Section 3.2
d) Results of all monitoring undertaken that year required by conditions of this consent (if applicable), including a comprehensive analysis of the monitoring results, assessment against any relevant guidelines and comparison with previous years' results (i.e. trend analysis);	Sections 3, 4 and 5
e) Results or evidence to demonstrate compliance with Condition 7 of this consent	Section 3.6
f) Details of any trigger levels or compliance limits that were reached (if occurred that year) and specifically the findings of saline monitoring compared with the 'alert', 'action' or 'cease' triggers;	Sections 3 and 4
g) Details of any actions and/or mitigation/adaptive management taken in response to trigger levels or compliance limits being reached, including an assessment of the effectiveness of these actions and/or mitigation/adaptive management;	Sections 3, 4 and 5
h) Any recommendations for changes to the monitoring plan required by conditions of this consent, including triggers, compliance limits or actions and/or mitigation measures or changes to the operations and maintenance manual, required by Condition 19 of this consent, including any recommendations of the Adaptive Management Committee (referred to in Condition 43 of this consent);	Section 6.2, Section 7.1.2, 7.1.3, 7.1.4, and 7.2
i) A discussion on any mitigation/adaptive management that may be required in the coming year;	Section 7
j) A copy of the complaints record required by Condition 45 of this consent;	Section 3.7
k) Summary of any maintenance undertaken.	Section 6.1
The annual Waikanae Borefield report shall be made available to the public on the Kāpiti Coast District Council website by 30 September each year, or by another date as agreed with the Manager. Note: The consent holder may request, with the Manager's approval, an extension of time to submit the annual report to the Manager and make it available to the public on the website, if the Adaptive Management Group requires more time to consider the draft annual report and provide their recommendations as required by part (h) of this condition.	Refer www.kapiticoast.govt.nz

** Condition that may change following S127*

In addition to the above consents, Council holds resource consent WGN050025 [33147] to abstract groundwater from two wells (PW1 and PW5) for the purpose of back up water supply for the communities of Waikanae, Paraparaumu and Raumati. Requirements of Condition 15 are discussed in Section 4.6

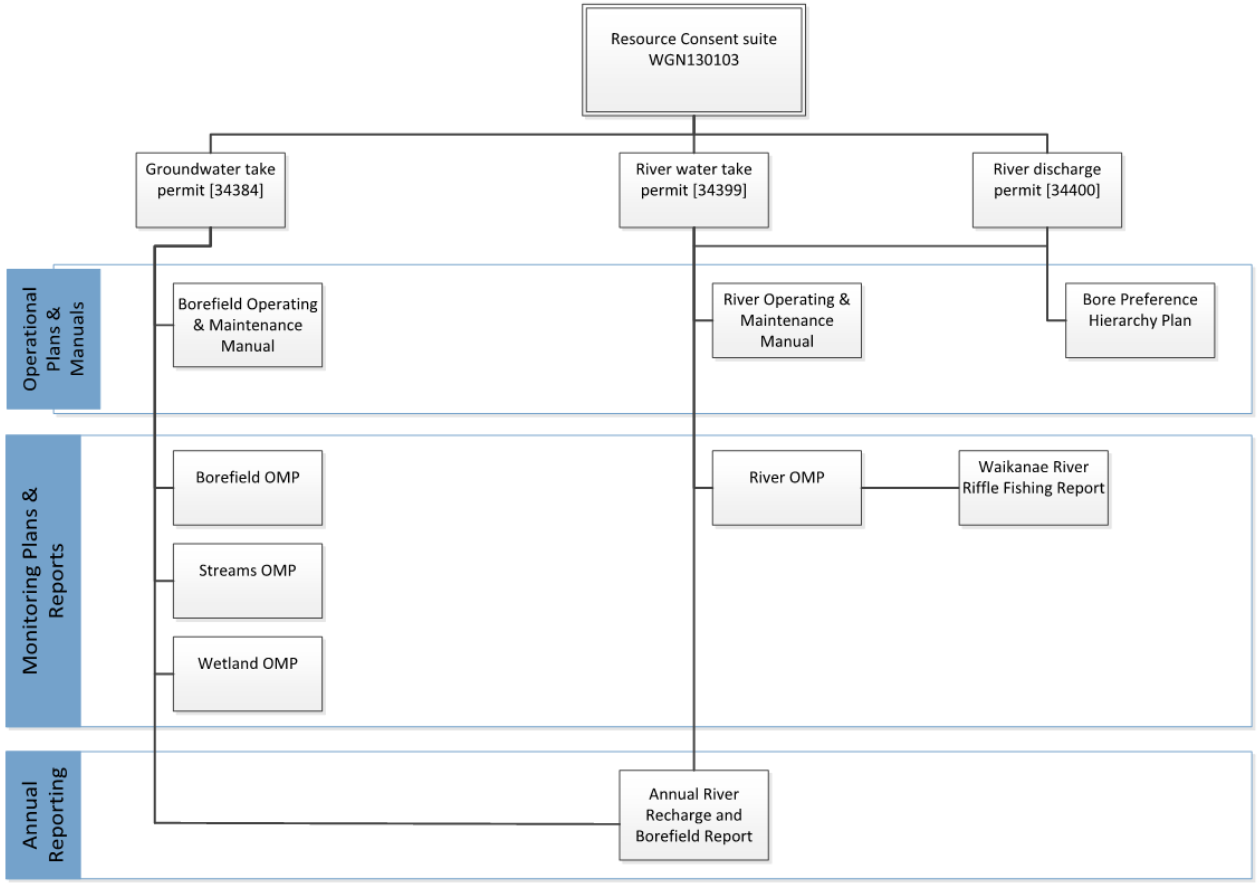


Figure 14: Key documents for RRwGW consent and ongoing monitoring

Appendix B

Waikanae River Fish Survey Results

Boffa Miskell

Memorandum

☐ **Auckland**
PO Box 91250, 1142
+64 9 358 2526

☐ **Hamilton**
PO Box 1094, 3240
+64 7 960 0006

☐ **Tauranga**
PO Box 13373, 3141
+64 7 571 5511

☑ **Wellington**
Level 4
Huddart Parker Building
1 Post Office Square
PO Box 11340, 6142
+64 4 385 9315

☐ **Christchurch**
PO Box 110, 8140
+64 3 366 8891

☐ **Queenstown**
PO Box 1028, 9348
+64 3 441 1670

☐ **Dunedin**
PO Box 657, 9054
+64 3 470 0460

Attention:	Tess Drewitt (CC Kathryn Jessamine)
Company:	KCDC (Beca)
Date:	12.04.2023
From:	Dr Vaughan Keesing
Message Ref:	Waikanae River recharge fish survey and fish passage over the weir check

Dear Tess and Kathryn

Boffa Miskell, on the 20th of March 2023 between 10am and 2pm, undertook a fish survey on the Waikanae River. Kāpiti Coast District Council (KCDC) requested the fish survey following the AMG meeting in February 2023 at which it was decided:

- That fish surveys should be undertaken this summer in accordance with the methodology used for the previous fish surveys (i.e. in riffles above and below the outlet).
- The fish survey results should be compared to the results from the previous surveys as reported in 2018/19 to establish whether there is any change to the baseline outlined in that report.
- The AMG will consider the results/analysis at the next AMG meeting in August 2023 and determine whether to continue fish surveys the following summer.
- One of the concerns raised by the AMG was the changing habitat in the river and whether that is also influencing fish abundance at this location.

The fish survey followed the agreed methodologies undertaken during the baseline surveys (and as detailed in the Waikanae River – Riffle Fishing Concluding Data Set Assessment by Boffa Miskell 8 April 2020) at sites R1 (just downstream of the Waikanae WTP) and sites C1 and C2, upstream of the Waikanae WTP weir (these locations are set out in the River Ongoing Mitigation Plan and are the same as have been used for previous fish surveys). A decision was made not to include in the survey the much lower sites of R2 and R3 (below the old SH1 bridge). The decision was made because these sites do not work well as controls for C1 and C2 (in terms of their habitat similarity), are much more distant than R1 in terms of recharge effects (much greater dilution by that time), and R3 still had a cyanobacteria warning over it. Lastly the flow at the time of the survey made R2 a more difficult (dangerous) site to survey. We do not consider that data at R2 and R3 is required to test the potential recharge effect or compare downstream and up stream of the discharge.

The flow in the river at the survey period was recorded (at the Waikanae WTP, LAWA NZ web site) at 4.5 cumecs. This is at the upper limit of survey capability.

KCDC also asked Boffa Miskell to examine the weir and the current fish passage challenge that represents.

Results

R1

We fished the entire R1 riffle – this equates to an area of 532 m^2 of rifle requiring 6 fish pass transects. The number of fish found are summarised in the table below.

	T1	T2	T3	T4	T5	T6
Torrent fish	1	2	1	2	3	3
Long fin eel		2		2	1	
Red fin bully	3	4	3	2	8	14
Brown trout	1					
Totals	5	8	4	6	12	17

Red fin bully were predominantly juvenile and less than 20mm in length but there were several larger adults (50-70mm), long fin eel were also young fish all less than 200mm. Torrent fish ranged in size but were generally resident adult at 50-100mm. Fish density for the R1 riffle at survey was 52 fish over 532 m^2 or 0.1 fish per meter square.

Proportionally the species make up the following percentages of the total number of individuals.

	Total no.	%
Torrent fish	12	23
Long fin eel	5	10
Red fin bully	34	65
Brown trout	1	2
Total	52	100

There was a greater number of fish caught in the 3m edge habitat than centrally where velocities are over 1m/s.

Upper R1 riffle looking up stream	Lower R1 riffle looking down stream
	

C1

The C1 riffle is comprised of several smaller riffle sections each fished so as to approximate the same riffle area as R1. As has always been the case, the river up stream is generally narrower and faster with fewer middle sized cobbles. This appears to have an impact on where and potentially how many fish are in the riffles. Ten transects were fished totalling 420 m^2 and the fish numbers are summarised in the table below.

	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10
Torrent fish	0	0	0	0	1	0	0	0	0	1
Long fin eel	0	3	0	2	0	0	0	2	2	0
Red fin bully	0	4	0	0	0	0	0	0	1	2
Brown trout	0	0	0	0	0	0	0	0	0	0
Totals	0	7	0	2	1	0	0	2	3	3

There are fewer fish in the above weir riffle (C1), 18 in total, compared to 52 in total in the below weir riffle at R1 (C1 total is 35% of the total at R1). Long fin eel (the most abundant of the species surveyed) were between 100 and 300mm. The two torrent fish were adult at 100 and 150mm. The red fin bully were also resident adult fish between 60 and 120mm in size.

Fish density for the C1 riffle at survey was 18 fish over 420 m^2 or 0.043 fish per meter square which is half the density of R1.

The fauna present suggest that there is a passage issue. We say this because it is long fin eel which are the dominant species numerically (50% of the catch at C1) above the weir and long fin eel are the better navigators of passage issues. Also while there are the same species represented as below the weir, the sizes above represent adults and some older larger fish whereas downstream there is a wider distribution, and the few large fish up stream represent periodic passage success rather than a wide distribution of sizes that would be expected if passage was a regular occurrence.

Proportionally the species make up the following percentages of the total number of individuals.

	Total no.	%
Torrent fish	2	11
Long fin eel	9	50
Red fin bully	7	39
Brown trout	0	0
Total	18	100

C1 Lower river riffle area	C1 Upper river riffle area to two sections
	

C2

We fished two shorter riffle sections to fish in total 380m^2. The numbers of fish found are summarised in the table below.

	T1	T2	T3	T4	T5
Torrent fish	0	1	1	2	1
Long fin eel	0	1	1	0	3
Red fin bully	0	0	2	1	1
Brown trout	0	0	0	0	1
Total	0	2	4	3	6

Similar to C1, there was a total catch of 15 fish from 380 m^2 of riffle giving a density of fish as 0.04 fish /m^2.

As with C1 the sizes indicate juvenile common bully, adult resident red fin bully. There was a wider range of torrent fish, from 40mm to 120mm. Proportionally the species make up the following percentages of the total number of individuals.

	Total no.	%
Torrent fish	5	33
Long fin eel	5	33
Red fin bully	4	27
Brown trout	1	7
Total	15	100

C2 A long thin pre pool riffle	C2 A narrow faster riffle up stream
	

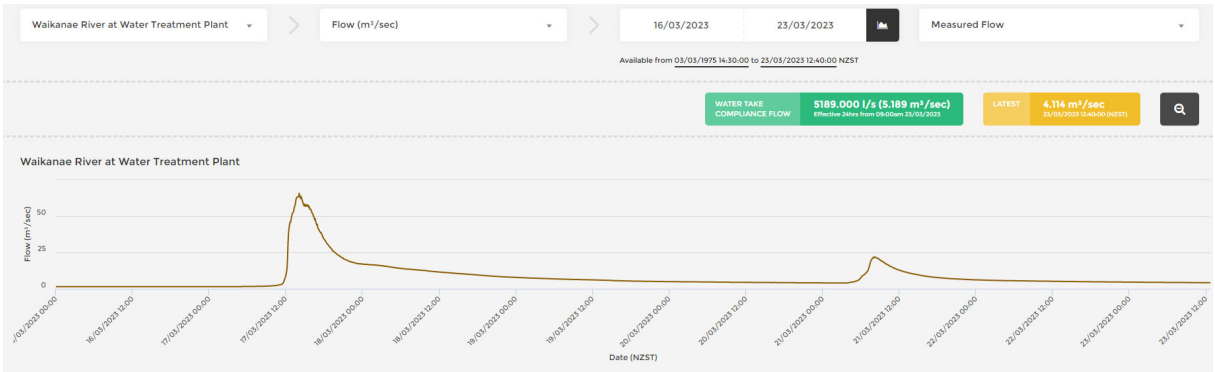
Historic March data compared to March 2023 data

The table below compares the number of fish found in this year's survey to surveys in March of previous years.

	R1 2017	R1 2018	R1 2019	R1 2023	C1 2017	C1 2018	C1 2019	C1 2023	C2 2017	C2 2018	C2 2019	C2 2023
Torrent fish	13	7	3	12	2	3	1	2	0*	5	4	5
Eel	8	2	2	5	13	1	6	9	13	1	6	5
Red fin bully	17	8	0	34	1	2	0	7	2	0	0	4
Brown trout	1	0	0	1	0	0		0	0	0	0	1

* blue gill bully

When the March survey data is compared across time the actual numbers of fish caught in the various areas is similar. However, the earlier effort surveyed around 1/3 to ½ the area of the 2023 effort (e.g. R1 – 207 m^2 versus 520m^2) and therefore the fish densities are around half that recorded earlier (refer to the table below). Nevertheless the fish species is similar and perhaps greater in 2023 and the data do not suggest a flood event effect. We say this because three days prior to the 2023 survey there was a 300 cumec fresh as shown in the graph below.



Species densities

Area fished (2023): R1 – 520 m^2; C1 = 420m^2, C2 = 380m^2

	2023 Number R1	2023 Number C1+C2	2023 Density R1	2023 Density C1	2023 Density C2	Historic density R1	Historic density C1	Historic density C2
Torrent fish	12	2 + 5	0.023	0.005	0.013	0.02	0.01	0.025
Long fin eel	5	9 + 5	0.01	0.021	0.013	0.03	0.062	0.037
Red fin bully	34	7 + 4	0.07	0.017	0.011	0.02	0.01	0.01

The averaged baseline densities were similar for R1 (below the WTP weir). While densities above the weir (WTP) at sites C1 and C2 were historically greater than currently.

Conclusion

We understand that there has been no recharge of water into the Waikanae River this year (2022-2023 summer (Beca pers com)). This means that if such water was a barrier to upward migration, this year's juvenile migrants will not have been faced with that potential.

R1 results of 2023 show that there has been upward migration of eel, common bully and torrent fish and that red fin bully are resident and recruiting at R1. The levels of those species are similar to the baseline condition. In the absence of recharge this season, nothing can be said in relation to these results being evidence or not of an effect. However, the 2022-2023 season fish data in R1, does provide evidence that if the recharge was a barrier, it is not one that creates a permeant barrier and may only cause issue at the actual time of discharge which to date has not diminished or changed the downstream fish fauna in riffle.

The persistence of the same species in C1 and C2 but with fewer juveniles suggest that there is a passage barrier but, given R1's results (and early recipient of recharge water) that barrier is not likely the river recharge water and more likely the physical barrier presented by the weir.

Fish passage

We consider that this monitoring result (at 4.5 cumecs) suggests that there is a current and longer historic fish passage issue at the weir. There continues to be, and periodically we suggest, a more exaggerated difference in the abundance / density of fish above the weir (at least in riffle habitat). This difference and the size/age skewness of the fish suggests to us a more variable, less frequent, recruitment caused most likely by year-to-year variable passage over the weir.

We investigated the weir. We understand that there are three fish passage enhancements through what is otherwise a standard concrete weir with large rock armouring and various cementing below the weir structure. The true right holds a sluice gate and channel which funnels water past the WTP intake screens. The surplus water flows out this concrete channel and falls some half metre onto a concrete pad and into the river (Photo 4). The velocity in the chute must be well over 2 m/s. We understand that the gate (which can close the sluice channel) has had a hole placed in it to assist downstream fish passage. We wonder, when the gate is closed under low flows, just what the velocity and exit flow is like, we suspect that the velocity may still, even at low flow, be too high.

The true left side of the weir has a purpose-built gap and ramp (Photo 2). However, the exit flow from the storage has no buffer and the flow is high velocity without any velocity abatement. Up swimming / climbing fish have no respite until they are past the ramp top lip some distance. The lower ramp has a number of vertical faces and ends in a vertical face not the bed. The velocity of the ramp is over 1m/s. This is only a marginal passage enhancement to the weir.

Then there is an older central weir low point and minor ramp like feature as well as several possible passage areas on cemented areas that hold the armour. Again however, the top lip velocity is very high and the passage through the large armour is unknown, but likely okay until the mid weir height is reached.

We think there is an ability to make the true left passage much better through provision of a better ramp and moderation of the velocities through installations.

Photo 1 The weir. 	Photo 2 True left passage. 
Photo 3 Central weir. 	Photo 4 Looking down on the true right sluice channel. 

Overall conclusions

In river physical habitat

We understand that the AMG was concerned that there is / maybe changing habitat in the river and whether that is also influencing fish abundance at this location.

We can assure the AMG that the lower river (R1 and environs) has not substantially changed in terms of wetted width and depth dimensions or in substrate or in visual periphyton cover or velocities. The persistence of the same fish species in more or less the same densities further suggests that the riffle habitat, at least, is no different. There has been, as is usually the case, a range of riparian / river edge changes, and those in the WTP to R1 river are obvious on the true right (inside bend) where a new channel has been formed, where willow have grown up and where the bank edge has been eroded, but these are not in stream habitat changes.

In a similar way the instream habitat at C1 and between C1 and C2 and above the weir all look, at survey, as they did in 2017-2020 with similar substrates, velocities, instream features, periphyton cover and fish

species. There are some riparian changes due to growth and some beach changes with erosion and loss of seral (weed) vegetation, but in the round the river has not changed more than is normal and remains very similar to that at baseline.

River recharge effects on fish

While there has been no recharge this 2022-2023 season, the presence of the same fish species in similar densities in R1 riffle is evidence that the river recharge of the past has not adversely affected (changed) the in-river fish fauna downstream.

Fish passage over the weir

While R1 data suggest river recharge is not a fish migration barrier, the reduction in smaller sizes (juveniles) of species at C1 and C2 does suggest that there is a recruitment issue above the weir. Having inspected the weir we are of the opinion that passage is challenged and that some further modifications are required to better facilitate the range of fish species known to be present up stream.

