

Fonterra Hautapu Resource Consent Compliance Annual Report

1 July 2019 to 30 June 2020

30 September 2020

Waikato Regional Council
Private Bag 3038
Waikato Mail Centre
Hamilton 3240

Attn: Krystal Geraghty

Fonterra Hautapu Annual Compliance Report

Please find attached the Annual Compliance Report for the following consents:

- 96133 Discharge to Water, River Discharge
- 137761.01.02 Discharge to Water, Stormwater
- 138453, Stormwater irrigation – This consent has not been used this season.

If you require any further information, please do not hesitate to contact me.

Yours sincerely,

Alice Rackham
Environmental Manager, Hautapu
Fonterra Co-operative Group Limited

Alice.Rackham@fonterra.com

direct +64 7 827 9653, fax +64 7 827 9698, mobile + 64 27 406 1765

Private Bag 885, Cambridge, Area code 3400, Victoria Road, Cambridge, New Zealand





**Fonterra Hautapu
Annual Resource Consents Report
2019/2020**



Report prepared by

Annelize du Toit
Environmental Advisor, Hautapu



Reviewed by:

Alice Rackham
Environmental Manager, Hautapu



Approved by:

Shane Harris
Site Operations Manager



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1. Contents

2.	Executive Summary	7
3.	Discharge to Water – Consent #96133, River Discharge	8
8.1	Introduction	8
8.2	Condition 1 - General	8
8.3	Condition 2 - Fees	8
8.4	Condition 3 - Volume	8
8.5	Condition 4 - Chemical Oxygen Demand	9
8.6	Condition 5 - Suspended Solids	9
8.7	Condition 6 - pH	9
8.8	Condition 7 - Ammonium-N	10
8.9	Condition 8 - Discharge of Foam or Fat & Turbidity Changes	11
8.10	Condition 9 - River Effects	11
8.11	Condition 10 - Nitrogen Load	12
8.12	Condition 11 - Phosphorus	13
8.13	Condition 11A - Total Available Chlorine	13
8.14	Condition 11B - Faecal Coliforms	13
8.15	Condition 12 - Continuous Monitoring	14
8.16	Condition 13 - Wastewater Characterisation	15
8.17	Condition 14 - Reporting	17
8.18	Condition 15 - Survey	17
8.19	Condition 16 - Annual Report	18
8.20	Condition 17 - Sample Analysis	18
8.21	Condition 18 - Diffuser	18
8.22	Condition 19 - Reviews	18
8.23	Regional Council Audits & Liaison	19
4.	Discharge of Stormwater – Consent #137761.01.02	20
10.1	Condition 1 – Scope	20
	10.2 Condition 2 - General	20
	10.3 Condition 3 - Changes	20
	10.4 Condition 4 (i) - fat & oil	20
10.5	Condition 4 (ii) - CBOD ₅	20
10.6	Condition 4 (iii) - Suspended Solids	21
	10.7 Condition 4 (iv) - pH	21
	10.8 Condition 5 - Erosion	21
	10.