Appendix C

Operation and Maintenance Logs Intake and Production Bores

Kāpiti Coast DISTRICT COUNCIL
Me Huri Whakamuri, Ka Titiro Whakamua

K4 Operation Bore Log

Date	FY	Filled in lo	Bore Leve	Pump Run	Temperatu	Flow Forw	Flow Reve	Cabinet Fi	Checked V	Well-head Security Comment	Comments
23/06/2022	2021/2022	Yes	49	7766	13.7	425815	5055	2 - Clean	Yes	OK	
30/06/2022	2021/2022	Yes	49	7766	13.7	425815	5068	2 - Clean	Yes	ok	
7/07/2022	2022/2023	Yes	49	7766	13.6	425815	5081	2 - Clean	Yes	Good	Nil
14/07/2022	2022/2023	Yes	49	7768	15.9	426299	5095	2 - Clean	Yes	Nil	Nil
21/07/2022	2022/2023	Yes	49	7773	13.7	427590	5108	2 - Clean	Yes		
28/07/2022	2022/2023	Yes	49	7773	13.7	427590	5121	2 - Clean	Yes	OK	
4/08/2022	2022/2023	Yes	49	7773	13.7	427590	5135	2 - Clean	Yes		
11/08/2022	2022/2023	Yes	45	7776	26.3	428285	5148	2 - Clean	Yes	OK	Motor temp higher than normal on pumps due to bore samples taken
17/08/2022	2022/2023	Yes	49	7776	13.7	428285	5160	2 - Clean	Yes		
25/08/2022	2022/2023	Yes	49	7776	13.7	428285	5176	3 - No Acti	Yes		
1/09/2022	2022/2023	Yes	49	7776	13.7	428285	5190	2 - Clean	Yes		
8/09/2022	2022/2023	Yes	48	7779	15.8	428839	5205	2 - Clean	Yes	OK	
15/09/2022	2022/2023	Yes	49	7779	13.7	428839	5220	2 - Clean	Yes		
23/09/2022	2022/2023	Yes	49	7779	13.7	428839	5236	3 - No Acti	Yes		
29/09/2022	2022/2023	Yes	49	7779	13.7	428839	5249	3 - No Acti	Yes		
6/10/2022	2022/2023	Yes	49	7779	13.6	428839	5263	2 - Clean	Yes	OK	
14/10/2022	2022/2023	Yes	49	7781	13.8	429300	5279	2 - Clean	Yes		
20/10/2022	2022/2023	Yes	49	7781	13.7	429300	5293	3 - No Acti	Yes		
27/10/2022	2022/2023	Yes	49	7781	13.7	429300	5309	3 - No Acti	Yes	Ok	
3/11/2022	2022/2023	Yes	49	7781	13.7	429300	5325	3 - No Acti	Yes		
10/11/2022	2022/2023	Yes	49	7781	13.7	429300	5342	2 - Clean	Yes	Ok	
17/11/2022	2022/2023	Yes	49	7781	13.6	429300	5360	2 - Clean	Yes		
24/11/2022	2022/2023	Yes	49	7783	13.8	429919	5377	3 - No Acti	Yes	Ok	
1/12/2022	2022/2023	Yes	49	7783	13.7	429919	5394	2 - Clean	Yes	Ok	
8/12/2022	2022/2023	Yes	29	7784	29.4	430209	5411	2 - Clean	Yes		
16/12/2022	2022/2023	Yes	49	7785	13.7	430432	5434	2 - Clean	Yes		
22/12/2022	2022/2023	Yes	49	7787	13.8	430825	5450	2 - Clean	Yes	Ok	
29/12/2022	2022/2023	Yes	49	7787.56	13.7	430825	5474	2 - Clean	Yes	OK	
5/01/2023	2022/2023	Yes	49	7787.56	13.7	430825	5493	2 - Clean	Yes		
12/01/2023	2022/2023	Yes	49	7787	13.7	430825	5510	2 - Clean	Yes	OK	
19/01/2023	2022/2023	Yes	49	7791.45	13.8	431731	5529	2 - Clean	Yes		
26/01/2023	2022/2023	Yes	49	7791	13.7	431731	5529	3 - No Acti	Yes		
2/02/2023	2022/2023	Yes	49	7791.45	13.7	431732	5573	2 - Clean	Yes		
9/02/2023	2022/2023	Yes	29	7792	29.3	432042	5593	3 - No Acti	Yes		
16/02/2023	2022/2023	Yes	49	7793	13.7	432185	5613	2 - Clean	Yes	Ok	
23/02/2023	2022/2023	Yes	49	7793.4	13.7	432185	5629	2 - Clean	Yes	OK	
2/03/2023	2022/2023	Yes	49	7793	13.7	432185	5646	2 - Clean	Yes	Ok	
8/03/2023	2022/2023	Yes	29	7794	28.6	432520	5661	3 - No Acti	Yes		
16/03/2023	2022/2023	Yes	49	7795	13.7	432653	5682	2 - Clean	Yes	Ok	
23/03/2023	2022/2023	Yes	49	7795.42	13.7	432653	5698	2 - Clean	Yes	OK	
30/03/2023	2022/2023	Yes	49	7795.4	13.6	432653	57.12	2 - Clean	Yes		
6/04/2023	2022/2023	Yes	49	7795.41	13.7	432653	5727	2 - Clean	Yes	OK	
13/04/2023	2022/2023	Yes	30	7796	28.6	432801	5743	3 - No Acti	Yes	Ok	
20/04/2023	2022/2023	Yes	49	7797.71	13.7	433187	5759	2 - Clean	Yes	OK	
27/04/2023	2022/2023	Yes	49	7797	13.7	433187	5774	2 - Clean	Yes		
4/05/2023	2022/2023	Yes	49	7797.71	13.7	433187	5789	2 - Clean	Yes	OK	
11/05/2023	2022/2023	Yes	29	7799.63	29.2	433638	5805	2 - Clean	Yes		
18/05/2023	2022/2023	Yes	49	7800	13.7	433753	7081	3 - No Acti	Yes		
25/05/2023	2022/2023	Yes	49	7800.15	13.7	433753	5833	2 - Clean	Yes		
1/06/2023	2022/2023	Yes	49	7800.12	13.7	433753	5848	2 - Clean	Yes	OK	
8/06/2023	2022/2023	Yes	29	7801.19	29.2	433997	5862	2 - Clean	Yes		
15/06/2023	2022/2023	Yes	49	7802	13.7	434271	5876	3 - No Acti	Yes		Plc not ack alarm
22/06/2023	2022/2023	Yes	49	7802	13.6	434271	5890	2 - Clean	Yes	Ok	Filter padlock seized needs replacement- got it off with a struggle & lubed it b
29/06/2023	2022/2023	Yes	49	7802.37	13.7	434271	5904	2 - Clean	Yes	OK	
6/07/2023	2023/2024	Yes	49	7802	13.7	434271	5917	2 - Clean	Yes	Ok	Dings in cabinet, 5 in total, worst one photographed, not sure if they were the
13/07/2023	2023/2024	Yes	30	7802.97	29.1	434410	5930	2 - Clean	Yes		

Kāpiti Coast DISTRICT COUNCIL
Me Huri Whakamuri, Ka Titiro Whakamua

K5 Operation Bore Log

Date	FY	Filled in lo	Bore Leve	Pump Run	Temperatu	Flow Forw	Flow Reve	Cabinet Fi	Checked V	Well-head Security (	Comments
28/04/2022	2021/2022	Yes	55	5440	15	11111.3	0.8	2 - Clean	Yes		Alarm does not deactivat
5/05/2022	2021/2022	Yes	55	5440	15	11111.3	0.8	2 - Clean	Yes	OK	Could not deactivate cab
12/05/2022	2021/2022	Yes	53	5443	15.5	11393.4	0.8	3 - No Acti	Yes		
19/05/2022	2021/2022	Yes	56	5443	14.9	11393.4	0.8	2 - Clean	Yes	OK	Could not deactivate cab
26/05/2022	2021/2022	Yes	55	5443	14.9	11393.4	0.8	2 - Clean	Yes	OK	
9/06/2022	2021/2022	Yes	56	5443	14.9	11393	0.8	3 - No Acti	Yes		
16/06/2022	2021/2022	Yes	53	5445	15.6	11637.2	0.8	3 - No Acti	Yes	Ok	
23/06/2022	2021/2022	Yes	56	5445	14.9	11637.2	0.8	2 - Clean	Yes	OK	
30/06/2022	2021/2022	Yes	56	5445	14.9	11637.2	0.8	2 - Clean	Yes	ok	
7/07/2022	2022/2023	Yes	56	5445	14.8	11637	0.8	2 - Clean	Yes	Good	Alarm faulty
14/07/2022	2022/2023	Yes	52	5447	15.9	11894	0.8	2 - Clean	Yes		
21/07/2022	2022/2023	Yes	56	5447	14.8	11895	0.8	2 - Clean	Yes		
28/07/2022	2022/2023	Yes	56	5447	14.9	11895	0.8	2 - Clean	Yes	OK	
4/08/2022	2022/2023	Yes	56	5447	15	11895	0.8	2 - Clean	Yes		
11/08/2022	2022/2023	Yes	49	5450	17.4	12262.8	0.8	2 - Clean	Yes	OK	
17/08/2022	2022/2023	Yes	56	5450	14.9	12262.8	0.8	2 - Clean	Yes		
25/08/2022	2022/2023	Yes	56	5450	14.9	12262	0.8	3 - No Acti	Yes		
1/09/2022	2022/2023	Yes	56	5450	14.9	12262.8	0.8	2 - Clean	Yes		
8/09/2022	2022/2023	Yes	52	5452	15.7	12560.9	0.8	2 - Clean	Yes	OK	
15/09/2022	2022/2023	Yes	56	5452	14.9	12560.9	0.8	2 - Clean	Yes		
23/09/2022	2022/2023	Yes	56	5452	14.9	12560	0.8	3 - No Acti	Yes		
29/09/2022	2022/2023	Yes	56	5452	14.9	12560.9	0.8	3 - No Acti	Yes		
6/10/2022	2022/2023	Yes	56	5452	14.9	12560.9	0.8	2 - Clean	Yes	OK	
14/10/2022	2022/2023	Yes	55	5454.74	15	12800.8	0.8	2 - Clean	Yes		
20/10/2022	2022/2023	Yes	56	5454	14.9	12800	0.8	3 - No Acti	Yes		
27/10/2022	2022/2023	Yes	56	5454	15	12800.8	0.8	3 - No Acti	Yes	Ok	
3/11/2022	2022/2023	Yes	56	5454	14.9	12800	0.8	3 - No Acti	Yes		alarm not acktrees need
10/11/2022	2022/2023	Yes	56	5454	15	12800.8	0.8	2 - Clean	Yes	Ok	
17/11/2022	2022/2023	Yes	56	5454	14.9	12800	0.81	2 - Clean	Yes		alarm not ack
24/11/2022	2022/2023	Yes	55	5457	15	13125	0.81	3 - No Acti	Yes	Ok	PLC panel view LCD scr
1/12/2022	2022/2023	Yes	56	5457	14.9	13125	0.81	2 - Clean	Yes	Ok	A water blast of concrete
8/12/2022	2022/2023	Yes	24	5458	26.2	13296.2	0.81	2 - Clean	Yes		
16/12/2022	2022/2023	Yes	56	5459	14.9	13391.3	0.81	2 - Clean	Yes		Blank screen
22/12/2022	2022/2023	Yes	56	5460	15	13510.6	0.81	2 - Clean	Yes	Ok	
29/12/2022	2022/2023	Yes	56	5460.86	15	13510.6	0.81	2 - Clean	Yes	OK	
5/01/2023	2022/2023	Yes	56	5460.86	15	13510.6	0.81	2 - Clean	Yes		
12/01/2023	2022/2023	Yes	56	5460.86	15	13510.6	0.81	2 - Clean	Yes	OK	
19/01/2023	2022/2023	Yes	55	5464.79	15	13934.5	0.81	2 - Clean	Yes		
26/01/2023	2022/2023	Yes	55	5464	15.1	13934.5	0.81	3 - No Acti	Yes		
2/02/2023	2022/2023	Yes	56	5464	15	13934.5	0.81	2 - Clean	Yes		
9/02/2023	2022/2023	Yes	27	5466	24.7	14091	0.81	3 - No Acti	Yes		
16/02/2023	2022/2023	Yes	56	5466	14.9	14151.5	0.82	2 - Clean	Yes	Ok	
23/02/2023	2022/2023	Yes	55	5466.82	14.9	14151.5	0.82	2 - Clean	Yes	OK	
2/03/2023	2022/2023	Yes	55	5466	14.9	14151.5	0.82	2 - Clean	Yes	Ok	
9/03/2023	2022/2023	Yes	27	5468	24.3	14323	0.84	3 - No Acti	Yes		
16/03/2023	2022/2023	Yes	55	5468	15	14378.1	0.84	2 - Clean	Yes	Ok	Swept bore apron - grav
23/03/2023	2022/2023	Yes	55	5468.93	15	14378.1	0.86	2 - Clean	Yes	OK	
30/03/2023	2022/2023	Yes	55	5468.9	14.9	14378.1	0.86	2 - Clean	Yes		
6/04/2023	2022/2023	Yes	55	5468.93	14.9	14378.1	0.86	2 - Clean	Yes	OK	
13/04/2023	2022/2023	Yes	29	5469	24.2	14456.6	0.87	3 - No Acti	Yes	Ok	
20/04/2023	2022/2023	Yes	56	5471.21	14.9	14622.9	0.88	2 - Clean	Yes	OK	
27/04/2023	2022/2023	Yes	55	5471	15	14622.9	0.89	2 - Clean	Yes		
4/05/2023	2022/2023	Yes	56	5471.22	14.9	14622.9	0.9	2 - Clean	Yes	OK	
11/05/2023	2022/2023	Yes	26	5473.02	24.7	14818.5	0.91	2 - Clean	Yes		
18/05/2023	2022/2023	Yes	56	5473	14.9	14896	0.92	3 - No Acti	Yes		
25/05/2023	2022/2023	Yes	55	5473.75	14.9	14896.2	0.92	2 - Clean	Yes		

Kāpiti Coast DISTRICT COUNCIL
Me Huri Whakamuri, Ka Titiro Whakamua

K6 Operation Bore Log

Date	FY	Filled in lo	Bore Leve	Pump Rur	Temperati	Flow Forv	Flow Reve	Cabinet Fl	Checked V	Compressor Service Due Date	Run comp	Well-head Secur	Comments
16/06/2022	2021/2022	Yes	49	7236	16.4	591356	266193	3 - No Act	Yes	16/01/2023	Yes	Ok	Signs of flooding
23/06/2022	2021/2022	Yes	50	7236	14.5	591356	266193	2 - Clean	Yes	1/01/2023	Yes	OK	
30/06/2022	2021/2022	Yes	50	7236	14.5	591356	266193	2 - Clean	Yes	30/01/2023	Yes	ok	
7/07/2022	2022/2023	Yes	50	7236	14.5	591359	266197	2 - Clean	Yes	2/01/2023	Yes	Good	No Moss or weeds
14/07/2022	2022/2023	Yes	49	7238	16.5	591796	266197	2 - Clean	Yes	1/01/2023	Yes		
21/07/2022	2022/2023	Yes	50	7238	14.5	591796	266197	2 - Clean	Yes	21/07/2022	Yes		
28/07/2022	2022/2023	Yes	50	7238	14.5	591796	266197	2 - Clean	Yes	1/01/2023	Yes	OK	
4/08/2022	2022/2023	Yes	50	7238	14.5	591796	266198	2 - Clean	Yes	4/07/2022	Yes		
11/08/2022	2022/2023	Yes	45	7241	22	592437	266198	2 - Clean	Yes	11/01/2023	Yes	OK	
17/08/2022	2022/2023	Yes	50	7241	14.5	592437	266198	2 - Clean	Yes	1/01/2023	Yes		
25/08/2022	2022/2023	Yes	50	7241	14.5	592437	266198	3 - No Act	Yes	18/01/2023	Yes		
1/09/2022	2022/2023	Yes	50	7241	14.5	592437	266198	2 - Clean	Yes	1/07/2022	Yes		
8/09/2022	2022/2023	Yes	48	7243	16.3	592936	266198	2 - Clean	Yes	1/01/2023	Yes	OK	
15/09/2022	2022/2023	Yes	50	7243	14.5	592936	266198	2 - Clean	Yes	15/07/2022	Yes		
23/09/2022	2022/2023	Yes	50	7243	14.5	592936	266198	3 - No Act	Yes	18/01/2023	Yes		
29/09/2022	2022/2023	Yes	50	7243	14.5	592936	266199	3 - No Act	Yes	1/01/2023	Yes		Bleed compressor & cylinder
6/10/2022	2022/2023	Yes	50	7243	14.5	592936	266199	2 - Clean	Yes	6/01/2023	Yes	OK	
14/10/2022	2022/2023	Yes	49	7245.69	14.7	593354	266199	2 - Clean	Yes	1/01/2023	Yes		
20/10/2022	2022/2023	Yes	50	7245.7	14.5	593354	266200	3 - No Act	Yes	18/01/2023	Yes		
27/10/2022	2022/2023	Yes	50	7245.7	14.5	593354	266201	3 - No Act	Yes	10/01/2023	Yes	Ok	
3/11/2022	2022/2023	Yes	50	7245.9	14.5	593354	266204	3 - No Act	Yes	10/01/2023	Yes		alarm not ack
10/11/2022	2022/2023	Yes	49	7245.9	14.5	593355	266212	2 - Clean	Yes	10/01/2023	Yes	Ok	Filter grill tabs all busted, grill won't stay in place. Secured now with one screw (see pic)
17/11/2022	2022/2023	Yes	49	7245.9	14.5	593355	266218	2 - Clean	Yes	18/01/2023	Yes		alarm not ack
24/11/2022	2022/2023	Yes	50	7248	14.7	593914	266221	3 - No Act	Yes	18/01/2023	Yes	Ok	Bore concrete pad needs a sweep - pine tree debris
1/12/2022	2022/2023	Yes	49	7248	14.5	593914	266223	2 - Clean	Yes	18/01/2023	Yes	Ok	Operator has done a nice job of correcting labelling on valve handle - attention to detail & nice finish :)
8/12/2022	2022/2023	Yes	29	7250	31.3	594302	266226	2 - Clean	Yes	8/03/2023	Yes		
16/12/2022	2022/2023	Yes	49	7250	14.5	594384	266233	2 - Clean	Yes	16/03/2023	Yes		
22/12/2022	2022/2023	Yes	49	7252	14.6	594734	266236	2 - Clean	Yes	1/03/2023	Yes	Ok	
29/12/2022	2022/2023	Yes	49	7252.34	14.5	594734	266245	2 - Clean	Yes	1/01/2023	Yes	OK	
5/01/2023	2022/2023	Yes	50	7252.34	14.5	594734	266249	2 - Clean	Yes	5/03/2023	Yes		
12/01/2023	2022/2023	Yes	49	7252.35	14.5	594734	266251	2 - Clean	Yes	18/01/2023	Yes	OK	
19/01/2023	2022/2023	Yes	49	7256.25	14.6	595548	266253	2 - Clean	Yes	19/03/2023	Yes		
26/01/2023	2022/2023	Yes	49	7256.25	14.5	595548	266253	3 - No Act	Yes	26/01/2023	Yes		compressor manual control switch hard to turn on weeds at back of shed reset alarm not working on cabinet console. reset the power to the display and hey presto it worked again. can disable alarm from display unit
2/02/2023	2022/2023	Yes	49	7256.26	14.5	595549	266256	2 - Clean	Yes	2/03/2023	Yes		
9/02/2023	2022/2023	Yes	30	7257	31	595882	266258	3 - No Act	Yes	2/03/2023	Yes		
16/02/2023	2022/2023	Yes	49	7258	14.5	595967	266259	2 - Clean	Yes	1/03/2023	Yes	Ok	Comp svce date a bit vague
23/02/2023	2022/2023	Yes	49	7258.27	14.5	595967	266259	2 - Clean	Yes	23/01/2023	Yes	OK	
2/03/2023	2022/2023	Yes	49	7258.27	14.5	595968	266263	2 - Clean	Yes	23/10/2023	Yes	Ok	Air relief on bore pipe could do with a clean out some time - dripping
8/03/2023	2022/2023	Yes	30	7259	30	596313	266263	3 - No Act	Yes	23/10/2023	Yes		
16/03/2023	2022/2023	Yes	49	7260	14.5	596389	330126	2 - Clean	Yes	23/10/2023	Yes	Ok	Gave bore apron a sweep, debris
23/03/2023	2022/2023	Yes	49	7260.3	14.5	596389	266263	2 - Clean	Yes	23/03/2024	Yes	OK	
30/03/2023	2022/2023	Yes	49	7260.3	14.5	596389	266263	2 - Clean	Yes	23/10/2023	Yes	Pic below is from	
6/04/2023	2022/2023	Yes	49	7260.3	14.5	596389	266264	2 - Clean	Yes	23/02/2024	Yes	OK	
13/04/2023	2022/2023	Yes	31	7261	29.9	596612	266264	3 - No Act	Yes	23/10/2023	No	Ok	Compressor already running
20/04/2023	2022/2023	Yes	49	7262.68	14.5	596884	266264	2 - Clean	Yes	23/02/2024	Yes	OK	
27/04/2023	2022/2023	Yes	49	7262.68	14.5	596884	266264	2 - Clean	Yes	23/10/2023	Yes		Seap, ref where the finger is pointing in the photo
4/05/2023	2022/2023	Yes	49	7262.68	14.5	596884	266264	2 - Clean	Yes	23/02/2024	Yes	OK	
11/05/2023	2022/2023	Yes	30	7264.07	31.2	597174	266265	2 - Clean	Yes	23/02/2024	Yes		
18/05/2023	2022/2023	Yes	49	7265	14.5	597386	266265	3 - No Act	Yes	23/02/2024	Yes		
25/05/2023	2022/2023	Yes	49	7265.11	14.5	597386	266265	2 - Clean	Yes	23/10/2023	Yes		Cabinet alarm faulty
1/06/2023	2022/2023	Yes	49	7265.11	14.5	597386	266265	2 - Clean	Yes	3/02/2024	Yes	OK	
8/06/2023	2022/2023	Yes	30	7266.46	30.9	597668	266265	2 - Clean	Yes	23/02/2024	Yes		
15/06/2023	2022/2023	Yes	49	7267	14.5	597852	266265	3 - No Act	Yes	23/02/2024	Yes		Alarm not ack
22/06/2023	2022/2023	Yes	49	7267	14.5	597852	266265	2 - Clean	Yes	23/10/2023	Yes	Ok	Could do with a weed inside compressor compound
29/06/2023	2022/2023	Yes	49	7267.36	14.5	597852	266265	2 - Clean	Yes	23/02/2024	Yes	OK	
6/07/2023	2023/2024	Yes	49	7267.36	14.5	597852	266265	2 - Clean	Yes	23/10/2023	Yes	Ok	

Kāpiti Coast DISTRICT COUNCIL
Me Huri Whakamuri, Ka Titiro Whakamua

K10 Operational Bore Log

Date	FY	Filled in log book?	Bore Level above Pump	Pump Run Hours	Temperature	Flow Forward	Flow Reverse	Cabinet Filter	Checked Well-head	Compressor Service Due Date	Run compressor manually?	Compressor Run Hours	Well-head Security Comment	Comments
9/06/2022	2021/2022	Yes	52	4968	14.3	28792	111	3 - No Action	Yes	18/01/2023	Yes	193.00		
16/06/2022	2021/2022	Yes	52	4970	15	28913.11	111.36	3 - No Action	Yes	16/01/2023	Yes	194.00	Ok	
23/06/2022	2021/2022	Yes	52	4970	14.3	28913.11	111.36	2 - Clean	Yes	1/01/2023	Yes	194.50	OK	
1/07/2022	2022/2023	Yes	52	4970	14.3	28913.11	111.37	2 - Clean	Yes	1/01/2023	Yes	194.90	ok	
7/07/2022	2022/2023	Yes	52	4970	14.2	28913.11	111.37	2 - Clean	Yes	2/01/2023	Yes	195.20	good	Nil
14/07/2022	2022/2023	Yes	52	4973	16.8	29036.5	111.37	2 - Clean	Yes	1/01/2023	Yes	196.10	Nil	Nil
21/07/2022	2022/2023	Yes	52	4977	14.3	29321.59	111.37	2 - Clean	Yes	21/07/2022	Yes	196.40		
28/07/2022	2022/2023	Yes	53	4977	14.3	29321.59	111.37	2 - Clean	Yes	1/01/2023	Yes	196.00	OK	
4/08/2022	2022/2023	Yes	52	4977	14.3	29321.59	111.37	2 - Clean	Yes	4/07/2022	Yes	197.27		
11/08/2022	2022/2023	Yes	32	4980	24.2	29452.51	111.37	2 - Clean	Yes	11/01/2023	Yes	198.27	OK	
17/08/2022	2022/2023	Yes	52	4980	14.3	29496.1	111.37	2 - Clean	Yes	1/01/2023	Yes	198.27		
25/08/2022	2022/2023	Yes	52	4980	14.3	294296	111	3 - No Action	Yes	18/01/2023	Yes	198.00		
1/09/2022	2022/2023	Yes	52	4980	14.3	29496.1	111.37	2 - Clean	Yes	1/07/2022	Yes	199.17		
8/09/2022	2022/2023	Yes	51	4983	17	29645.24	111.37	2 - Clean	Yes	1/01/2023	Yes	200.00	OK	
15/09/2022	2022/2023	Yes	52	4983	14.3	29645.24	111.37	2 - Clean	Yes	15/01/2023	Yes	200.27		
23/09/2022	2022/2023	Yes	52	4983	14.3	29645	111	3 - No Action	Yes	18/01/2023	Yes	200.00		
29/09/2022	2022/2023	Yes	52	4983	14.3	29645.24	111.37	3 - No Action	Yes	1/01/2023	Yes	200.63		Bleed compressor & cylinder
6/10/2022	2022/2023	Yes	52	4983	14.3	29645.24	111.37	2 - Clean	Yes	6/01/2023	Yes	200.00	OK	
14/10/2022	2022/2023	Yes	52	4985	14.3	29765.71	111.37	2 - Clean	Yes	1/01/2023	Yes	201.72		
20/10/2022	2022/2023	Yes	52	4985	14.3	29765	111	3 - No Action	Yes	18/01/2023	Yes	201.00		
27/10/2022	2022/2023	Yes	52	4985	14.3	29765.71	111.37	3 - No Action	Yes	10/01/2023	Yes	201.74	Ok but compressor shed latch s	
3/11/2022	2022/2023	Yes	52	4985	14.3	29765	111	3 - No Action	Yes	10/01/2023	Yes	202.00		
10/11/2022	2022/2023	Yes	52	4985	14.3	29765.71	111.37	2 - Clean	Yes	10/01/2023	Yes	202.13	Ok	
17/11/2022	2022/2023	Yes	52	4985	14.3	29765	111	2 - Clean	Yes	10/01/2023	Yes	202.00		
24/11/2022	2022/2023	Yes	52	4988	14.3	29933.93	111.37	3 - No Action	Yes	10/01/2023	Yes	203.22	Ok	
1/12/2022	2022/2023	Yes	52	4988	14.3	29933.93	111.37	2 - Clean	Yes	10/01/2023	Yes	203.23	Ok	
8/12/2022	2022/2023	Yes	33	4989	24.5	29984.13	111.37	2 - Clean	Yes	8/03/2023	Yes	203.95		
15/12/2022	2022/2023	Yes	52	4990	14.3	30071.94	111.37	2 - Clean	Yes	15/03/2023	Yes	203.95		
22/12/2022	2022/2023	Yes	52	4992	14.3	30178.34	111.37	2 - Clean	Yes	1/03/2022	Yes	204.43	Ok	
29/12/2022	2022/2023	Yes	52	4992	14.3	30178.34	111.37	2 - Clean	Yes	1/01/2023	Yes	204.43	OK	
5/01/2023	2022/2023	Yes	52	4992.31	14.3	30178.34	111.37	2 - Clean	Yes	5/03/2023	Yes	204.57		
12/01/2023	2022/2023	Yes	52	4992.31	14.3	30178.34	111.37	2 - Clean	Yes	18/01/2023	Yes	204.82	OK	
19/01/2023	2022/2023	Yes	52	4996.19	14.3	30408.87	111.37	2 - Clean	Yes	19/03/2023	Yes	205.65		
26/01/2023	2022/2023	Yes	52	4996.19	14.3	30408	111.37	3 - No Action	Yes	26/01/2023	Yes	205.00		
2/02/2023	2022/2023	Yes	52	4996.19	14.3	30408.87	111.37	2 - Clean	Yes	2/03/2023	Yes	205.79		
9/02/2023	2022/2023	Yes	32	4997	24.4	30471	111	3 - No Action	Yes	23/04/2023	Yes	206.00		
16/02/2023	2022/2023	Yes	52	4998	14.3	30528.4	111.37	2 - Clean	Yes	1/03/2023	Yes	206.68	Ok	Comp service date's a bit vague
23/02/2023	2022/2023	Yes	52	4998.21	14.3	30528.4	111.37	2 - Clean	Yes	23/01/2023	Yes	208.96	OK	
2/03/2023	2022/2023	Yes	52	4998.21	14.3	30528.4	111.37	2 - Clean	Yes	23/10/2023	Yes	207.00	Ok	
9/03/2023	2022/2023	Yes	33	4999	24.2	30600	111	3 - No Action	Yes	23/10/2023	Yes	208.00		
16/03/2023	2022/2023	Yes	52	5000	14.3	30654.19	111.37	2 - Clean	Yes	23/10/2023	Yes	208.00	Ok	
23/03/2023	2022/2023	Yes	52	5000.34	14.3	30654.19	111.37	2 - Clean	Yes	24/03/2024	Yes	209.22	OK	
30/03/2023	2022/2023	Yes	52	5000.34	14.2	30654.19	111.37	2 - Clean	Yes	23/10/2023	Yes	209.38		
6/04/2023	2022/2023	Yes	52	5000.34	14.3	30654.19	111.37	2 - Clean	Yes	23/02/2024	Yes	209.38	OK	
13/04/2023	2022/2023	Yes	32	5002	24.3	30770.94	111.37	3 - No Action	Yes	23/10/2023	Yes	210.00	Ok	
20/04/2023	2022/2023	Yes	52	5002.69	14.3	30793.71	111.37	2 - Clean	Yes	23/02/2024	Yes	210.06	OK	
27/04/2023	2022/2023	Yes	52	5002.69	14.3	30793.71	111.37	2 - Clean	Yes	23/10/2023	Yes	210.06		
4/05/2023	2022/2023	Yes	52	5002	14.3	30793.71	111.37	2 - Clean	Yes	23/02/2024	Yes	210.06	OK	
11/05/2023	2022/2023	Yes	32	5005.11	24.6	30937.28	111.37	2 - Clean	Yes	23/10/2023	Yes	210.59		
18/05/2023	2022/2023	Yes	52	5005.11	14.3	30949	111	3 - No Action	Yes	23/02/2024	Yes	216.00		
25/05/2023	2022/2023	Yes	52	5005.33	14.3	30949.81	111.37	2 - Clean	Yes	23/10/2023	Yes	222.93		Cabinet alarm faulty
1/06/2023	2022/2023	Yes	52	5005.33	14.3	30949.81	111.37	2 - Clean	Yes	23/02/2024	Yes	226.48	OK	
8/06/2023	2022/2023	Yes	33	5005.71	24.1	30972.24	111.37	2 - Clean	Yes	23/10/2023	Yes	237.80		
15/06/2023	2022/2023	Yes	52	5007	14.3	31088	111	3 - No Action	Yes	23/02/2024	Yes	271.00		Plc panel view not working, not ack alarm.Bleed valve on compr
22/06/2023	2022/2023	Yes	52	5007	14.3	31088.34	111.37	2 - Clean	Yes	23/10/2023	Yes	272.00	Ok	
29/06/2023	2022/2023	Yes	52	5007.67	14.3	31088.34	111.37	2 - Clean	Yes	23/02/2024	Yes	272.80	OK	

Kāpiti Coast DISTRICT COUNCIL
Me Huri Whakamuri, Ka Titiro Whakamua

K12 Operational Bore Log

Date	FY	Filled in log	Bore Level	Pump Run	Temperature	Flow Forward	Flow Reverse	Cabinet Filter	Checked Valve	Well-head	Comments
9/06/2022	2021/2022	Yes	62.2	1018	13.7	36617.59	54.5	3 - No Action	Yes		
16/06/2022	2021/2022	Yes	60	1020	13.9	36675.6	54.5	3 - No Action	Yes	Ok	Rust sighted on bore
23/06/2022	2021/2022	Yes	62.3	1020	13.7	36675.6	54.5	2 - Clean	Yes	OK	
30/06/2022	2021/2022	Yes									
7/07/2022	2022/2023	Yes	62.4	1020	13.7	36675.6	54.5	2 - Clean	Yes	Good	Nil
14/07/2022	2022/2023	Yes	60.8	1020	14	36737	54.5	2 - Clean	Yes		
21/07/2022	2022/2023	Yes	62.2	1024	13.7	36887.9	54.5	2 - Clean	Yes		
28/07/2022	2022/2023	Yes	62.5	1024	13.7	36887.9	54.5	2 - Clean	Yes	OK	
4/08/2022	2022/2023	Yes	62.5	1024	13.7	36887.9	54.5	2 - Clean	Yes		
11/08/2022	2022/2023	Yes	58.4	1025	16.1	36978.28	54.5	2 - Clean	Yes	OK	
17/08/2022	2022/2023	Yes	62.5	1025	13.7	36978.28	54.5	2 - Clean	Yes		
25/08/2022	2022/2023	Yes	62.6	1025	13.7	36978	54	3 - No Action	Yes		
1/09/2022	2022/2023	Yes	62.7	1025	13.7	36978.28	54.5	2 - Clean	Yes		
8/09/2022	2022/2023	Yes	61	1026	13.9	37050	54.5	2 - Clean	Yes	OK	blocking fence fixing. requires repair
15/09/2022	2022/2023	Yes	62.5	1026	13.7	37050.88	54.5	2 - Clean	Yes		
23/09/2022	2022/2023	Yes	62.6	1026	13.7	37050	54	3 - No Action	Yes		
29/09/2022	2022/2023	Yes	62.5	1026	13.7	37050.88	54.5	3 - No Action	Yes		
6/10/2022	2022/2023	Yes	62.5	1026	13.7	37050	54.5	2 - Clean	Yes	OK	
14/10/2022	2022/2023	Yes	62.2	1027.2	13.7	37109.3	54.5	2 - Clean	Yes		
20/10/2022	2022/2023	Yes	62.4	1027	13.7	37109	54.5	3 - No Action	Yes		
27/10/2022	2022/2023	Yes	62.4	1027	13.7	37109.3	54.5	3 - No Action	Yes	Ok	
3/11/2022	2022/2023	Yes	62.4	1027	13.6	37109	54	3 - No Action	Yes		
10/11/2022	2022/2023	Yes	62.3	1027	13.7	37109.31	54.5	2 - Clean	Yes		
17/11/2022	2022/2023	Yes	62.3	1027	13.6	37109	54.5	2 - Clean	Yes		
24/11/2022	2022/2023	Yes	62	1029	13.7	37192.83	54.5	3 - No Action	Yes	Ok	
1/12/2022	2022/2023	Yes	62.4	1029	13.6	37192.83	54.5	2 - Clean	Yes	Ok	Concrete pad was Water blasted last week
8/12/2022	2022/2023	Yes	24.8	1031.6	27.7	37242	54.5	2 - Clean	Yes		
16/12/2022	2022/2023	Yes									
22/12/2022	2022/2023	Yes	62.2	1033	13.7	37310.34	54.5	2 - Clean	Yes	Ok	
29/12/2022	2022/2023	Yes	62.3	1033.8	13.7	37310.34	54.5	2 - Clean	Yes	OK	
5/01/2023	2022/2023	Yes	62.2	1033.8	13.7	37310.35	54.5	2 - Clean	Yes		
12/01/2023	2022/2023	Yes	62.3	1033.8	13.7	37310.35	54.5	2 - Clean	Yes	OK	
19/01/2023	2022/2023	Yes	61.9	1037	13.7	37424.25	54.5	2 - Clean	Yes		
26/01/2023	2022/2023	Yes	62.1	1037	13.7	37424	54.5	3 - No Action	Yes		rust
2/02/2023	2022/2023	Yes	62.1	1037	13.7	37424.25	54.5	2 - Clean	Yes		
9/02/2023	2022/2023	Yes	24.6	1039	27.6	37478	54.5	3 - No Action	Yes		
16/02/2023	2022/2023	Yes	62.1	1039	13.7	37481.76	54.5	2 - Clean	Yes	Ok	Bit of subsidence behind K12, my boot went into it. Followed it & caved it in, didn't seem to have an opening like a rabbit hole, about 1.5m long
23/02/2023	2022/2023	Yes	62	1039.2	13.7	37481.76	54.5	2 - Clean	Yes	OK	Remove car parts rubbish from bore head fenced cage
2/03/2023	2022/2023	Yes	62.1	1039	13.6	37481.76	54.5	2 - Clean	Yes	Ok	
9/03/2023	2022/2023	Yes	24.3	1041	26.6	37540	54.5	3 - No Action	Yes		
16/03/2023	2022/2023	Yes	62	1041	13.6	37543.26	54.5	2 - Clean	Yes	Ok	
23/03/2023	2022/2023	Yes	62	1041.3	13.7	37543.26	54.5	2 - Clean	Yes	OK	
30/03/2023	2022/2023	Yes	62.1	1041.3	13.7	37543.26	54.5	2 - Clean	Yes		
6/04/2023	2022/2023	Yes	62	1041.3	13.7	37543.27	54.5	2 - Clean	Yes	OK	
13/04/2023	2022/2023	Yes	25.3	1042	26.6	37580.63	54.5	3 - No Action	Yes	Ok	
20/04/2023	2022/2023	Yes	62.1	1043	13.7	37604.89	54.5	2 - Clean	Yes	OK	
27/04/2023	2022/2023	Yes	62.2	1043	13.7	37604.89	54.5	2 - Clean	Yes		
4/05/2023	2022/2023	Yes	62.3	1043.5	13.7	37604.89	54.5	2 - Clean	Yes	OK	
11/05/2023	2022/2023	Yes	25	1045.1	27.5	37654.03	54.5	2 - Clean	Yes		
18/05/2023	2022/2023	Yes	62	1046	13.7	37680	54	3 - No Action	Yes		
25/05/2023	2022/2023	Yes	62.4	1046	13.7	37680.59	54.5	2 - Clean	Yes		
1/06/2023	2022/2023	Yes	62.3	1046	13.7	37680.59	54.5	2 - Clean	Yes	OK	
8/06/2023	2022/2023	Yes	25.6	1047.2	27.5	37717.75	54.5	2 - Clean	Yes		
15/06/2023	2022/2023	Yes	62.2	1048	13.7	37746	54.5	3 - No Action	Yes		
22/06/2023	2022/2023	Yes	62.3	1048	13.7	37746.5	54.5	2 - Clean	Yes	Ok	
29/06/2023	2022/2023	Yes	62.2	1048.1	13.7	37746.5	54.5	2 - Clean	Yes	OK	Wrap on front cabinet door is rubbing

Kāpiti Coast DISTRICT COUNCIL
Me Huri Whakamuri, Ka Titiro Whakamua

KB4 Operational Bore Log

Date	FY	Filled in lo	Bore Leve	Pump Run	Temperatu	Flow Forw	Flow Reve	Cabinet Fi	Checked V	Well-head	Comments
12/05/2022	2021/2022	Yes	36	5996	14.6	333091	6194	3 - No Acti	Yes		
19/05/2022	2021/2022	Yes	36	5996	14.7	333091	6210	2 - Clean	Yes	OK	
26/05/2022	2021/2022	Yes	36	5996	14.6	333091	6227	1 - Change	Yes	OK	
9/06/2022	2021/2022	Yes	36	5996	14.7	333091	6259	3 - No Acti	Yes		
16/06/2022	2021/2022	Yes	36	5996	14.7	333091	6278	3 - No Acti	Yes	Ok	
23/06/2022	2021/2022	Yes	36	5996	14.5	333091	6295	2 - Clean	Yes	OK	Electrical work been carry out on
30/06/2022	2021/2022	Yes	37	5996	14.6	333092	6312	2 - Clean	Yes	ok	
7/07/2022	2022/2023	Yes	36	5996	14.4	333092	6328	2 - Clean	Yes	Good	Nil
14/07/2022	2022/2023	Yes	37	5996	14.6	333092	6346	2 - Clean	Yes	Nil	Nil
21/07/2022	2022/2023	Yes	2	5996	14.5	333092	6363	2 - Clean	Yes		
28/07/2022	2022/2023	Yes	2	5996	14.6	333092	6380	2 - Clean	Yes	OK	
4/08/2022	2022/2023	Yes	3	5996	14.7	333092	6398	2 - Clean	Yes		
11/08/2022	2022/2023	Yes	3	5996	14.5	333092	6415	2 - Clean	Yes	OK	
17/08/2022	2022/2023	Yes	4	5996	14.7	333092	6431	2 - Clean	Yes		
25/08/2022	2022/2023	Yes	99	5996	14.7	333092	6450	3 - No Acti	Yes		
8/09/2022	2022/2023	Yes	0	5996	14.7	333093	6486	2 - Clean	Yes	OK	Borehole level has no display
15/09/2022	2022/2023	Yes	0	5996	14.6	333093	6504	2 - Clean	Yes		Bore level not showing on displa
23/09/2022	2022/2023	Yes	36	5996	14.6	333110	6523	3 - No Acti	Yes		
29/09/2022	2022/2023	Yes	36	5996	14.5	333110	6539	3 - No Acti	Yes		
6/10/2022	2022/2023	Yes	36	5996	14.4	333110	6556	2 - Clean	Yes	OK	
14/10/2022	2022/2023	Yes	36	5998.54	14.7	333359	6576	2 - Clean	Yes		
20/10/2022	2022/2023	Yes	36	5998	14.5	333359	6592	3 - No Acti	Yes		
27/10/2022	2022/2023	Yes	36	5998	14.5	333359	6609	3 - No Acti	Yes		
3/11/2022	2022/2023	Yes	36	5998	14.6	333360	6628	3 - No Acti	Yes		alarm not ack
10/11/2022	2022/2023	Yes	36	5998	14.6	333360	6647	2 - Clean	Yes	Ok	
17/11/2022	2022/2023	Yes	36	5998	14.5	333360	6665	2 - Clean	Yes		alarm not ACK
24/11/2022	2022/2023	Yes	36	6001	14.7	333703	6682	3 - No Acti	Yes	Ok	
1/12/2022	2022/2023	Yes	36	6001	14.7	333703	6700	2 - Clean	Yes	Ok	
8/12/2022	2022/2023	Yes	28	6002.37	23.8	333833	6718	2 - Clean	Yes		
16/12/2022	2022/2023	Yes	36	6003	14.7	333984	6739	2 - Clean	Yes		
22/12/2022	2022/2023	Yes	36	6005	14.9	334198	6753	2 - Clean	Yes	Ok	
29/12/2022	2022/2023	Yes	36	6005.36	14.8	334198	6771	2 - Clean	Yes	OK	
5/01/2023	2022/2023	Yes	36	6005.35	14.5	334198	6787	2 - Clean	Yes		
12/01/2023	2022/2023	Yes	36	6005.35	14.6	334198	6804	2 - Clean	Yes	OK	
19/01/2023	2022/2023	Yes	36	6009.22	14.7	334677	6820	2 - Clean	Yes		
26/01/2023	2022/2023	Yes	36	6009	14.8	334677	6820	3 - No Acti	Yes		alarm shutoff not working on disp
2/02/2023	2022/2023	Yes	36	6009.22	14.6	334678	6852	2 - Clean	Yes		
9/02/2023	2022/2023	Yes	28	6010	23.7	334825	6870	3 - No Acti	Yes		
16/02/2023	2022/2023	Yes	36	6011	14.5	334923	6887	2 - Clean	Yes	Ok	
23/02/2023	2022/2023	Yes	36	6011.21	14.6	334923	6903	2 - Clean	Yes	OK	
2/03/2023	2022/2023	Yes	36	6011	14.6	334924	6921	2 - Clean	Yes	Ok	
9/03/2023	2022/2023	Yes	28	6012	23.4	335084	6934	3 - No Acti	Yes		
16/03/2023	2022/2023	Yes	36	6013	14.7	335175	6952	2 - Clean	Yes	Ok	Gave bore apron a sweep, stone
23/03/2023	2022/2023	Yes	36	6013.25	14.6	335175	6968	2 - Clean	Yes	OK	
30/03/2023	2022/2023	Yes	36	6013.25	14.4	335175	6984	2 - Clean	Yes		
6/04/2023	2022/2023	Yes	36	6013.25	14.6	335175	7000	2 - Clean	Yes	OK	
13/04/2023	2022/2023	Yes	28	6014	23.5	335387	7016	3 - No Acti	Yes	Ok	
20/04/2023	2022/2023	Yes	36	6015.55	14.6	335458	7032	2 - Clean	Yes	OK	
27/04/2023	2022/2023	Yes	36	6015.55	14.5	335458	7048	2 - Clean	Yes		
4/05/2023	2022/2023	Yes	36	6015.52	14.6	335458	7065	2 - Clean	Yes	OK	
11/05/2023	2022/2023	Yes	28	6017.72	23.6	335730	7081	2 - Clean	Yes		
18/05/2023	2022/2023	Yes	49	7800	13.7	433753	7081	3 - No Acti	Yes		
18/05/2023	2022/2023	Yes	49	7800	13.7	433753	7081	3 - No Acti	Yes		
25/05/2023	2022/2023	Yes	36	6018.05	14.5	335767	7115	2 - Clean	Yes		
1/06/2023	2022/2023	Yes	36	6018.02	14.6	335767	7132	2 - Clean	Yes	OK	
8/06/2023	2022/2023	Yes	28	6019.01	23.5	335887	7149	2 - Clean	Yes		

Kāpiti Coast DISTRICT COUNCIL
Me Huri Whakamuri, Ka Titiro Whakamua

KB7 Operation Bore Log

Date	FY	Filled in log	Bore Level	Pump Run	Temperature	Flow Forward	Flow Reverse	Cabinet Fi	Checked V	Well-head Security Comment	Comments
31/03/2022	2021/2022	Yes	4	2034	24	21141	95	3 - No Act	Yes		
7/04/2022	2021/2022	Yes	35	2167	14.2	24031.88	95.33	2 - Clean	Yes		
14/04/2022	2021/2022	Yes	4	2305	23.9	27027.32	95.33	3 - No Act	Yes		
21/04/2022	2021/2022	Yes	38	2308	14.2	27095	95.33	3 - No Act	Yes		
28/04/2022	2021/2022	Yes	39	2308	14.2	27095.43	95.33	2 - Clean	Yes		
5/05/2022	2021/2022	Yes	39	2308	14.2	27095.44	95.33	2 - Clean	Yes	OK	Alarm OK this time
12/05/2022	2021/2022	Yes	38	2311	14.5	27145.83	95.34	3 - No Act	Yes		
19/05/2022	2021/2022	Yes	40	2311	14.2	27145.84	95.34	2 - Clean	Yes	OK	
26/05/2022	2021/2022	Yes	40	2311	14.2	27145.85	95.34	2 - Clean	Yes	OK	Well head flange corrosion requires attention
9/06/2022	2021/2022	Yes	40	2311	14.1	27145.88	95.34	3 - No Act	Yes		
16/06/2022	2021/2022	Yes	39	2313	14.6	27189.41	95.34	3 - No Act	Yes	Rust on bore flange	
23/06/2022	2021/2022	Yes	40	2313	14.2	27189.43	95.34	2 - Clean	Yes	OK	Corrosion still requires attention
30/06/2022	2021/2022	Yes	40	2313	14.1	27189	95.34	2 - Clean	Yes	ok	
7/07/2022	2022/2023	Yes	40	2313	14.1	27189.47	95.34	2 - Clean	Yes	Good	Nil
14/07/2022	2022/2023	Yes	39	2315	14.5	27235	95.34	2 - Clean	Yes		
21/07/2022	2022/2023	Yes	40	2320	14.1	27350.27	95.34	2 - Clean	Yes		
28/07/2022	2022/2023	Yes	40	2320	14.1	27350.28	95.35	2 - Clean	Yes	OK	
4/08/2022	2022/2023	Yes	40	2320	14.1	27350.29	95.35	2 - Clean	Yes		
11/08/2022	2022/2023	Yes	36	2323	14.3	27417.63	95.35	2 - Clean	Yes	OK	
17/08/2022	2022/2023	Yes	40	2323	14.1	27417.64	95.35	2 - Clean	Yes		
25/08/2022	2022/2023	Yes	41	2323	24.2	27417	95	3 - No Act	Yes		
1/09/2022	2022/2023	Yes	40	2323	14.1	27417.67	95.36	2 - Clean	Yes		
8/09/2022	2022/2023	Yes	39	2326	14.5	27471.96	95.36	2 - Clean	Yes	oK	
15/09/2022	2022/2023	Yes	40	2326	14.2	27471.96	95.36	2 - Clean			
23/09/2022	2022/2023	Yes	40	2326	14.2	27471	95	3 - No Act	Yes		
29/09/2022	2022/2023	Yes	40	2326	14.2	27471.98	95.36	3 - No Act	Yes		
6/10/2022	2022/2023	Yes	40	2326	14.1	27472	95.36	2 - Clean	Yes	OK	
14/10/2022	2022/2023	Yes	40	2328.16	14.2	27516.34	95.36	2 - Clean	Yes		
20/10/2022	2022/2023	Yes	40	2328	14.2	27516	95	3 - No Act	Yes		
27/10/2022	2022/2023	Yes	40	2328	14.1	24516.36	95.36	3 - No Act	Yes	Ok	
3/11/2022	2022/2023	Yes	40	2928	14.1	27516	95	3 - No Act	Yes		
10/11/2022	2022/2023	Yes	40	2328	14.2	27516.37	95.36	2 - Clean	Yes	Ok	
17/11/2022	2022/2023	Yes	40	2328	14.1	27516	95	2 - Clean	Yes		
24/11/2022	2022/2023	Yes	40	2331	14.2	27578.62	95.37	2 - Clean	Yes	Ok	
1/12/2022	2022/2023	Yes	40	2331	14.2	27578.63	95.37	2 - Clean	Yes	Ok	Bore pad was water blasted last week
8/12/2022	2022/2023	Yes	13	2333	25.8	27624.75	95.37	2 - Clean	Yes		
16/12/2022	2022/2023	Yes	40	2333.3	14.2	27628.7	95.37	2 - Clean	Yes		
22/12/2022	2022/2023	Yes	40	2335	14.2	27667.22	95.37	2 - Clean	Yes	Ok	
29/12/2022	2022/2023	Yes	40	2335.19	14.2	27667.27	95.38	2 - Clean	Yes	OK	
5/01/2023	2022/2023	Yes	40	2335.12	14.2	27667.25	95.38	2 - Clean	Yes		
12/01/2023	2022/2023	Yes	40	2335.12	14.2	27667.29	95.38	2 - Clean	Yes	OK	
19/01/2023	2022/2023	Yes	40	2339.05	14.2	27752.57	95.38	2 - Clean	Yes		
26/01/2023	2022/2023	Yes	40	2339	14.2	27752	95.38	3 - No Act			plc display faulty. AFI need to fix. reset power but still not working
2/02/2023	2022/2023	Yes	40	2339.05	14.2	27752.6	95.38	2 - Clean	Yes		
9/02/2023	2022/2023	Yes	12	2340	25.8	27790	95	3 - No Act	Yes		
16/02/2023	2022/2023	Yes	40	2341	14.2	27795.65	95.38	2 - Clean	Yes	Ok	PLC panel view screen is blank
23/02/2023	2022/2023	Yes	40	2341.04	14.1	27795.68	95.38	2 - Clean	Yes	OK	
2/03/2023	2022/2023	Yes	40	2341	14.2	27795.7	95.39	2 - Clean	Yes	Ok	
8/03/2023	2022/2023	Yes	12	2342	25.2	27836	95.39	3 - No Act	Yes		
16/03/2023	2022/2023	Yes	40	2343	14.2	27842.22	95.39	2 - Clean	Yes	Ok	
23/03/2023	2022/2023	Yes	40	2343.19	14.2	27842.23	95.39	2 - Clean	Yes	OK	
30/03/2023	2022/2023	Yes	40	2343.18	14.1	27842.25	95.39	2 - Clean	Yes		
6/04/2023	2022/2023	Yes	40	2343.18	14.2	27842.28	95.39	2 - Clean	Yes	OK	
13/04/2023	2022/2023	Yes	13	2344	25.3	27866.23	95.39	3 - No Act	Yes	Ok	
20/04/2023	2022/2023	Yes	40	2345.34	14.2	27888.94	95.39	2 - Clean	Yes	OK	
27/04/2023	2022/2023	Yes	40	2345.3	14.1	27888.97	95.4	2 - Clean	Yes		

Kāpiti Coast DISTRICT COUNCIL
Me Huri Whakamuri, Ka Titiro Whakamua

N2 Operational Bore Log

Date	FY	Filled in lo	Bore Leve	Pump Run	Temperatu	Flow Forw	Flow Reve	Cabinet Fi	Checked V	Well-head	Comments	
7/07/2022	2022/2023	Yes	43.3	729	13	65840	9.95	3 - No Acti	Yes			
14/07/2022	2022/2023	Yes	43.5	731	13.7	68719	9.95	3 - No Acti	Yes	Ok		
21/07/2022	2022/2023	Yes	43.4	731	13	68719.93	9.95	2 - Clean	Yes	OK		
28/07/2022	2022/2023	Yes										
4/08/2022	2022/2023	Yes	43.3	731	13	68720	9.95	2 - Clean	Yes	Good	Nil	
11/08/2022	2022/2023	Yes	43.2	733	13.8	68914	9.96	2 - Clean	Yes			
17/08/2022	2022/2023	Yes	43.5	733	13	68914.91	9.96	2 - Clean	Yes			
25/08/2022	2022/2023	Yes	43.5	733	13	68914.93	9.96	2 - Clean	Yes	OK		
1/09/2022	2022/2023	Yes	43.5	733	13	68914.95	9.96	2 - Clean	Yes			
8/09/2022	2022/2023	Yes	43	736	15	69199.63	9.96	2 - Clean	Yes	OK		
15/09/2022	2022/2023	Yes	43.5	736	13	69119.4	9.96	2 - Clean	Yes			
23/09/2022	2022/2023	Yes	43.6	736	13	69199	9.96	3 - No Acti	Yes			
29/09/2022	2022/2023	Yes	43.5	736	13	69199.73	9.96	2 - Clean	Yes			
6/10/2022	2022/2023	Yes	43.3	739	13.7	69420.89	9.96	2 - Clean	Yes	OK	Bore fence fixing requires repair	
14/10/2022	2022/2023	Yes	43.4	739	13	69420	9.96	2 - Clean	Yes			
20/10/2022	2022/2023	Yes	43.4	739	13	69421	9.96	3 - No Acti	Yes			
27/10/2022	2022/2023	Yes	43.3	739	13	69421.11	9.96	3 - No Acti	Yes			
3/11/2022	2022/2023	Yes	43.4	739	13	69421.16	9.96	2 - Clean	Yes	OK		
10/11/2022	2022/2023	Yes	43.2	741.4	13.1	69600.56	9.96	2 - Clean	Yes			
17/11/2022	2022/2023	Yes	43.2	741	13	69600	9.96	3 - No Acti	Yes			
24/11/2022	2022/2023	Yes	43.2	741	13	69600.82	9.96	3 - No Acti	Yes	Ok	Cow pats within a few metres of the concrete bore head pad	
1/12/2022	2022/2023	Yes		741	13	69601	9.96	3 - No Acti	Yes		bore level panel not working	
8/12/2022	2022/2023	Yes	0	741	13	69603.06	9.96	2 - Clean	Yes	Ok	Bore Level reading not correct, new probe to be installed.	

15/12/2022	2022/2023	Yes	0	741	13	69611	9.96	2 - Clean	Yes			
22/12/2022	2022/2023	Yes	42.2	744	13.1	69899.74	9.96	3 - No Acti	Yes	Ok	Cable gaps in bore head cap - though this is not used for drinking retic supply	
29/12/2022	2022/2023	Yes	42.3	744	13	69913.42	9.96	2 - Clean	Yes	Ok	Concrete pad could benefit from a water blast	
5/01/2023	2022/2023	Yes	37.2	744	27.2	69965.64	9.96	2 - Clean	Yes			
12/01/2023	2022/2023	Yes	42.1	746	13	70160.75	9.96	2 - Clean	Yes			
19/01/2023	2022/2023	Yes	42.1	748	13	70346.89	9.97	2 - Clean	Yes	Ok		
26/01/2023	2022/2023	Yes	42.1	748.3	13	70351.79	10.84	2 - Clean	Yes	OK		
2/02/2023	2022/2023	Yes	42	748.3	13	70351	10.84	2 - Clean	Yes			
9/02/2023	2022/2023	Yes	42	748.3	13	70351.82	10.84	2 - Clean	Yes	OK		
16/02/2023	2022/2023	Yes	41.9	752.3	13.1	70709.48	10.84	2 - Clean	Yes			
23/02/2023	2022/2023	Yes	41.9	752	13	70716	10.84	3 - No Acti	Yes			
2/03/2023	2022/2023	Yes	41.9	752.5	13	70748.87	10.84	2 - Clean	Yes			
9/03/2023	2022/2023	Yes	36.8	752	27.5	70838	10.84	3 - No Acti	Yes			
16/03/2023	2022/2023	Yes	41.9	754	13	71009.02	10.84	2 - Clean	Yes	Ok		
23/03/2023	2022/2023	Yes	41.8	754.8	13	71050.69	10.84	2 - Clean	Yes	OK		

30/03/2023	2022/2023	Yes	41.8	754	13	71096.54	10.84	2 - Clean	Yes	Ok		
6/04/2023	2022/2023	Yes	39.5	754	15.1	71138	10.84	3 - No Acti	Yes			
13/04/2023	2022/2023	Yes	41.8	754	13	71194.56	10.84	2 - Clean	Yes	Ok		
20/04/2023	2022/2023	Yes	41.9	754.9	13	71234.68	10.84	2 - Clean	Yes	OK		
27/04/2023	2022/2023	Yes	41.9	754.3	13	71272.77	10.84	2 - Clean	Yes			
4/05/2023	2022/2023	Yes	41.9	754.9	13	71308.97	10.84	2 - Clean	Yes	OK		
11/05/2023	2022/2023	Yes	39.5	754	15	71349.64	10.84	3 - No Acti	Yes	Ok		
18/05/2023	2022/2023	Yes	42	754.2	13	71390.3	10.84	2 - Clean	Yes	OK		
25/05/2023	2022/2023	Yes	42.1	754	13	71424.98	10.84	2 - Clean	Yes			
1/06/2023	2022/2023	Yes	42.1	754.4	13	71461.54	10.84	2 - Clean	Yes	OK	Lock and chain been removed from road entry gate	
8/06/2023	2022/2023	Yes	36.9	755.1	27.8	71567.67	10.84	2 - Clean	Yes			
15/06/2023	2022/2023	Yes	42.2	756	13	71768	10	3 - No Acti	Yes			
22/06/2023	2022/2023	Yes	42.2	756.9	13	71807.45	10.84	2 - Clean	Yes			
29/06/2023	2022/2023	Yes	42.3	756.9	13	71852.81	10.84	2 - Clean	Yes	OK		
6/07/2023	2023/2024	Yes	36.9	757.6	27.7	71950.55	10.84	3 - No Acti	Yes	Ok		
13/07/2023	2023/2024	Yes	42.1	759	13	72129	10.84	3 - No Acti	Yes			
20/07/2023	2023/2024	Yes	42.1	759	13	72162.85	10.84	2 - Clean	Yes	Ok		
27/07/2023	2023/2024	Yes	42.1	759.4	13	72199.8	10.84	2 - Clean	Yes	OK		No action

Appendix D

Bore Water Quality Sampling Results

eurofins | Food & Water Testing

ANALYTICAL REPORT

REPORT CODE **AR-22-NW-043244-01** REPORT DATE **29/11/2022**

Attention Kapiti Coast District Council
Kim Mazur
175 Rimu Road
5032 Paraparaumu
NEW ZEALAND
Phone +64275554729
Email Kim.Mazur@kapiticoast.govt.nz
Copy to: Coley (Marcus.Coley@kapiticoast.govt.nz)

Contact for your orders: Wil Verar **Order code:** EUNZWE-00068155
Contract: Kapiti DC WWTP
Submission Reference: KCDC Pre-season Bore 2022 **Purchase Order Number:** 366112

SAMPLE CODE **812-2022-00119564**

Client Reference: Bore N2
Sampling Point NW0002254013:Bore N2
Reception Date & Time: 23/11/2022 11:10
Analysis Start Date & Time: 23/11/2022 12:03 **Analysis Ending Date:** 29/11/2022
Sampled Date & Time 23/11/2022 09:34 **Sampler(s)** KCDC

		RESULTS		LOQ
NW179	**Ammonia Nitrogen**			
	Ammoniacal nitrogen (N)	0.05	mg/l	0.01
NW303	**Anion Sum**			
	Anions, sum	3.83	meq/l	0.01
NW583	**Arsenic - Soluble**			
	Arsenic (As)	<0.001	mg/l	0.001
NW002	**Bicarbonate Alkalinity**			
	Bicarbonate alkalinity	77	mg CaCO3/l	1
NW455	**Boron - Dissolved**			
	Boron (B)	0.068	mg/l	0.005
NW009	**Bromide**			
	Bromide	0.25	mg/l	0.02
NW457	**Calcium - Dissolved**			
	Calcium (Ca)	27.3	mg/l	0.01
NW304	**Cation Sum**			
	Cations, sum	4.06	meq/l	0.01
NW007	**Chloride**			
	Chloride (Cl)	76.4	mg/l	0.02
NW023	**Conductivity**			
	Conductivity	44.5	mS/m	0.1
NW679	**Cyanide**			
	Cyanide	<0.005	mg/l	0.005
NW193	**Dissolved Reactive Phosphorus**			
	Phosphorus (soluble reactive)	0.116	mg/l	0.005
NW006	**Fluoride**			
	Fluoride	0.16	mg/l	0.02

		RESULTS		LOQ
①NW028	**Free Carbon Dioxide**			
	Carbon dioxide	5	mg CO2/l	1
①NW351	**Hydrogen Sulphide**			
	Sulphide	<0.05	mg/l	0.05
NW305	**Ion Balance**			
	Ion balance	2.87	%	0.01
NW460	**Iron - Dissolved**			
	Iron (Fe)	<0.005	mg/l	0.005
NW462	**Magnesium - Dissolved**			
	Magnesium (Mg)	7.64	mg/l	0.01
NW463	**Manganese - Dissolved**			
	Manganese (Mn)	0.100	mg/l	0.005
NW084	**Mercury - Acid Soluble**			
	Mercury (Hg)	<0.0005	mg/l	0.0005
NW010	**Nitrate-N**			
	Nitrate-N	<0.01	mg/l	0.01
NW008	**Nitrite-N**			
	Nitrite	<0.01	mg/l	0.01
NW195	**pH**			
	pH	7.5		0.1
NW466	**Potassium - Dissolved**			
	Potassium (K)	3.22	mg/l	0.01
NW469	**Sodium - Dissolved**			
	Sodium (Na)	45.6	mg/l	0.02
NW104	**Soluble Cadmium**			
	Cadmium (Cd)	<0.0002	mg/l	0.0002
NW106	**Soluble Chromium**			
	Chromium (Cr)	<0.001	mg/l	0.001
NW108	**Soluble Copper**			
	Copper (Cu)	0.0026	mg/l	0.0005
NW110	**Soluble Lead**			
	Lead (Pb)	<0.0005	mg/l	0.0005
NW116	**Soluble Nickel**			
	Nickel (Ni)	<0.0005	mg/l	0.0005
NW119	**Soluble Silver**			
	Silver (Ag)	<0.0005	mg/l	0.0005
NW125	**Soluble Zinc**			
	Zinc (Zn)	<0.002	mg/l	0.002
NW011	**Sulphate**			
	Sulphate	20.1	mg/l	0.02
NW199	**Sulphide**			
	Sulphide	<0.2	mg/l	0.2
NW003	**Total Alkalinity**			
	Alkalinity total	77	mg CaCO3/l	1

		RESULTS		LOQ
①NW207	**Total Dissolved Solids**			
	Total dissolved Solids	245	mg/l	1
①NW339	**Total Dissolved Solids**			
	Total dissolved Solids	218	mg/l	1
NW029	**Total Hardness**			
	Hardness	100	mg CaCO3/l	1
NW189	**Total Nitrogen**			
	Total Nitrogen (N)	0.070	mg/l	0.002
NW210	**Total Non-Purgeable Organic Carbon**			
	Total Organic Carbon	0.2	mg/l	0.1
NW194	**Total Phosphorus**			
	Total phosphorus	0.128	mg/l	0.005

LIST OF METHODS

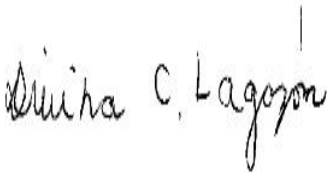
NW002 **Bicarbonate Alkalinity:** APHA Online Edition 4500-CO2 D
NW003 **Total Alkalinity:** APHA Online Edition 2320 B
NW006 **Fluoride:** APHA Online Edition 4110 B
NW007 **Chloride:** APHA Online Edition 4110 B
NW008 **Nitrite-N:** APHA Online Edition 4110 B
NW009 **Bromide:** APHA Online Edition 4110 B
NW010 **Nitrate-N:** APHA Online Edition 4110 B
NW011 **Sulphate:** APHA Online Edition 4110 B
NW023 **Conductivity:** APHA Online Edition 2510 B
NW028 **Free Carbon Dioxide:** APHA Online Edition 4500-CO2 B
NW029 **Total Hardness:** APHA Online Edition 2340 B
NW084 **Mercury - Acid Soluble:** APHA Online Edition 3125 B mod.
NW104 **Soluble Cadmium:** APHA Online Edition 3125 B mod.
NW106 **Soluble Chromium:** APHA Online Edition 3125 B mod.
NW108 **Soluble Copper:** APHA Online Edition 3125 B mod.
NW110 **Soluble Lead:** APHA Online Edition 3125 B mod.
NW116 **Soluble Nickel:** APHA Online Edition 3125 B mod.
NW119 **Soluble Silver:** APHA Online Edition 3125 B mod.
NW125 **Soluble Zinc:** APHA Online Edition 3125 B mod.
NW179 **Ammonia Nitrogen:** APHA Online Edition 4500-NH3 H
NW189 **Total Nitrogen:** APHA Online Edition 4500-NO3- I
NW193 **Dissolved Reactive Phosphorus:** APHA Online Edition 4500-P G
NW194 **Total Phosphorus:** APHA Online Edition 4500-P G / 4500-P B
NW195 **pH:** APHA Online Edition 4500-H B
NW199 **Sulphide:** APHA Online Edition 4500-S²- B, C, F
NW207 **Total Dissolved Solids:** Internal Method, Calculation
NW210 **Total Non-Purgeable Organic Carbon:** APHA Online Edition 5310 B
NW303 **Anion Sum:** APHA 1030 E
NW304 **Cation Sum:** APHA 1030 E
NW305 **Ion Balance:** APHA 1030 E
NW339 **Total Dissolved Solids:** Internal Method, Gravimetry
NW351 **Hydrogen Sulphide:** calculated
NW455 **Boron - Dissolved:** APHA Online Edition 3120 B mod.
NW457 **Calcium - Dissolved:** APHA Online Edition 3120 B mod.
NW460 **Iron - Dissolved:** APHA Online Edition 3120 B mod.
NW462 **Magnesium - Dissolved:** APHA Online Edition 3120 B mod.
NW463 **Manganese - Dissolved:** APHA Online Edition 3120 B mod.
NW466 **Potassium - Dissolved:** APHA Online Edition 3120 B mod.
NW469 **Sodium - Dissolved:** APHA Online Edition 3120 B mod.
NW583 **Arsenic - Soluble:** APHA Online Edition 3125 B mod.
NW679 **Cyanide:** APHA Online Edition 4500-CN C & E

Signature

Marylou Cabral Laboratory Manager
Jennifer Mont Supervisor
Amitesh Kumar Supervisor

Eurofins ELS Limited
85 Port Road
Seaview
Lower Hutt
Wellington 5010
NEW ZEALAND

Phone +64 4 576 5016
www.eurofins.co.nz



Divina Cunanan Lagazon	Supervisor	**Gordon McArthur**	Senior laboratory Analyst	**Ivan Imamura**	Laboratory Analyst
Cody Forbes	Laboratory Technician				

EXPLANATORY NOTE

① Test is not accredited
② Test is subcontracted within Eurofins group and is accredited
③ Test is subcontracted within Eurofins group and is not accredited
④ Test is subcontracted outside Eurofins group and is accredited
⑤ Test is subcontracted outside Eurofins group and is not accredited
⑥ Test result is provided by the customer and is not accredited
⑦ Tested at the sampling point by Eurofins and is not accredited
⑧ Tested at the sampling point by Eurofins and is accredited

N/A means Not applicable
Not Detected means not detected at or above the Limit of Quantification (LOQ)
LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit

The test result(s) in this report apply only to the sample as received.
This document can only be reproduced in full.
The tests are identified by a five-digit code, their description is available on request.
Accreditation does not apply to comments or graphical representations.
Unless otherwise stated, all tests in this analytical report (except for subcontracted tests) are performed at 85 Port Road, Seaview, Lower Hutt, Wellington, NEW ZEALAND.
The laboratory is not responsible for the information provided by the customer which can affect the validity of the results, for example: sampling information such as date/time, field data etc.
This report issued by Eurofins relates exclusively to the samples provided by the Customer and does not relate to the lot / batch from which the samples have been obtained.
Eurofins may subcontract the performance of part or all of the Services to a third party and the Customer authorises the release of all information necessary to the third party for the provision of the Services.
All samples become the property of Eurofins to the extent necessary for the performance of the Services.
Eurofins will not be required to store samples and may destroy or otherwise dispose of the samples or return the samples to the Customer (at the Customer's cost in all respects) immediately following analysis of the samples.
If the Customer pays for storage of the samples Eurofins will take commercially reasonable steps to store the samples for the agreed period in terms of industry practice.
The Customer acknowledges and accepts that: (a) it is solely responsible for the sampling process and warrants that the sample provided to Eurofins is representative of the lot / batch from which the samples were drawn; and (b) Eurofins expresses no opinion and accepts no liability in respect of the Customer's production process or homogeneity of the sample.
The Eurofins water sampling services uses IANZ approved methodology based on AS/NZS 5667 and / or best practice to collect and transport samples that are fit for the purpose of analytical testing. Eurofins shall have no liability if the sample collected is not representative of the source from which it has been taken. The laboratory is not responsible for sampling activities unless explicitly indicated by the statement "Sampled by Eurofins" on the report for water samples.
The Customer acknowledges that the Services are provided using the then current state of technology and methods developed and generally applied by Eurofins and involve analysis, interpretations, consulting work and conclusions. Eurofins shall use commercially reasonable degree of care in providing the Services.
This report is produced and issued on the basis of information, documents and/or samples provided by, or on behalf of, the Customer and solely for the benefit of the Customer who is responsible for acting as it sees fit on the basis of this report. Neither Eurofins nor any of its officers, employees, agents or subcontractors shall be liable to the Customer nor any third party for any actions taken or not taken on the basis of this report nor for any incorrect results arising from unclear, erroneous, incomplete, misleading or false information provided to Eurofins.
Eurofins shall have no liability for any indirect or consequential loss including, without limitation, loss of production, loss of contracts, loss of profits, loss of business or costs incurred from business interruption, loss of opportunity, loss of goodwill or damage to reputation and cost of product recall (including any losses suffered as a result of distribution of the Customer's products subject of the Services prior to the report being released by Eurofins). It shall further have no liability for any loss, damage or expenses arising from the claims of any third party (including, without limitation, product liability claims) that may be incurred by the Customer.
Eurofins General Terms and Conditions apply.

END OF REPORT

eurofins

Food & Water Testing

ANALYTICAL REPORT

REPORT CODE **AR-22-NW-043245-01** REPORT DATE **29/11/2022**

Attention Kapiti Coast District Council
Kim Mazur
175 Rimu Road
5032 Paraparaumu
NEW ZEALAND
Phone +64275554729
Email Kim.Mazur@kapiticoast.govt.nz
Copy to: Coley (Marcus.Coley@kapiticoast.govt.nz)

Contact for your orders: Wil Verar
Contract: Kapiti DC WWTP
Submission Reference: KCDC Pre-season Bore 2022
Order code: EUNZWE-00068155
Purchase Order Number: 366112

SAMPLE CODE **812-2022-00119569**

Client Reference: Bore K6
Sampling Point NW0002254018:Bore K6
Reception Date & Time: 23/11/2022 11:10
Analysis Start Date & Time: 23/11/2022 12:03
Analysis Ending Date: 29/11/2022
Sampled Date & Time 23/11/2022 08:47
Sampler(s) KCDC

		RESULTS		LOQ
NW179	**Ammonia Nitrogen**			
	Ammoniacal nitrogen (N)	0.48	mg/l	0.01
NW303	**Anion Sum**			
	Anions, sum	9.73	meq/l	0.01
NW583	**Arsenic - Soluble**			
	Arsenic (As)	<0.001	mg/l	0.001
NW002	**Bicarbonate Alkalinity**			
	Bicarbonate alkalinity	276	mg CaCO3/l	1
NW455	**Boron - Dissolved**			
	Boron (B)	0.701	mg/l	0.005
NW009	**Bromide**			
	Bromide	0.73	mg/l	0.02
NW457	**Calcium - Dissolved**			
	Calcium (Ca)	31.5	mg/l	0.01
NW304	**Cation Sum**			
	Cations, sum	11.3	meq/l	0.01
NW007	**Chloride**			
	Chloride (Cl)	183	mg/l	0.02
NW023	**Conductivity**			
	Conductivity	112	mS/m	0.1
NW679	**Cyanide**			
	Cyanide	<0.005	mg/l	0.005
NW193	**Dissolved Reactive Phosphorus**			
	Phosphorus (soluble reactive)	0.064	mg/l	0.005
NW006	**Fluoride**			
	Fluoride	0.04	mg/l	0.02

		RESULTS		LOQ
①NW028	**Free Carbon Dioxide**			
	Carbon dioxide	10	mg CO2/l	1
①NW351	**Hydrogen Sulphide**			
	Sulphide	<0.05	mg/l	0.05
NW305	**Ion Balance**			
	Ion balance	7.38	%	0.01
NW460	**Iron - Dissolved**			
	Iron (Fe)	<0.005	mg/l	0.005
NW462	**Magnesium - Dissolved**			
	Magnesium (Mg)	16.4	mg/l	0.01
NW463	**Manganese - Dissolved**			
	Manganese (Mn)	0.079	mg/l	0.005
NW084	**Mercury - Acid Soluble**			
	Mercury (Hg)	<0.0005	mg/l	0.0005
NW010	**Nitrate-N**			
	Nitrate-N	<0.01	mg/l	0.01
NW008	**Nitrite-N**			
	Nitrite	<0.01	mg/l	0.01
NW195	**pH**			
	pH	7.7		0.1
NW466	**Potassium - Dissolved**			
	Potassium (K)	10.8	mg/l	0.01
NW469	**Sodium - Dissolved**			
	Sodium (Na)	185	mg/l	0.02
NW104	**Soluble Cadmium**			
	Cadmium (Cd)	<0.0002	mg/l	0.0002
NW106	**Soluble Chromium**			
	Chromium (Cr)	<0.001	mg/l	0.001
NW108	**Soluble Copper**			
	Copper (Cu)	0.0017	mg/l	0.0005
NW110	**Soluble Lead**			
	Lead (Pb)	<0.0005	mg/l	0.0005
NW116	**Soluble Nickel**			
	Nickel (Ni)	<0.0005	mg/l	0.0005
NW119	**Soluble Silver**			
	Silver (Ag)	<0.0005	mg/l	0.0005
NW125	**Soluble Zinc**			
	Zinc (Zn)	<0.002	mg/l	0.002
NW011	**Sulphate**			
	Sulphate	0.22	mg/l	0.02
NW199	**Sulphide**			
	Sulphide	<0.2	mg/l	0.2
NW003	**Total Alkalinity**			
	Alkalinity total	277	mg CaCO3/l	1

		RESULTS		LOQ
①NW207	**Total Dissolved Solids**			
	Total dissolved Solids	615	mg/l	1
①NW339	**Total Dissolved Solids**			
	Total dissolved Solids	548	mg/l	1
NW029	**Total Hardness**			
	Hardness	146	mg CaCO3/l	1
NW189	**Total Nitrogen**			
	Total Nitrogen (N)	0.510	mg/l	0.002
NW210	**Total Non-Purgeable Organic Carbon**			
	Total Organic Carbon	0.4	mg/l	0.1
NW194	**Total Phosphorus**			
	Total phosphorus	0.068	mg/l	0.005

LIST OF METHODS

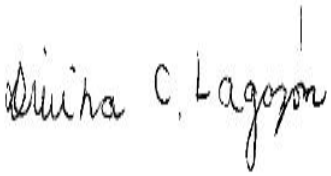
NW002 **Bicarbonate Alkalinity:** APHA Online Edition 4500-CO2 D
NW003 **Total Alkalinity:** APHA Online Edition 2320 B
NW006 **Fluoride:** APHA Online Edition 4110 B
NW007 **Chloride:** APHA Online Edition 4110 B
NW008 **Nitrite-N:** APHA Online Edition 4110 B
NW009 **Bromide:** APHA Online Edition 4110 B
NW010 **Nitrate-N:** APHA Online Edition 4110 B
NW011 **Sulphate:** APHA Online Edition 4110 B
NW023 **Conductivity:** APHA Online Edition 2510 B
NW028 **Free Carbon Dioxide:** APHA Online Edition 4500-CO2 B
NW029 **Total Hardness:** APHA Online Edition 2340 B
NW084 **Mercury - Acid Soluble:** APHA Online Edition 3125 B mod.
NW104 **Soluble Cadmium:** APHA Online Edition 3125 B mod.
NW106 **Soluble Chromium:** APHA Online Edition 3125 B mod.
NW108 **Soluble Copper:** APHA Online Edition 3125 B mod.
NW110 **Soluble Lead:** APHA Online Edition 3125 B mod.
NW116 **Soluble Nickel:** APHA Online Edition 3125 B mod.
NW119 **Soluble Silver:** APHA Online Edition 3125 B mod.
NW125 **Soluble Zinc:** APHA Online Edition 3125 B mod.
NW179 **Ammonia Nitrogen:** APHA Online Edition 4500-NH3 H
NW189 **Total Nitrogen:** APHA Online Edition 4500-NO3- I
NW193 **Dissolved Reactive Phosphorus:** APHA Online Edition 4500-P G
NW194 **Total Phosphorus:** APHA Online Edition 4500-P G / 4500-P B
NW195 **pH:** APHA Online Edition 4500-H B
NW199 **Sulphide:** APHA Online Edition 4500-S²- B, C, F
NW207 **Total Dissolved Solids:** Internal Method, Calculation
NW210 **Total Non-Purgeable Organic Carbon:** APHA Online Edition 5310 B
NW303 **Anion Sum:** APHA 1030 E
NW304 **Cation Sum:** APHA 1030 E
NW305 **Ion Balance:** APHA 1030 E
NW339 **Total Dissolved Solids:** Internal Method, Gravimetry
NW351 **Hydrogen Sulphide:** calculated
NW455 **Boron - Dissolved:** APHA Online Edition 3120 B mod.
NW457 **Calcium - Dissolved:** APHA Online Edition 3120 B mod.
NW460 **Iron - Dissolved:** APHA Online Edition 3120 B mod.
NW462 **Magnesium - Dissolved:** APHA Online Edition 3120 B mod.
NW463 **Manganese - Dissolved:** APHA Online Edition 3120 B mod.
NW466 **Potassium - Dissolved:** APHA Online Edition 3120 B mod.
NW469 **Sodium - Dissolved:** APHA Online Edition 3120 B mod.
NW583 **Arsenic - Soluble:** APHA Online Edition 3125 B mod.
NW679 **Cyanide:** APHA Online Edition 4500-CN C & E

Signature

Marylou Cabral Laboratory Manager
Jennifer Mont Supervisor
Amitesh Kumar Supervisor

Eurofins ELS Limited
85 Port Road
Seaview
Lower Hutt
Wellington 5010
NEW ZEALAND

Phone +64 4 576 5016
www.eurofins.co.nz



Divina Cunanan Lagazon	Supervisor	**Gordon McArthur**	Senior laboratory Analyst	**Ivan Imamura**	Laboratory Analyst
Cody Forbes	Laboratory Technician				

EXPLANATORY NOTE

① Test is not accredited
② Test is subcontracted within Eurofins group and is accredited
③ Test is subcontracted within Eurofins group and is not accredited
④ Test is subcontracted outside Eurofins group and is accredited
⑤ Test is subcontracted outside Eurofins group and is not accredited
⑥ Test result is provided by the customer and is not accredited
⑦ Tested at the sampling point by Eurofins and is not accredited
⑧ Tested at the sampling point by Eurofins and is accredited

N/A means Not applicable
Not Detected means not detected at or above the Limit of Quantification (LOQ)
LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit

The test result(s) in this report apply only to the sample as received.
This document can only be reproduced in full.
The tests are identified by a five-digit code, their description is available on request.
Accreditation does not apply to comments or graphical representations.
Unless otherwise stated, all tests in this analytical report (except for subcontracted tests) are performed at 85 Port Road, Seaview, Lower Hutt, Wellington, NEW ZEALAND.
The laboratory is not responsible for the information provided by the customer which can affect the validity of the results, for example: sampling information such as date/time, field data etc.
This report issued by Eurofins relates exclusively to the samples provided by the Customer and does not relate to the lot / batch from which the samples have been obtained.
Eurofins may subcontract the performance of part or all of the Services to a third party and the Customer authorises the release of all information necessary to the third party for the provision of the Services.
All samples become the property of Eurofins to the extent necessary for the performance of the Services.
Eurofins will not be required to store samples and may destroy or otherwise dispose of the samples or return the samples to the Customer (at the Customer's cost in all respects) immediately following analysis of the samples.
If the Customer pays for storage of the samples Eurofins will take commercially reasonable steps to store the samples for the agreed period in terms of industry practice.
The Customer acknowledges and accepts that: (a) it is solely responsible for the sampling process and warrants that the sample provided to Eurofins is representative of the lot / batch from which the samples were drawn; and (b) Eurofins expresses no opinion and accepts no liability in respect of the Customer's production process or homogeneity of the sample.
The Eurofins water sampling services uses IANZ approved methodology based on AS/NZS 5667 and / or best practice to collect and transport samples that are fit for the purpose of analytical testing. Eurofins shall have no liability if the sample collected is not representative of the source from which it has been taken. The laboratory is not responsible for sampling activities unless explicitly indicated by the statement "Sampled by Eurofins" on the report for water samples.
The Customer acknowledges that the Services are provided using the then current state of technology and methods developed and generally applied by Eurofins and involve analysis, interpretations, consulting work and conclusions. Eurofins shall use commercially reasonable degree of care in providing the Services.
This report is produced and issued on the basis of information, documents and/or samples provided by, or on behalf of, the Customer and solely for the benefit of the Customer who is responsible for acting as it sees fit on the basis of this report. Neither Eurofins nor any of its officers, employees, agents or subcontractors shall be liable to the Customer nor any third party for any actions taken or not taken on the basis of this report nor for any incorrect results arising from unclear, erroneous, incomplete, misleading or false information provided to Eurofins.
Eurofins shall have no liability for any indirect or consequential loss including, without limitation, loss of production, loss of contracts, loss of profits, loss of business or costs incurred from business interruption, loss of opportunity, loss of goodwill or damage to reputation and cost of product recall (including any losses suffered as a result of distribution of the Customer's products subject of the Services prior to the report being released by Eurofins). It shall further have no liability for any loss, damage or expenses arising from the claims of any third party (including, without limitation, product liability claims) that may be incurred by the Customer.
Eurofins General Terms and Conditions apply.

END OF REPORT

eurofins | Food & Water Testing

ANALYTICAL REPORT

REPORT CODE **AR-22-NW-043398-01** REPORT DATE **30/11/2022**

Attention Kapiti Coast District Council
Kim Mazur
175 Rimu Road
5032 Paraparaumu
NEW ZEALAND
Phone +64275554729
Email Kim.Mazur@kapiticoast.govt.nz
Copy to: Coley (Marcus.Coley@kapiticoast.govt.nz)

Contact for your orders: Wil Verar
Contract: Kapiti DC WWTP
Submission Reference: KCDC Pre-season Bore 2022
Order code: EUNZWE-00068155
Purchase Order Number: 366112

SAMPLE CODE **812-2022-00119565**

Client Reference: Bore K10
Sampling Point NW0002254014:Bore K10
Reception Date & Time: 23/11/2022 11:10
Analysis Start Date & Time: 23/11/2022 12:03
Analysis Ending Date: 30/11/2022
Sampled Date & Time 23/11/2022 07:56
Sampler(s) KCDC

		RESULTS		LOQ
NW179	**Ammonia Nitrogen**			
	Ammoniacal nitrogen (N)	0.23	mg/l	0.01
NW303	**Anion Sum**			
	Anions, sum	6.98	meq/l	0.01
NW583	**Arsenic - Soluble**			
	Arsenic (As)	0.001	mg/l	0.001
NW002	**Bicarbonate Alkalinity**			
	Bicarbonate alkalinity	213	mg CaCO3/l	1
NW455	**Boron - Dissolved**			
	Boron (B)	0.144	mg/l	0.005
NW009	**Bromide**			
	Bromide	0.52	mg/l	0.02
NW457	**Calcium - Dissolved**			
	Calcium (Ca)	51.9	mg/l	0.01
NW304	**Cation Sum**			
	Cations, sum	8.35	meq/l	0.01
NW007	**Chloride**			
	Chloride (Cl)	123	mg/l	0.02
NW023	**Conductivity**			
	Conductivity	81.1	mS/m	0.1
NW679	**Cyanide**			
	Cyanide	<0.005	mg/l	0.005
NW193	**Dissolved Reactive Phosphorus**			
	Phosphorus (soluble reactive)	0.039	mg/l	0.005
NW006	**Fluoride**			
	Fluoride	0.03	mg/l	0.02

		RESULTS		LOQ
①NW028	**Free Carbon Dioxide**			
	Carbon dioxide	10	mg CO2/l	1
①NW351	**Hydrogen Sulphide**			
	Sulphide	<0.05	mg/l	0.05
NW305	**Ion Balance**			
	Ion balance	8.91	%	0.01
NW460	**Iron - Dissolved**			
	Iron (Fe)	<0.005	mg/l	0.005
NW462	**Magnesium - Dissolved**			
	Magnesium (Mg)	14.6	mg/l	0.01
NW463	**Manganese - Dissolved**			
	Manganese (Mn)	0.173	mg/l	0.005
NW084	**Mercury - Acid Soluble**			
	Mercury (Hg)	<0.0005	mg/l	0.0005
NW010	**Nitrate-N**			
	Nitrate-N	<0.01	mg/l	0.01
NW008	**Nitrite-N**			
	Nitrite	<0.01	mg/l	0.01
NW195	**pH**			
	pH	7.6		0.1
NW466	**Potassium - Dissolved**			
	Potassium (K)	8.38	mg/l	0.01
NW469	**Sodium - Dissolved**			
	Sodium (Na)	99.4	mg/l	0.02
NW104	**Soluble Cadmium**			
	Cadmium (Cd)	<0.0002	mg/l	0.0002
NW106	**Soluble Chromium**			
	Chromium (Cr)	<0.001	mg/l	0.001
NW108	**Soluble Copper**			
	Copper (Cu)	0.0027	mg/l	0.0005
NW110	**Soluble Lead**			
	Lead (Pb)	<0.0005	mg/l	0.0005
NW116	**Soluble Nickel**			
	Nickel (Ni)	<0.0005	mg/l	0.0005
NW119	**Soluble Silver**			
	Silver (Ag)	<0.0005	mg/l	0.0005
NW125	**Soluble Zinc**			
	Zinc (Zn)	<0.002	mg/l	0.002
NW011	**Sulphate**			
	Sulphate	<0.02	mg/l	0.02
NW199	**Sulphide**			
	Sulphide	<0.2	mg/l	0.2
NW003	**Total Alkalinity**			
	Alkalinity total	214	mg CaCO3/l	1

		RESULTS		LOQ
①NW207	**Total Dissolved Solids**			
	Total dissolved Solids	446	mg/l	1
①NW339	**Total Dissolved Solids**			
	Total dissolved Solids	398	mg/l	1
NW029	**Total Hardness**			
	Hardness	190	mg CaCO3/l	1
NW189	**Total Nitrogen**			
	Total Nitrogen (N)	0.230	mg/l	0.002
NW210	**Total Non-Purgeable Organic Carbon**			
	Total Organic Carbon	0.3	mg/l	0.1
NW194	**Total Phosphorus**			
	Total phosphorus	0.061	mg/l	0.005

LIST OF METHODS

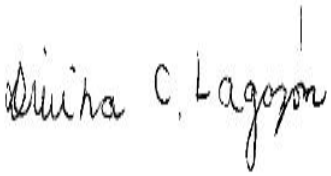
NW002 **Bicarbonate Alkalinity:** APHA Online Edition 4500-CO2 D
NW003 **Total Alkalinity:** APHA Online Edition 2320 B
NW006 **Fluoride:** APHA Online Edition 4110 B
NW007 **Chloride:** APHA Online Edition 4110 B
NW008 **Nitrite-N:** APHA Online Edition 4110 B
NW009 **Bromide:** APHA Online Edition 4110 B
NW010 **Nitrate-N:** APHA Online Edition 4110 B
NW011 **Sulphate:** APHA Online Edition 4110 B
NW023 **Conductivity:** APHA Online Edition 2510 B
NW028 **Free Carbon Dioxide:** APHA Online Edition 4500-CO2 B
NW029 **Total Hardness:** APHA Online Edition 2340 B
NW084 **Mercury - Acid Soluble:** APHA Online Edition 3125 B mod.
NW104 **Soluble Cadmium:** APHA Online Edition 3125 B mod.
NW106 **Soluble Chromium:** APHA Online Edition 3125 B mod.
NW108 **Soluble Copper:** APHA Online Edition 3125 B mod.
NW110 **Soluble Lead:** APHA Online Edition 3125 B mod.
NW116 **Soluble Nickel:** APHA Online Edition 3125 B mod.
NW119 **Soluble Silver:** APHA Online Edition 3125 B mod.
NW125 **Soluble Zinc:** APHA Online Edition 3125 B mod.
NW179 **Ammonia Nitrogen:** APHA Online Edition 4500-NH3 H
NW189 **Total Nitrogen:** APHA Online Edition 4500-NO3- I
NW193 **Dissolved Reactive Phosphorus:** APHA Online Edition 4500-P G
NW194 **Total Phosphorus:** APHA Online Edition 4500-P G / 4500-P B
NW195 **pH:** APHA Online Edition 4500-H B
NW199 **Sulphide:** APHA Online Edition 4500-S²- B, C, F
NW207 **Total Dissolved Solids:** Internal Method, Calculation
NW210 **Total Non-Purgeable Organic Carbon:** APHA Online Edition 5310 B
NW303 **Anion Sum:** APHA 1030 E
NW304 **Cation Sum:** APHA 1030 E
NW305 **Ion Balance:** APHA 1030 E
NW339 **Total Dissolved Solids:** Internal Method, Gravimetry
NW351 **Hydrogen Sulphide:** calculated
NW455 **Boron - Dissolved:** APHA Online Edition 3120 B mod.
NW457 **Calcium - Dissolved:** APHA Online Edition 3120 B mod.
NW460 **Iron - Dissolved:** APHA Online Edition 3120 B mod.
NW462 **Magnesium - Dissolved:** APHA Online Edition 3120 B mod.
NW463 **Manganese - Dissolved:** APHA Online Edition 3120 B mod.
NW466 **Potassium - Dissolved:** APHA Online Edition 3120 B mod.
NW469 **Sodium - Dissolved:** APHA Online Edition 3120 B mod.
NW583 **Arsenic - Soluble:** APHA Online Edition 3125 B mod.
NW679 **Cyanide:** APHA Online Edition 4500-CN C & E

Signature

Marylou Cabral Laboratory Manager
Jennifer Mont Supervisor
Amitesh Kumar Supervisor

Eurofins ELS Limited
85 Port Road
Seaview
Lower Hutt
Wellington 5010
NEW ZEALAND

Phone +64 4 576 5016
www.eurofins.co.nz



Divina Cunanan Lagazon	Supervisor	**Gordon McArthur**	Senior laboratory Analyst	**Ivan Imamura**	Laboratory Analyst
Cody Forbes	Laboratory Technician	**Sam Tagart Cottis**	Senior Laboratory Analyst		

EXPLANATORY NOTE

① Test is not accredited
② Test is subcontracted within Eurofins group and is accredited
③ Test is subcontracted within Eurofins group and is not accredited
④ Test is subcontracted outside Eurofins group and is accredited
⑤ Test is subcontracted outside Eurofins group and is not accredited
⑥ Test result is provided by the customer and is not accredited
⑦ Tested at the sampling point by Eurofins and is not accredited
⑧ Tested at the sampling point by Eurofins and is accredited

N/A means Not applicable
Not Detected means not detected at or above the Limit of Quantification (LOQ)
LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit

The test result(s) in this report apply only to the sample as received.
This document can only be reproduced in full.
The tests are identified by a five-digit code, their description is available on request.
Accreditation does not apply to comments or graphical representations.
Unless otherwise stated, all tests in this analytical report (except for subcontracted tests) are performed at 85 Port Road, Seaview, Lower Hutt, Wellington, NEW ZEALAND.
The laboratory is not responsible for the information provided by the customer which can affect the validity of the results, for example: sampling information such as date/time, field data etc.
This report issued by Eurofins relates exclusively to the samples provided by the Customer and does not relate to the lot / batch from which the samples have been obtained.
Eurofins may subcontract the performance of part or all of the Services to a third party and the Customer authorises the release of all information necessary to the third party for the provision of the Services.
All samples become the property of Eurofins to the extent necessary for the performance of the Services.
Eurofins will not be required to store samples and may destroy or otherwise dispose of the samples or return the samples to the Customer (at the Customer's cost in all respects) immediately following analysis of the samples.
If the Customer pays for storage of the samples Eurofins will take commercially reasonable steps to store the samples for the agreed period in terms of industry practice.
The Customer acknowledges and accepts that: (a) it is solely responsible for the sampling process and warrants that the sample provided to Eurofins is representative of the lot / batch from which the samples were drawn; and (b) Eurofins expresses no opinion and accepts no liability in respect of the Customer's production process or homogeneity of the sample.
The Eurofins water sampling services uses IANZ approved methodology based on AS/NZS 5667 and / or best practice to collect and transport samples that are fit for the purpose of analytical testing. Eurofins shall have no liability if the sample collected is not representative of the source from which it has been taken. The laboratory is not responsible for sampling activities unless explicitly indicated by the statement "Sampled by Eurofins" on the report for water samples.
The Customer acknowledges that the Services are provided using the then current state of technology and methods developed and generally applied by Eurofins and involve analysis, interpretations, consulting work and conclusions. Eurofins shall use commercially reasonable degree of care in providing the Services.
This report is produced and issued on the basis of information, documents and/or samples provided by, or on behalf of, the Customer and solely for the benefit of the Customer who is responsible for acting as it sees fit on the basis of this report. Neither Eurofins nor any of its officers, employees, agents or subcontractors shall be liable to the Customer nor any third party for any actions taken or not taken on the basis of this report nor for any incorrect results arising from unclear, erroneous, incomplete, misleading or false information provided to Eurofins.
Eurofins shall have no liability for any indirect or consequential loss including, without limitation, loss of production, loss of contracts, loss of profits, loss of business or costs incurred from business interruption, loss of opportunity, loss of goodwill or damage to reputation and cost of product recall (including any losses suffered as a result of distribution of the Customer's products subject of the Services prior to the report being released by Eurofins). It shall further have no liability for any loss, damage or expenses arising from the claims of any third party (including, without limitation, product liability claims) that may be incurred by the Customer.
Eurofins General Terms and Conditions apply.

END OF REPORT

eurofins

Food & Water Testing

ANALYTICAL REPORT

REPORT CODE **AR-22-NW-043399-01** REPORT DATE **30/11/2022**

Attention Kapiti Coast District Council
Kim Mazur
175 Rimu Road
5032 Paraparaumu
NEW ZEALAND
Phone +64275554729
Email Kim.Mazur@kapiticoast.govt.nz
Copy to: Coley (Marcus.Coley@kapiticoast.govt.nz)

Contact for your orders: Wil Verar **Order code:** EUNZWE-00068155
Contract: Kapiti DC WWTP
Submission Reference: KCDC Pre-season Bore 2022 **Purchase Order Number:** 366112

SAMPLE CODE **812-2022-00119566**

Client Reference: Bore KB4
Sampling Point NW0002254015:Bore KB4
Reception Date & Time: 23/11/2022 11:10
Analysis Start Date & Time: 23/11/2022 12:03 **Analysis Ending Date:** 30/11/2022
Sampled Date & Time 23/11/2022 08:08 **Sampler(s)** KCDC

		RESULTS		LOQ
NW179	**Ammonia Nitrogen**			
	Ammoniacal nitrogen (N)	0.10	mg/l	0.01
NW303	**Anion Sum**			
	Anions, sum	12.5	meq/l	0.01
NW583	**Arsenic - Soluble**			
	Arsenic (As)	<0.001	mg/l	0.001
NW002	**Bicarbonate Alkalinity**			
	Bicarbonate alkalinity	175	mg CaCO3/l	1
NW455	**Boron - Dissolved**			
	Boron (B)	0.244	mg/l	0.005
NW009	**Bromide**			
	Bromide	1.22	mg/l	0.02
NW457	**Calcium - Dissolved**			
	Calcium (Ca)	46.3	mg/l	0.01
NW304	**Cation Sum**			
	Cations, sum	13.6	meq/l	0.01
NW007	**Chloride**			
	Chloride (Cl)	338	mg/l	0.02
NW023	**Conductivity**			
	Conductivity	143	mS/m	0.1
NW679	**Cyanide**			
	Cyanide	<0.005	mg/l	0.005
NW193	**Dissolved Reactive Phosphorus**			
	Phosphorus (soluble reactive)	0.028	mg/l	0.005
NW006	**Fluoride**			
	Fluoride	0.03	mg/l	0.02

		RESULTS		LOQ
①NW028	**Free Carbon Dioxide**			
	Carbon dioxide	6	mg CO2/l	1
①NW351	**Hydrogen Sulphide**			
	Sulphide	<0.05	mg/l	0.05
NW305	**Ion Balance**			
	Ion balance	4.22	%	0.01
NW460	**Iron - Dissolved**			
	Iron (Fe)	<0.005	mg/l	0.005
NW462	**Magnesium - Dissolved**			
	Magnesium (Mg)	15.7	mg/l	0.01
NW463	**Manganese - Dissolved**			
	Manganese (Mn)	0.038	mg/l	0.005
NW084	**Mercury - Acid Soluble**			
	Mercury (Hg)	<0.0005	mg/l	0.0005
NW010	**Nitrate-N**			
	Nitrate-N	<0.01	mg/l	0.01
NW008	**Nitrite-N**			
	Nitrite	<0.01	mg/l	0.01
NW195	**pH**			
	pH	7.8		0.1
NW466	**Potassium - Dissolved**			
	Potassium (K)	8.66	mg/l	0.01
NW469	**Sodium - Dissolved**			
	Sodium (Na)	225	mg/l	0.02
NW104	**Soluble Cadmium**			
	Cadmium (Cd)	<0.0002	mg/l	0.0002
NW106	**Soluble Chromium**			
	Chromium (Cr)	<0.001	mg/l	0.001
NW108	**Soluble Copper**			
	Copper (Cu)	0.0022	mg/l	0.0005
NW110	**Soluble Lead**			
	Lead (Pb)	<0.0005	mg/l	0.0005
NW116	**Soluble Nickel**			
	Nickel (Ni)	<0.0005	mg/l	0.0005
NW119	**Soluble Silver**			
	Silver (Ag)	<0.0005	mg/l	0.0005
NW125	**Soluble Zinc**			
	Zinc (Zn)	<0.002	mg/l	0.002
NW011	**Sulphate**			
	Sulphate	3.38	mg/l	0.02
NW199	**Sulphide**			
	Sulphide	<0.2	mg/l	0.2
NW003	**Total Alkalinity**			
	Alkalinity total	176	mg CaCO3/l	1

		RESULTS		LOQ
①NW207	**Total Dissolved Solids**			
	Total dissolved Solids	788	mg/l	1
①NW339	**Total Dissolved Solids**			
	Total dissolved Solids	702	mg/l	1
NW029	**Total Hardness**			
	Hardness	180	mg CaCO3/l	1
NW189	**Total Nitrogen**			
	Total Nitrogen (N)	0.120	mg/l	0.002
NW210	**Total Non-Purgeable Organic Carbon**			
	Total Organic Carbon	0.2	mg/l	0.1
NW194	**Total Phosphorus**			
	Total phosphorus	0.024	mg/l	0.005

LIST OF METHODS

NW002 **Bicarbonate Alkalinity:** APHA Online Edition 4500-CO2 D

NW003 **Total Alkalinity:** APHA Online Edition 2320 B

NW006 **Fluoride:** APHA Online Edition 4110 B

NW007 **Chloride:** APHA Online Edition 4110 B

NW008 **Nitrite-N:** APHA Online Edition 4110 B

NW009 **Bromide:** APHA Online Edition 4110 B

NW010 **Nitrate-N:** APHA Online Edition 4110 B

NW011 **Sulphate:** APHA Online Edition 4110 B

NW023 **Conductivity:** APHA Online Edition 2510 B

NW028 **Free Carbon Dioxide:** APHA Online Edition 4500-CO2 B

NW029 **Total Hardness:** APHA Online Edition 2340 B

NW084 **Mercury - Acid Soluble:** APHA Online Edition 3125 B mod.

NW104 **Soluble Cadmium:** APHA Online Edition 3125 B mod.

NW106 **Soluble Chromium:** APHA Online Edition 3125 B mod.

NW108 **Soluble Copper:** APHA Online Edition 3125 B mod.

NW110 **Soluble Lead:** APHA Online Edition 3125 B mod.

NW116 **Soluble Nickel:** APHA Online Edition 3125 B mod.

NW119 **Soluble Silver:** APHA Online Edition 3125 B mod.

NW125 **Soluble Zinc:** APHA Online Edition 3125 B mod.

NW179 **Ammonia Nitrogen:** APHA Online Edition 4500-NH3 H

NW189 **Total Nitrogen:** APHA Online Edition 4500-NO3- I

NW193 **Dissolved Reactive Phosphorus:** APHA Online Edition 4500-P G

NW194 **Total Phosphorus:** APHA Online Edition 4500-P G / 4500-P B

NW195 **pH:** APHA Online Edition 4500-H B

NW199 **Sulphide:** APHA Online Edition 4500-S^{2-} B, C, F

NW207 **Total Dissolved Solids:** Internal Method, Calculation

NW210 **Total Non-Purgeable Organic Carbon:** APHA Online Edition 5310 B

NW303 **Anion Sum:** APHA 1030 E

NW304 **Cation Sum:** APHA 1030 E

NW305 **Ion Balance:** APHA 1030 E

NW339 **Total Dissolved Solids:** Internal Method, Gravimetry

NW351 **Hydrogen Sulphide:** calculated

NW455 **Boron - Dissolved:** APHA Online Edition 3120 B mod.

NW457 **Calcium - Dissolved:** APHA Online Edition 3120 B mod.

NW460 **Iron - Dissolved:** APHA Online Edition 3120 B mod.

NW462 **Magnesium - Dissolved:** APHA Online Edition 3120 B mod.

NW463 **Manganese - Dissolved:** APHA Online Edition 3120 B mod.

NW466 **Potassium - Dissolved:** APHA Online Edition 3120 B mod.

NW469 **Sodium - Dissolved:** APHA Online Edition 3120 B mod.

NW583 **Arsenic - Soluble:** APHA Online Edition 3125 B mod.

NW679 **Cyanide:** APHA Online Edition 4500-CN C & E

Signature

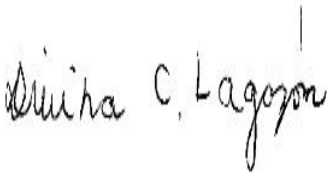
Marylou Cabral Laboratory Manager

Jennifer Mont Supervisor

Amitesh Kumar Supervisor

Eurofins ELS Limited
85 Port Road
Seaview
Lower Hutt
Wellington 5010
NEW ZEALAND

Phone +64 4 576 5016
www.eurofins.co.nz



Divina Cunanan Lagazon	Supervisor	**Gordon McArthur**	Senior laboratory Analyst	**Ivan Imamura**	Laboratory Analyst
Cody Forbes	Laboratory Technician	**Sam Tagart Cottis**	Senior Laboratory Analyst		

EXPLANATORY NOTE

① Test is not accredited
② Test is subcontracted within Eurofins group and is accredited
③ Test is subcontracted within Eurofins group and is not accredited
④ Test is subcontracted outside Eurofins group and is accredited
⑤ Test is subcontracted outside Eurofins group and is not accredited
⑥ Test result is provided by the customer and is not accredited
⑦ Tested at the sampling point by Eurofins and is not accredited
⑧ Tested at the sampling point by Eurofins and is accredited

N/A means Not applicable
Not Detected means not detected at or above the Limit of Quantification (LOQ)
LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit

The test result(s) in this report apply only to the sample as received.
This document can only be reproduced in full.
The tests are identified by a five-digit code, their description is available on request.
Accreditation does not apply to comments or graphical representations.
Unless otherwise stated, all tests in this analytical report (except for subcontracted tests) are performed at 85 Port Road, Seaview, Lower Hutt, Wellington, NEW ZEALAND.
The laboratory is not responsible for the information provided by the customer which can affect the validity of the results, for example: sampling information such as date/time, field data etc.
This report issued by Eurofins relates exclusively to the samples provided by the Customer and does not relate to the lot / batch from which the samples have been obtained.
Eurofins may subcontract the performance of part or all of the Services to a third party and the Customer authorises the release of all information necessary to the third party for the provision of the Services.
All samples become the property of Eurofins to the extent necessary for the performance of the Services.
Eurofins will not be required to store samples and may destroy or otherwise dispose of the samples or return the samples to the Customer (at the Customer's cost in all respects) immediately following analysis of the samples.
If the Customer pays for storage of the samples Eurofins will take commercially reasonable steps to store the samples for the agreed period in terms of industry practice.
The Customer acknowledges and accepts that: (a) it is solely responsible for the sampling process and warrants that the sample provided to Eurofins is representative of the lot / batch from which the samples were drawn; and (b) Eurofins expresses no opinion and accepts no liability in respect of the Customer's production process or homogeneity of the sample.
The Eurofins water sampling services uses IANZ approved methodology based on AS/NZS 5667 and / or best practice to collect and transport samples that are fit for the purpose of analytical testing. Eurofins shall have no liability if the sample collected is not representative of the source from which it has been taken. The laboratory is not responsible for sampling activities unless explicitly indicated by the statement "Sampled by Eurofins" on the report for water samples.
The Customer acknowledges that the Services are provided using the then current state of technology and methods developed and generally applied by Eurofins and involve analysis, interpretations, consulting work and conclusions. Eurofins shall use commercially reasonable degree of care in providing the Services.
This report is produced and issued on the basis of information, documents and/or samples provided by, or on behalf of, the Customer and solely for the benefit of the Customer who is responsible for acting as it sees fit on the basis of this report. Neither Eurofins nor any of its officers, employees, agents or subcontractors shall be liable to the Customer nor any third party for any actions taken or not taken on the basis of this report nor for any incorrect results arising from unclear, erroneous, incomplete, misleading or false information provided to Eurofins.
Eurofins shall have no liability for any indirect or consequential loss including, without limitation, loss of production, loss of contracts, loss of profits, loss of business or costs incurred from business interruption, loss of opportunity, loss of goodwill or damage to reputation and cost of product recall (including any losses suffered as a result of distribution of the Customer's products subject of the Services prior to the report being released by Eurofins). It shall further have no liability for any loss, damage or expenses arising from the claims of any third party (including, without limitation, product liability claims) that may be incurred by the Customer.
Eurofins General Terms and Conditions apply.

END OF REPORT

eurofins | Food & Water Testing

ANALYTICAL REPORT

REPORT CODE **AR-22-NW-043400-01** REPORT DATE **30/11/2022**

Attention Kapiti Coast District Council
Kim Mazur
175 Rimu Road
5032 Paraparaumu
NEW ZEALAND
Phone +64275554729
Email Kim.Mazur@kapiticoast.govt.nz
Copy to: Coley (Marcus.Coley@kapiticoast.govt.nz)

Contact for your orders: Wil Verar **Order code:** EUNZWE-00068155
Contract: Kapiti DC WWTP
Submission Reference: KCDC Pre-season Bore 2022 **Purchase Order Number:** 366112

SAMPLE CODE **812-2022-00119567**

Client Reference: Bore K4
Sampling Point NW0002254016:Bore K4
Reception Date & Time: 23/11/2022 11:10
Analysis Start Date & Time: 23/11/2022 12:03 **Analysis Ending Date:** 30/11/2022
Sampled Date & Time 23/11/2022 08:24 **Sampler(s)** KCDC

		RESULTS		LOQ
NW179	**Ammonia Nitrogen**			
	Ammoniacal nitrogen (N)	0.02	mg/l	0.01
NW303	**Anion Sum**			
	Anions, sum	4.11	meq/l	0.01
NW583	**Arsenic - Soluble**			
	Arsenic (As)	<0.001	mg/l	0.001
NW002	**Bicarbonate Alkalinity**			
	Bicarbonate alkalinity	107	mg CaCO3/l	1
NW455	**Boron - Dissolved**			
	Boron (B)	0.096	mg/l	0.005
NW009	**Bromide**			
	Bromide	0.25	mg/l	0.02
NW457	**Calcium - Dissolved**			
	Calcium (Ca)	3.61	mg/l	0.01
NW304	**Cation Sum**			
	Cations, sum	4.67	meq/l	0.01
NW007	**Chloride**			
	Chloride (Cl)	73.3	mg/l	0.02
NW023	**Conductivity**			
	Conductivity	47.8	mS/m	0.1
NW679	**Cyanide**			
	Cyanide	<0.005	mg/l	0.005
NW193	**Dissolved Reactive Phosphorus**			
	Phosphorus (soluble reactive)	0.102	mg/l	0.005
NW006	**Fluoride**			
	Fluoride	0.21	mg/l	0.02

		RESULTS		LOQ
①NW028	**Free Carbon Dioxide**			
	Carbon dioxide	6	mg CO2/l	1
①NW351	**Hydrogen Sulphide**			
	Sulphide	<0.05	mg/l	0.05
NW305	**Ion Balance**			
	Ion balance	6.39	%	0.01
NW460	**Iron - Dissolved**			
	Iron (Fe)	0.012	mg/l	0.005
NW462	**Magnesium - Dissolved**			
	Magnesium (Mg)	4.18	mg/l	0.01
NW463	**Manganese - Dissolved**			
	Manganese (Mn)	0.137	mg/l	0.005
NW084	**Mercury - Acid Soluble**			
	Mercury (Hg)	<0.0005	mg/l	0.0005
NW010	**Nitrate-N**			
	Nitrate-N	<0.01	mg/l	0.01
NW008	**Nitrite-N**			
	Nitrite	<0.01	mg/l	0.01
NW195	**pH**			
	pH	7.6		0.1
NW466	**Potassium - Dissolved**			
	Potassium (K)	1.74	mg/l	0.01
NW469	**Sodium - Dissolved**			
	Sodium (Na)	94.2	mg/l	0.02
NW104	**Soluble Cadmium**			
	Cadmium (Cd)	<0.0002	mg/l	0.0002
NW106	**Soluble Chromium**			
	Chromium (Cr)	<0.001	mg/l	0.001
NW108	**Soluble Copper**			
	Copper (Cu)	0.0019	mg/l	0.0005
NW110	**Soluble Lead**			
	Lead (Pb)	<0.0005	mg/l	0.0005
NW116	**Soluble Nickel**			
	Nickel (Ni)	<0.0005	mg/l	0.0005
NW119	**Soluble Silver**			
	Silver (Ag)	<0.0005	mg/l	0.0005
NW125	**Soluble Zinc**			
	Zinc (Zn)	<0.002	mg/l	0.002
NW011	**Sulphate**			
	Sulphate	13.5	mg/l	0.02
NW199	**Sulphide**			
	Sulphide	<0.2	mg/l	0.2
NW003	**Total Alkalinity**			
	Alkalinity total	107	mg CaCO3/l	1

		RESULTS		LOQ
①NW207	**Total Dissolved Solids**			
	Total dissolved Solids	263	mg/l	1
①NW339	**Total Dissolved Solids**			
	Total dissolved Solids	234	mg/l	1
NW029	**Total Hardness**			
	Hardness	26	mg CaCO3/l	1
NW189	**Total Nitrogen**			
	Total Nitrogen (N)	0.060	mg/l	0.002
NW210	**Total Non-Purgeable Organic Carbon**			
	Total Organic Carbon	0.8	mg/l	0.1
NW194	**Total Phosphorus**			
	Total phosphorus	0.104	mg/l	0.005

LIST OF METHODS

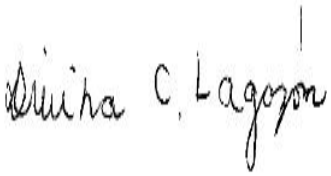
NW002 **Bicarbonate Alkalinity:** APHA Online Edition 4500-CO2 D
NW003 **Total Alkalinity:** APHA Online Edition 2320 B
NW006 **Fluoride:** APHA Online Edition 4110 B
NW007 **Chloride:** APHA Online Edition 4110 B
NW008 **Nitrite-N:** APHA Online Edition 4110 B
NW009 **Bromide:** APHA Online Edition 4110 B
NW010 **Nitrate-N:** APHA Online Edition 4110 B
NW011 **Sulphate:** APHA Online Edition 4110 B
NW023 **Conductivity:** APHA Online Edition 2510 B
NW028 **Free Carbon Dioxide:** APHA Online Edition 4500-CO2 B
NW029 **Total Hardness:** APHA Online Edition 2340 B
NW084 **Mercury - Acid Soluble:** APHA Online Edition 3125 B mod.
NW104 **Soluble Cadmium:** APHA Online Edition 3125 B mod.
NW106 **Soluble Chromium:** APHA Online Edition 3125 B mod.
NW108 **Soluble Copper:** APHA Online Edition 3125 B mod.
NW110 **Soluble Lead:** APHA Online Edition 3125 B mod.
NW116 **Soluble Nickel:** APHA Online Edition 3125 B mod.
NW119 **Soluble Silver:** APHA Online Edition 3125 B mod.
NW125 **Soluble Zinc:** APHA Online Edition 3125 B mod.
NW179 **Ammonia Nitrogen:** APHA Online Edition 4500-NH3 H
NW189 **Total Nitrogen:** APHA Online Edition 4500-NO3- I
NW193 **Dissolved Reactive Phosphorus:** APHA Online Edition 4500-P G
NW194 **Total Phosphorus:** APHA Online Edition 4500-P G / 4500-P B
NW195 **pH:** APHA Online Edition 4500-H B
NW199 **Sulphide:** APHA Online Edition 4500-S²- B, C, F
NW207 **Total Dissolved Solids:** Internal Method, Calculation
NW210 **Total Non-Purgeable Organic Carbon:** APHA Online Edition 5310 B
NW303 **Anion Sum:** APHA 1030 E
NW304 **Cation Sum:** APHA 1030 E
NW305 **Ion Balance:** APHA 1030 E
NW339 **Total Dissolved Solids:** Internal Method, Gravimetry
NW351 **Hydrogen Sulphide:** calculated
NW455 **Boron - Dissolved:** APHA Online Edition 3120 B mod.
NW457 **Calcium - Dissolved:** APHA Online Edition 3120 B mod.
NW460 **Iron - Dissolved:** APHA Online Edition 3120 B mod.
NW462 **Magnesium - Dissolved:** APHA Online Edition 3120 B mod.
NW463 **Manganese - Dissolved:** APHA Online Edition 3120 B mod.
NW466 **Potassium - Dissolved:** APHA Online Edition 3120 B mod.
NW469 **Sodium - Dissolved:** APHA Online Edition 3120 B mod.
NW583 **Arsenic - Soluble:** APHA Online Edition 3125 B mod.
NW679 **Cyanide:** APHA Online Edition 4500-CN C & E

Signature

Marylou Cabral Laboratory Manager
Jennifer Mont Supervisor
Amitesh Kumar Supervisor

Eurofins ELS Limited
85 Port Road
Seaview
Lower Hutt
Wellington 5010
NEW ZEALAND

Phone +64 4 576 5016
www.eurofins.co.nz



Divina Cunanan Lagazon	Supervisor	**Gordon McArthur**	Senior laboratory Analyst	**Ivan Imamura**	Laboratory Analyst
Cody Forbes	Laboratory Technician	**Sam Tagart Cottis**	Senior Laboratory Analyst		

EXPLANATORY NOTE

① Test is not accredited
② Test is subcontracted within Eurofins group and is accredited
③ Test is subcontracted within Eurofins group and is not accredited
④ Test is subcontracted outside Eurofins group and is accredited
⑤ Test is subcontracted outside Eurofins group and is not accredited
⑥ Test result is provided by the customer and is not accredited
⑦ Tested at the sampling point by Eurofins and is not accredited
⑧ Tested at the sampling point by Eurofins and is accredited

N/A means Not applicable
Not Detected means not detected at or above the Limit of Quantification (LOQ)
LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit

The test result(s) in this report apply only to the sample as received.
This document can only be reproduced in full.
The tests are identified by a five-digit code, their description is available on request.
Accreditation does not apply to comments or graphical representations.
Unless otherwise stated, all tests in this analytical report (except for subcontracted tests) are performed at 85 Port Road, Seaview, Lower Hutt, Wellington, NEW ZEALAND.
The laboratory is not responsible for the information provided by the customer which can affect the validity of the results, for example: sampling information such as date/time, field data etc.
This report issued by Eurofins relates exclusively to the samples provided by the Customer and does not relate to the lot / batch from which the samples have been obtained.
Eurofins may subcontract the performance of part or all of the Services to a third party and the Customer authorises the release of all information necessary to the third party for the provision of the Services.
All samples become the property of Eurofins to the extent necessary for the performance of the Services.
Eurofins will not be required to store samples and may destroy or otherwise dispose of the samples or return the samples to the Customer (at the Customer's cost in all respects) immediately following analysis of the samples.
If the Customer pays for storage of the samples Eurofins will take commercially reasonable steps to store the samples for the agreed period in terms of industry practice.
The Customer acknowledges and accepts that: (a) it is solely responsible for the sampling process and warrants that the sample provided to Eurofins is representative of the lot / batch from which the samples were drawn; and (b) Eurofins expresses no opinion and accepts no liability in respect of the Customer's production process or homogeneity of the sample.
The Eurofins water sampling services uses IANZ approved methodology based on AS/NZS 5667 and / or best practice to collect and transport samples that are fit for the purpose of analytical testing. Eurofins shall have no liability if the sample collected is not representative of the source from which it has been taken. The laboratory is not responsible for sampling activities unless explicitly indicated by the statement "Sampled by Eurofins" on the report for water samples.
The Customer acknowledges that the Services are provided using the then current state of technology and methods developed and generally applied by Eurofins and involve analysis, interpretations, consulting work and conclusions. Eurofins shall use commercially reasonable degree of care in providing the Services.
This report is produced and issued on the basis of information, documents and/or samples provided by, or on behalf of, the Customer and solely for the benefit of the Customer who is responsible for acting as it sees fit on the basis of this report. Neither Eurofins nor any of its officers, employees, agents or subcontractors shall be liable to the Customer nor any third party for any actions taken or not taken on the basis of this report nor for any incorrect results arising from unclear, erroneous, incomplete, misleading or false information provided to Eurofins.
Eurofins shall have no liability for any indirect or consequential loss including, without limitation, loss of production, loss of contracts, loss of profits, loss of business or costs incurred from business interruption, loss of opportunity, loss of goodwill or damage to reputation and cost of product recall (including any losses suffered as a result of distribution of the Customer's products subject of the Services prior to the report being released by Eurofins). It shall further have no liability for any loss, damage or expenses arising from the claims of any third party (including, without limitation, product liability claims) that may be incurred by the Customer.
Eurofins General Terms and Conditions apply.

END OF REPORT

eurofins | Food & Water Testing

ANALYTICAL REPORT

REPORT CODE **AR-22-NW-043401-01** REPORT DATE **30/11/2022**

Attention Kapiti Coast District Council
Kim Mazur
175 Rimu Road
5032 Paraparaumu
NEW ZEALAND
Phone +64275554729
Email Kim.Mazur@kapiticoast.govt.nz
Copy to: Coley (Marcus.Coley@kapiticoast.govt.nz)

Contact for your orders: Wil Verar
Contract: Kapiti DC WWTP
Submission Reference: KCDC Pre-season Bore 2022
Order code: EUNZWE-00068155
Purchase Order Number: 366112

SAMPLE CODE **812-2022-00119568**

Client Reference: Bore K5
Sampling Point NW0002254017:Bore K5
Reception Date & Time: 23/11/2022 11:10
Analysis Start Date & Time: 23/11/2022 12:03
Analysis Ending Date: 30/11/2022
Sampled Date & Time 23/11/2022 08:36
Sampler(s) KCDC

		RESULTS		LOQ
NW179	**Ammonia Nitrogen**			
	Ammoniacal nitrogen (N)	0.33	mg/l	0.01
NW303	**Anion Sum**			
	Anions, sum	9.68	meq/l	0.01
NW583	**Arsenic - Soluble**			
	Arsenic (As)	0.001	mg/l	0.001
NW002	**Bicarbonate Alkalinity**			
	Bicarbonate alkalinity	241	mg CaCO3/l	1
NW455	**Boron - Dissolved**			
	Boron (B)	0.528	mg/l	0.005
NW009	**Bromide**			
	Bromide	0.76	mg/l	0.02
NW457	**Calcium - Dissolved**			
	Calcium (Ca)	31.7	mg/l	0.01
NW304	**Cation Sum**			
	Cations, sum	10.8	meq/l	0.01
NW007	**Chloride**			
	Chloride (Cl)	202	mg/l	0.02
NW023	**Conductivity**			
	Conductivity	112	mS/m	0.1
NW679	**Cyanide**			
	Cyanide	<0.005	mg/l	0.005
NW193	**Dissolved Reactive Phosphorus**			
	Phosphorus (soluble reactive)	0.103	mg/l	0.005
NW006	**Fluoride**			
	Fluoride	0.05	mg/l	0.02

		RESULTS		LOQ
①NW028	**Free Carbon Dioxide**			
	Carbon dioxide	5	mg CO2/l	1
①NW351	**Hydrogen Sulphide**			
	Sulphide	<0.05	mg/l	0.05
NW305	**Ion Balance**			
	Ion balance	5.49	%	0.01
NW460	**Iron - Dissolved**			
	Iron (Fe)	<0.005	mg/l	0.005
NW462	**Magnesium - Dissolved**			
	Magnesium (Mg)	14.7	mg/l	0.01
NW463	**Manganese - Dissolved**			
	Manganese (Mn)	0.070	mg/l	0.005
NW084	**Mercury - Acid Soluble**			
	Mercury (Hg)	<0.0005	mg/l	0.0005
NW010	**Nitrate-N**			
	Nitrate-N	<0.01	mg/l	0.01
NW008	**Nitrite-N**			
	Nitrite	<0.01	mg/l	0.01
NW195	**pH**			
	pH	8.0		0.1
NW466	**Potassium - Dissolved**			
	Potassium (K)	8.43	mg/l	0.01
NW469	**Sodium - Dissolved**			
	Sodium (Na)	179	mg/l	0.02
NW104	**Soluble Cadmium**			
	Cadmium (Cd)	<0.0002	mg/l	0.0002
NW106	**Soluble Chromium**			
	Chromium (Cr)	<0.001	mg/l	0.001
NW108	**Soluble Copper**			
	Copper (Cu)	0.0019	mg/l	0.0005
NW110	**Soluble Lead**			
	Lead (Pb)	<0.0005	mg/l	0.0005
NW116	**Soluble Nickel**			
	Nickel (Ni)	<0.0005	mg/l	0.0005
NW119	**Soluble Silver**			
	Silver (Ag)	<0.0005	mg/l	0.0005
NW125	**Soluble Zinc**			
	Zinc (Zn)	<0.002	mg/l	0.002
NW011	**Sulphate**			
	Sulphate	0.41	mg/l	0.02
NW199	**Sulphide**			
	Sulphide	<0.2	mg/l	0.2
NW003	**Total Alkalinity**			
	Alkalinity total	243	mg CaCO3/l	1

		RESULTS		LOQ
①NW207	**Total Dissolved Solids**			
	Total dissolved Solids	617	mg/l	1
①NW339	**Total Dissolved Solids**			
	Total dissolved Solids	549	mg/l	1
NW029	**Total Hardness**			
	Hardness	140	mg CaCO3/l	1
NW189	**Total Nitrogen**			
	Total Nitrogen (N)	0.360	mg/l	0.002
NW210	**Total Non-Purgeable Organic Carbon**			
	Total Organic Carbon	0.4	mg/l	0.1
NW194	**Total Phosphorus**			
	Total phosphorus	0.109	mg/l	0.005

LIST OF METHODS

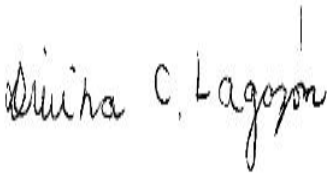
NW002 **Bicarbonate Alkalinity:** APHA Online Edition 4500-CO2 D
NW003 **Total Alkalinity:** APHA Online Edition 2320 B
NW006 **Fluoride:** APHA Online Edition 4110 B
NW007 **Chloride:** APHA Online Edition 4110 B
NW008 **Nitrite-N:** APHA Online Edition 4110 B
NW009 **Bromide:** APHA Online Edition 4110 B
NW010 **Nitrate-N:** APHA Online Edition 4110 B
NW011 **Sulphate:** APHA Online Edition 4110 B
NW023 **Conductivity:** APHA Online Edition 2510 B
NW028 **Free Carbon Dioxide:** APHA Online Edition 4500-CO2 B
NW029 **Total Hardness:** APHA Online Edition 2340 B
NW084 **Mercury - Acid Soluble:** APHA Online Edition 3125 B mod.
NW104 **Soluble Cadmium:** APHA Online Edition 3125 B mod.
NW106 **Soluble Chromium:** APHA Online Edition 3125 B mod.
NW108 **Soluble Copper:** APHA Online Edition 3125 B mod.
NW110 **Soluble Lead:** APHA Online Edition 3125 B mod.
NW116 **Soluble Nickel:** APHA Online Edition 3125 B mod.
NW119 **Soluble Silver:** APHA Online Edition 3125 B mod.
NW125 **Soluble Zinc:** APHA Online Edition 3125 B mod.
NW179 **Ammonia Nitrogen:** APHA Online Edition 4500-NH3 H
NW189 **Total Nitrogen:** APHA Online Edition 4500-NO3- I
NW193 **Dissolved Reactive Phosphorus:** APHA Online Edition 4500-P G
NW194 **Total Phosphorus:** APHA Online Edition 4500-P G / 4500-P B
NW195 **pH:** APHA Online Edition 4500-H B
NW199 **Sulphide:** APHA Online Edition 4500-S²- B, C, F
NW207 **Total Dissolved Solids:** Internal Method, Calculation
NW210 **Total Non-Purgeable Organic Carbon:** APHA Online Edition 5310 B
NW303 **Anion Sum:** APHA 1030 E
NW304 **Cation Sum:** APHA 1030 E
NW305 **Ion Balance:** APHA 1030 E
NW339 **Total Dissolved Solids:** Internal Method, Gravimetry
NW351 **Hydrogen Sulphide:** calculated
NW455 **Boron - Dissolved:** APHA Online Edition 3120 B mod.
NW457 **Calcium - Dissolved:** APHA Online Edition 3120 B mod.
NW460 **Iron - Dissolved:** APHA Online Edition 3120 B mod.
NW462 **Magnesium - Dissolved:** APHA Online Edition 3120 B mod.
NW463 **Manganese - Dissolved:** APHA Online Edition 3120 B mod.
NW466 **Potassium - Dissolved:** APHA Online Edition 3120 B mod.
NW469 **Sodium - Dissolved:** APHA Online Edition 3120 B mod.
NW583 **Arsenic - Soluble:** APHA Online Edition 3125 B mod.
NW679 **Cyanide:** APHA Online Edition 4500-CN C & E

Signature

Marylou Cabral Laboratory Manager
Jennifer Mont Supervisor
Amitesh Kumar Supervisor

Eurofins ELS Limited
85 Port Road
Seaview
Lower Hutt
Wellington 5010
NEW ZEALAND

Phone +64 4 576 5016
www.eurofins.co.nz



Divina Cunanan Lagazon	Supervisor	**Gordon McArthur**	Senior laboratory Analyst	**Ivan Imamura**	Laboratory Analyst
Cody Forbes	Laboratory Technician	**Sam Tagart Cottis**	Senior Laboratory Analyst		

EXPLANATORY NOTE

① Test is not accredited
② Test is subcontracted within Eurofins group and is accredited
③ Test is subcontracted within Eurofins group and is not accredited
④ Test is subcontracted outside Eurofins group and is accredited
⑤ Test is subcontracted outside Eurofins group and is not accredited
⑥ Test result is provided by the customer and is not accredited
⑦ Tested at the sampling point by Eurofins and is not accredited
⑧ Tested at the sampling point by Eurofins and is accredited

N/A means Not applicable
Not Detected means not detected at or above the Limit of Quantification (LOQ)
LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit

The test result(s) in this report apply only to the sample as received.
This document can only be reproduced in full.
The tests are identified by a five-digit code, their description is available on request.
Accreditation does not apply to comments or graphical representations.
Unless otherwise stated, all tests in this analytical report (except for subcontracted tests) are performed at 85 Port Road, Seaview, Lower Hutt, Wellington, NEW ZEALAND.
The laboratory is not responsible for the information provided by the customer which can affect the validity of the results, for example: sampling information such as date/time, field data etc.
This report issued by Eurofins relates exclusively to the samples provided by the Customer and does not relate to the lot / batch from which the samples have been obtained.
Eurofins may subcontract the performance of part or all of the Services to a third party and the Customer authorises the release of all information necessary to the third party for the provision of the Services.
All samples become the property of Eurofins to the extent necessary for the performance of the Services.
Eurofins will not be required to store samples and may destroy or otherwise dispose of the samples or return the samples to the Customer (at the Customer's cost in all respects) immediately following analysis of the samples.
If the Customer pays for storage of the samples Eurofins will take commercially reasonable steps to store the samples for the agreed period in terms of industry practice.
The Customer acknowledges and accepts that: (a) it is solely responsible for the sampling process and warrants that the sample provided to Eurofins is representative of the lot / batch from which the samples were drawn; and (b) Eurofins expresses no opinion and accepts no liability in respect of the Customer's production process or homogeneity of the sample.
The Eurofins water sampling services uses IANZ approved methodology based on AS/NZS 5667 and / or best practice to collect and transport samples that are fit for the purpose of analytical testing. Eurofins shall have no liability if the sample collected is not representative of the source from which it has been taken. The laboratory is not responsible for sampling activities unless explicitly indicated by the statement "Sampled by Eurofins" on the report for water samples.
The Customer acknowledges that the Services are provided using the then current state of technology and methods developed and generally applied by Eurofins and involve analysis, interpretations, consulting work and conclusions. Eurofins shall use commercially reasonable degree of care in providing the Services.
This report is produced and issued on the basis of information, documents and/or samples provided by, or on behalf of, the Customer and solely for the benefit of the Customer who is responsible for acting as it sees fit on the basis of this report. Neither Eurofins nor any of its officers, employees, agents or subcontractors shall be liable to the Customer nor any third party for any actions taken or not taken on the basis of this report nor for any incorrect results arising from unclear, erroneous, incomplete, misleading or false information provided to Eurofins.
Eurofins shall have no liability for any indirect or consequential loss including, without limitation, loss of production, loss of contracts, loss of profits, loss of business or costs incurred from business interruption, loss of opportunity, loss of goodwill or damage to reputation and cost of product recall (including any losses suffered as a result of distribution of the Customer's products subject of the Services prior to the report being released by Eurofins). It shall further have no liability for any loss, damage or expenses arising from the claims of any third party (including, without limitation, product liability claims) that may be incurred by the Customer.
Eurofins General Terms and Conditions apply.

END OF REPORT

eurofins | Food & Water Testing

ANALYTICAL REPORT

REPORT CODE **AR-22-NW-043402-01** REPORT DATE **30/11/2022**

Attention Kapiti Coast District Council
Kim Mazur
175 Rimu Road
5032 Paraparaumu
NEW ZEALAND
Phone +64275554729
Email Kim.Mazur@kapiticoast.govt.nz
Copy to: Coley (Marcus.Coley@kapiticoast.govt.nz)

Contact for your orders: Wil Verar
Contract: Kapiti DC WWTP
Submission Reference: KCDC Pre-season Bore 2022
Order code: EUNZWE-00068155
Purchase Order Number: 366112

SAMPLE CODE **812-2022-00119570**

Client Reference: Bore KB7
Sampling Point NW0002254019:Bore KB7
Reception Date & Time: 23/11/2022 11:10
Analysis Start Date & Time: 23/11/2022 12:03
Analysis Ending Date: 30/11/2022
Sampled Date & Time 23/11/2022 09:01
Sampler(s) KCDC

		RESULTS		LOQ
NW179	**Ammonia Nitrogen**			
	Ammoniacal nitrogen (N)	<0.01	mg/l	0.01
NW303	**Anion Sum**			
	Anions, sum	7.20	meq/l	0.01
NW583	**Arsenic - Soluble**			
	Arsenic (As)	<0.001	mg/l	0.001
NW002	**Bicarbonate Alkalinity**			
	Bicarbonate alkalinity	101	mg CaCO3/l	1
NW455	**Boron - Dissolved**			
	Boron (B)	0.545	mg/l	0.005
NW009	**Bromide**			
	Bromide	0.59	mg/l	0.02
NW457	**Calcium - Dissolved**			
	Calcium (Ca)	20.3	mg/l	0.01
NW304	**Cation Sum**			
	Cations, sum	7.92	meq/l	0.01
NW007	**Chloride**			
	Chloride (Cl)	185	mg/l	0.02
NW023	**Conductivity**			
	Conductivity	83.6	mS/m	0.1
NW679	**Cyanide**			
	Cyanide	<0.005	mg/l	0.005
NW193	**Dissolved Reactive Phosphorus**			
	Phosphorus (soluble reactive)	0.025	mg/l	0.005
NW006	**Fluoride**			
	Fluoride	0.06	mg/l	0.02

		RESULTS		LOQ
①NW028	**Free Carbon Dioxide**			
	Carbon dioxide	4	mg CO2/l	1
①NW351	**Hydrogen Sulphide**			
	Sulphide	<0.05	mg/l	0.05
NW305	**Ion Balance**			
	Ion balance	4.79	%	0.01
NW460	**Iron - Dissolved**			
	Iron (Fe)	0.007	mg/l	0.005
NW462	**Magnesium - Dissolved**			
	Magnesium (Mg)	12.7	mg/l	0.01
NW463	**Manganese - Dissolved**			
	Manganese (Mn)	0.011	mg/l	0.005
NW084	**Mercury - Acid Soluble**			
	Mercury (Hg)	<0.0005	mg/l	0.0005
NW010	**Nitrate-N**			
	Nitrate-N	<0.01	mg/l	0.01
NW008	**Nitrite-N**			
	Nitrite	<0.01	mg/l	0.01
NW195	**pH**			
	pH	7.7		0.1
NW466	**Potassium - Dissolved**			
	Potassium (K)	3.39	mg/l	0.01
NW469	**Sodium - Dissolved**			
	Sodium (Na)	133	mg/l	0.02
NW104	**Soluble Cadmium**			
	Cadmium (Cd)	<0.0002	mg/l	0.0002
NW106	**Soluble Chromium**			
	Chromium (Cr)	<0.001	mg/l	0.001
NW108	**Soluble Copper**			
	Copper (Cu)	0.0015	mg/l	0.0005
NW110	**Soluble Lead**			
	Lead (Pb)	<0.0005	mg/l	0.0005
NW116	**Soluble Nickel**			
	Nickel (Ni)	<0.0005	mg/l	0.0005
NW119	**Soluble Silver**			
	Silver (Ag)	<0.0005	mg/l	0.0005
NW125	**Soluble Zinc**			
	Zinc (Zn)	<0.002	mg/l	0.002
NW011	**Sulphate**			
	Sulphate	13.9	mg/l	0.02
NW199	**Sulphide**			
	Sulphide	<0.2	mg/l	0.2
NW003	**Total Alkalinity**			
	Alkalinity total	101	mg CaCO3/l	1

		RESULTS		LOQ
①NW207	**Total Dissolved Solids**			
	Total dissolved Solids	460	mg/l	1
①NW339	**Total Dissolved Solids**			
	Total dissolved Solids	410	mg/l	1
NW029	**Total Hardness**			
	Hardness	103	mg CaCO3/l	1
NW189	**Total Nitrogen**			
	Total Nitrogen (N)	<0.05	mg/l	0.002
NW210	**Total Non-Purgeable Organic Carbon**			
	Total Organic Carbon	0.1	mg/l	0.1
NW194	**Total Phosphorus**			
	Total phosphorus	0.029	mg/l	0.005

LIST OF METHODS

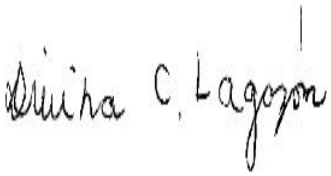
NW002 **Bicarbonate Alkalinity:** APHA Online Edition 4500-CO2 D
NW003 **Total Alkalinity:** APHA Online Edition 2320 B
NW006 **Fluoride:** APHA Online Edition 4110 B
NW007 **Chloride:** APHA Online Edition 4110 B
NW008 **Nitrite-N:** APHA Online Edition 4110 B
NW009 **Bromide:** APHA Online Edition 4110 B
NW010 **Nitrate-N:** APHA Online Edition 4110 B
NW011 **Sulphate:** APHA Online Edition 4110 B
NW023 **Conductivity:** APHA Online Edition 2510 B
NW028 **Free Carbon Dioxide:** APHA Online Edition 4500-CO2 B
NW029 **Total Hardness:** APHA Online Edition 2340 B
NW084 **Mercury - Acid Soluble:** APHA Online Edition 3125 B mod.
NW104 **Soluble Cadmium:** APHA Online Edition 3125 B mod.
NW106 **Soluble Chromium:** APHA Online Edition 3125 B mod.
NW108 **Soluble Copper:** APHA Online Edition 3125 B mod.
NW110 **Soluble Lead:** APHA Online Edition 3125 B mod.
NW116 **Soluble Nickel:** APHA Online Edition 3125 B mod.
NW119 **Soluble Silver:** APHA Online Edition 3125 B mod.
NW125 **Soluble Zinc:** APHA Online Edition 3125 B mod.
NW179 **Ammonia Nitrogen:** APHA Online Edition 4500-NH3 H
NW189 **Total Nitrogen:** APHA Online Edition 4500-NO3- I
NW193 **Dissolved Reactive Phosphorus:** APHA Online Edition 4500-P G
NW194 **Total Phosphorus:** APHA Online Edition 4500-P G / 4500-P B
NW195 **pH:** APHA Online Edition 4500-H B
NW199 **Sulphide:** APHA Online Edition 4500-S²- B, C, F
NW207 **Total Dissolved Solids:** Internal Method, Calculation
NW210 **Total Non-Purgeable Organic Carbon:** APHA Online Edition 5310 B
NW303 **Anion Sum:** APHA 1030 E
NW304 **Cation Sum:** APHA 1030 E
NW305 **Ion Balance:** APHA 1030 E
NW339 **Total Dissolved Solids:** Internal Method, Gravimetry
NW351 **Hydrogen Sulphide:** calculated
NW455 **Boron - Dissolved:** APHA Online Edition 3120 B mod.
NW457 **Calcium - Dissolved:** APHA Online Edition 3120 B mod.
NW460 **Iron - Dissolved:** APHA Online Edition 3120 B mod.
NW462 **Magnesium - Dissolved:** APHA Online Edition 3120 B mod.
NW463 **Manganese - Dissolved:** APHA Online Edition 3120 B mod.
NW466 **Potassium - Dissolved:** APHA Online Edition 3120 B mod.
NW469 **Sodium - Dissolved:** APHA Online Edition 3120 B mod.
NW583 **Arsenic - Soluble:** APHA Online Edition 3125 B mod.
NW679 **Cyanide:** APHA Online Edition 4500-CN C & E

Signature

Marylou Cabral Laboratory Manager
Jennifer Mont Supervisor
Amitesh Kumar Supervisor

Eurofins ELS Limited
85 Port Road
Seaview
Lower Hutt
Wellington 5010
NEW ZEALAND

Phone +64 4 576 5016
www.eurofins.co.nz



Divina Cunanan Lagazon	Supervisor	**Gordon McArthur**	Senior laboratory Analyst	**Ivan Imamura**	Laboratory Analyst
Cody Forbes	Laboratory Technician	**Sam Tagart Cottis**	Senior Laboratory Analyst		

EXPLANATORY NOTE

① Test is not accredited
② Test is subcontracted within Eurofins group and is accredited
③ Test is subcontracted within Eurofins group and is not accredited
④ Test is subcontracted outside Eurofins group and is accredited
⑤ Test is subcontracted outside Eurofins group and is not accredited
⑥ Test result is provided by the customer and is not accredited
⑦ Tested at the sampling point by Eurofins and is not accredited
⑧ Tested at the sampling point by Eurofins and is accredited

N/A means Not applicable
Not Detected means not detected at or above the Limit of Quantification (LOQ)
LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit

The test result(s) in this report apply only to the sample as received.
This document can only be reproduced in full.
The tests are identified by a five-digit code, their description is available on request.
Accreditation does not apply to comments or graphical representations.
Unless otherwise stated, all tests in this analytical report (except for subcontracted tests) are performed at 85 Port Road, Seaview, Lower Hutt, Wellington, NEW ZEALAND.
The laboratory is not responsible for the information provided by the customer which can affect the validity of the results, for example: sampling information such as date/time, field data etc.
This report issued by Eurofins relates exclusively to the samples provided by the Customer and does not relate to the lot / batch from which the samples have been obtained.
Eurofins may subcontract the performance of part or all of the Services to a third party and the Customer authorises the release of all information necessary to the third party for the provision of the Services.
All samples become the property of Eurofins to the extent necessary for the performance of the Services.
Eurofins will not be required to store samples and may destroy or otherwise dispose of the samples or return the samples to the Customer (at the Customer's cost in all respects) immediately following analysis of the samples.
If the Customer pays for storage of the samples Eurofins will take commercially reasonable steps to store the samples for the agreed period in terms of industry practice.
The Customer acknowledges and accepts that: (a) it is solely responsible for the sampling process and warrants that the sample provided to Eurofins is representative of the lot / batch from which the samples were drawn; and (b) Eurofins expresses no opinion and accepts no liability in respect of the Customer's production process or homogeneity of the sample.
The Eurofins water sampling services uses IANZ approved methodology based on AS/NZS 5667 and / or best practice to collect and transport samples that are fit for the purpose of analytical testing. Eurofins shall have no liability if the sample collected is not representative of the source from which it has been taken. The laboratory is not responsible for sampling activities unless explicitly indicated by the statement "Sampled by Eurofins" on the report for water samples.
The Customer acknowledges that the Services are provided using the then current state of technology and methods developed and generally applied by Eurofins and involve analysis, interpretations, consulting work and conclusions. Eurofins shall use commercially reasonable degree of care in providing the Services.
This report is produced and issued on the basis of information, documents and/or samples provided by, or on behalf of, the Customer and solely for the benefit of the Customer who is responsible for acting as it sees fit on the basis of this report. Neither Eurofins nor any of its officers, employees, agents or subcontractors shall be liable to the Customer nor any third party for any actions taken or not taken on the basis of this report nor for any incorrect results arising from unclear, erroneous, incomplete, misleading or false information provided to Eurofins.
Eurofins shall have no liability for any indirect or consequential loss including, without limitation, loss of production, loss of contracts, loss of profits, loss of business or costs incurred from business interruption, loss of opportunity, loss of goodwill or damage to reputation and cost of product recall (including any losses suffered as a result of distribution of the Customer's products subject of the Services prior to the report being released by Eurofins). It shall further have no liability for any loss, damage or expenses arising from the claims of any third party (including, without limitation, product liability claims) that may be incurred by the Customer.
Eurofins General Terms and Conditions apply.

END OF REPORT

eurofins

Food & Water Testing

ANALYTICAL REPORT

REPORT CODE **AR-22-NW-043403-01** REPORT DATE **30/11/2022**

Attention Kapiti Coast District Council
Kim Mazur
175 Rimu Road
5032 Paraparaumu
NEW ZEALAND
Phone +64275554729
Email Kim.Mazur@kapiticoast.govt.nz
Copy to: Coley (Marcus.Coley@kapiticoast.govt.nz)

Contact for your orders: Wil Verar **Order code:** EUNZWE-00068155
Contract: Kapiti DC WWTP
Submission Reference: KCDC Pre-season Bore 2022 **Purchase Order Number:** 366112

SAMPLE CODE **812-2022-00119571**

Client Reference: Bore K12
Sampling Point NW0002254020:Bore K12
Reception Date & Time: 23/11/2022 11:10
Analysis Start Date & Time: 23/11/2022 12:03 **Analysis Ending Date:** 30/11/2022
Sampled Date & Time 23/11/2022 09:10 **Sampler(s)** KCDC

		RESULTS		LOQ
NW179	**Ammonia Nitrogen**			
	Ammoniacal nitrogen (N)	<0.01	mg/l	0.01
NW303	**Anion Sum**			
	Anions, sum	4.54	meq/l	0.01
NW583	**Arsenic - Soluble**			
	Arsenic (As)	<0.001	mg/l	0.001
NW002	**Bicarbonate Alkalinity**			
	Bicarbonate alkalinity	91	mg CaCO3/l	1
NW455	**Boron - Dissolved**			
	Boron (B)	0.413	mg/l	0.005
NW009	**Bromide**			
	Bromide	0.30	mg/l	0.02
NW457	**Calcium - Dissolved**			
	Calcium (Ca)	16.8	mg/l	0.01
NW304	**Cation Sum**			
	Cations, sum	4.77	meq/l	0.01
NW007	**Chloride**			
	Chloride (Cl)	94.8	mg/l	0.02
NW023	**Conductivity**			
	Conductivity	51.6	mS/m	0.1
NW679	**Cyanide**			
	Cyanide	<0.005	mg/l	0.005
NW193	**Dissolved Reactive Phosphorus**			
	Phosphorus (soluble reactive)	0.043	mg/l	0.005
NW006	**Fluoride**			
	Fluoride	0.09	mg/l	0.02

		RESULTS		LOQ
①NW028	**Free Carbon Dioxide**			
	Carbon dioxide	3	mg CO2/l	1
①NW351	**Hydrogen Sulphide**			
	Sulphide	<0.05	mg/l	0.05
NW305	**Ion Balance**			
	Ion balance	2.51	%	0.01
NW460	**Iron - Dissolved**			
	Iron (Fe)	<0.005	mg/l	0.005
NW462	**Magnesium - Dissolved**			
	Magnesium (Mg)	9.14	mg/l	0.01
NW463	**Manganese - Dissolved**			
	Manganese (Mn)	0.013	mg/l	0.005
NW084	**Mercury - Acid Soluble**			
	Mercury (Hg)	<0.0005	mg/l	0.0005
NW010	**Nitrate-N**			
	Nitrate-N	<0.01	mg/l	0.01
NW008	**Nitrite-N**			
	Nitrite	<0.01	mg/l	0.01
NW195	**pH**			
	pH	7.7		0.1
NW466	**Potassium - Dissolved**			
	Potassium (K)	1.88	mg/l	0.01
NW469	**Sodium - Dissolved**			
	Sodium (Na)	72.0	mg/l	0.02
NW104	**Soluble Cadmium**			
	Cadmium (Cd)	<0.0002	mg/l	0.0002
NW106	**Soluble Chromium**			
	Chromium (Cr)	<0.001	mg/l	0.001
NW108	**Soluble Copper**			
	Copper (Cu)	0.0015	mg/l	0.0005
NW110	**Soluble Lead**			
	Lead (Pb)	<0.0005	mg/l	0.0005
NW116	**Soluble Nickel**			
	Nickel (Ni)	<0.0005	mg/l	0.0005
NW119	**Soluble Silver**			
	Silver (Ag)	<0.0005	mg/l	0.0005
NW125	**Soluble Zinc**			
	Zinc (Zn)	<0.002	mg/l	0.002
NW011	**Sulphate**			
	Sulphate	16.0	mg/l	0.02
NW199	**Sulphide**			
	Sulphide	<0.2	mg/l	0.2
NW003	**Total Alkalinity**			
	Alkalinity total	92	mg CaCO3/l	1

		RESULTS		LOQ
①NW339	**Total Dissolved Solids**			
	Total dissolved Solids	253	mg/l	1
①NW207	**Total Dissolved Solids**			
	Total dissolved Solids	284	mg/l	1
NW029	**Total Hardness**			
	Hardness	80	mg CaCO3/l	1
NW189	**Total Nitrogen**			
	Total Nitrogen (N)	<0.05	mg/l	0.002
NW210	**Total Non-Purgeable Organic Carbon**			
	Total Organic Carbon	0.1	mg/l	0.1
NW194	**Total Phosphorus**			
	Total phosphorus	0.042	mg/l	0.005

LIST OF METHODS

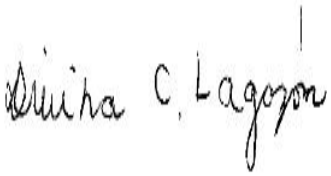
NW002 **Bicarbonate Alkalinity:** APHA Online Edition 4500-CO2 D
NW003 **Total Alkalinity:** APHA Online Edition 2320 B
NW006 **Fluoride:** APHA Online Edition 4110 B
NW007 **Chloride:** APHA Online Edition 4110 B
NW008 **Nitrite-N:** APHA Online Edition 4110 B
NW009 **Bromide:** APHA Online Edition 4110 B
NW010 **Nitrate-N:** APHA Online Edition 4110 B
NW011 **Sulphate:** APHA Online Edition 4110 B
NW023 **Conductivity:** APHA Online Edition 2510 B
NW028 **Free Carbon Dioxide:** APHA Online Edition 4500-CO2 B
NW029 **Total Hardness:** APHA Online Edition 2340 B
NW084 **Mercury - Acid Soluble:** APHA Online Edition 3125 B mod.
NW104 **Soluble Cadmium:** APHA Online Edition 3125 B mod.
NW106 **Soluble Chromium:** APHA Online Edition 3125 B mod.
NW108 **Soluble Copper:** APHA Online Edition 3125 B mod.
NW110 **Soluble Lead:** APHA Online Edition 3125 B mod.
NW116 **Soluble Nickel:** APHA Online Edition 3125 B mod.
NW119 **Soluble Silver:** APHA Online Edition 3125 B mod.
NW125 **Soluble Zinc:** APHA Online Edition 3125 B mod.
NW179 **Ammonia Nitrogen:** APHA Online Edition 4500-NH3 H
NW189 **Total Nitrogen:** APHA Online Edition 4500-NO3- I
NW193 **Dissolved Reactive Phosphorus:** APHA Online Edition 4500-P G
NW194 **Total Phosphorus:** APHA Online Edition 4500-P G / 4500-P B
NW195 **pH:** APHA Online Edition 4500-H B
NW199 **Sulphide:** APHA Online Edition 4500-S²- B, C, F
NW207 **Total Dissolved Solids:** Internal Method, Calculation
NW210 **Total Non-Purgeable Organic Carbon:** APHA Online Edition 5310 B
NW303 **Anion Sum:** APHA 1030 E
NW304 **Cation Sum:** APHA 1030 E
NW305 **Ion Balance:** APHA 1030 E
NW339 **Total Dissolved Solids:** Internal Method, Gravimetry
NW351 **Hydrogen Sulphide:** calculated
NW455 **Boron - Dissolved:** APHA Online Edition 3120 B mod.
NW457 **Calcium - Dissolved:** APHA Online Edition 3120 B mod.
NW460 **Iron - Dissolved:** APHA Online Edition 3120 B mod.
NW462 **Magnesium - Dissolved:** APHA Online Edition 3120 B mod.
NW463 **Manganese - Dissolved:** APHA Online Edition 3120 B mod.
NW466 **Potassium - Dissolved:** APHA Online Edition 3120 B mod.
NW469 **Sodium - Dissolved:** APHA Online Edition 3120 B mod.
NW583 **Arsenic - Soluble:** APHA Online Edition 3125 B mod.
NW679 **Cyanide:** APHA Online Edition 4500-CN C & E

Signature

Marylou Cabral Laboratory Manager
Jennifer Mont Supervisor
Amitesh Kumar Supervisor

Eurofins ELS Limited
85 Port Road
Seaview
Lower Hutt
Wellington 5010
NEW ZEALAND

Phone +64 4 576 5016
www.eurofins.co.nz



Divina Cunanan Lagazon	Supervisor	**Gordon McArthur**	Senior laboratory Analyst	**Ivan Imamura**	Laboratory Analyst
Cody Forbes	Laboratory Technician	**Sam Tagart Cottis**	Senior Laboratory Analyst		

EXPLANATORY NOTE

① Test is not accredited
② Test is subcontracted within Eurofins group and is accredited
③ Test is subcontracted within Eurofins group and is not accredited
④ Test is subcontracted outside Eurofins group and is accredited
⑤ Test is subcontracted outside Eurofins group and is not accredited
⑥ Test result is provided by the customer and is not accredited
⑦ Tested at the sampling point by Eurofins and is not accredited
⑧ Tested at the sampling point by Eurofins and is accredited

N/A means Not applicable
Not Detected means not detected at or above the Limit of Quantification (LOQ)
LOQ means Limit of Quantification and the unit of LOQ is the same as the result unit

The test result(s) in this report apply only to the sample as received.
This document can only be reproduced in full.
The tests are identified by a five-digit code, their description is available on request.
Accreditation does not apply to comments or graphical representations.
Unless otherwise stated, all tests in this analytical report (except for subcontracted tests) are performed at 85 Port Road, Seaview, Lower Hutt, Wellington, NEW ZEALAND.
The laboratory is not responsible for the information provided by the customer which can affect the validity of the results, for example: sampling information such as date/time, field data etc.
This report issued by Eurofins relates exclusively to the samples provided by the Customer and does not relate to the lot / batch from which the samples have been obtained.
Eurofins may subcontract the performance of part or all of the Services to a third party and the Customer authorises the release of all information necessary to the third party for the provision of the Services.
All samples become the property of Eurofins to the extent necessary for the performance of the Services.
Eurofins will not be required to store samples and may destroy or otherwise dispose of the samples or return the samples to the Customer (at the Customer's cost in all respects) immediately following analysis of the samples.
If the Customer pays for storage of the samples Eurofins will take commercially reasonable steps to store the samples for the agreed period in terms of industry practice.
The Customer acknowledges and accepts that: (a) it is solely responsible for the sampling process and warrants that the sample provided to Eurofins is representative of the lot / batch from which the samples were drawn; and (b) Eurofins expresses no opinion and accepts no liability in respect of the Customer's production process or homogeneity of the sample.
The Eurofins water sampling services uses IANZ approved methodology based on AS/NZS 5667 and / or best practice to collect and transport samples that are fit for the purpose of analytical testing. Eurofins shall have no liability if the sample collected is not representative of the source from which it has been taken. The laboratory is not responsible for sampling activities unless explicitly indicated by the statement "Sampled by Eurofins" on the report for water samples.
The Customer acknowledges that the Services are provided using the then current state of technology and methods developed and generally applied by Eurofins and involve analysis, interpretations, consulting work and conclusions. Eurofins shall use commercially reasonable degree of care in providing the Services.
This report is produced and issued on the basis of information, documents and/or samples provided by, or on behalf of, the Customer and solely for the benefit of the Customer who is responsible for acting as it sees fit on the basis of this report. Neither Eurofins nor any of its officers, employees, agents or subcontractors shall be liable to the Customer nor any third party for any actions taken or not taken on the basis of this report nor for any incorrect results arising from unclear, erroneous, incomplete, misleading or false information provided to Eurofins.
Eurofins shall have no liability for any indirect or consequential loss including, without limitation, loss of production, loss of contracts, loss of profits, loss of business or costs incurred from business interruption, loss of opportunity, loss of goodwill or damage to reputation and cost of product recall (including any losses suffered as a result of distribution of the Customer's products subject of the Services prior to the report being released by Eurofins). It shall further have no liability for any loss, damage or expenses arising from the claims of any third party (including, without limitation, product liability claims) that may be incurred by the Customer.
Eurofins General Terms and Conditions apply.

END OF REPORT

Appendix E

Complaints Record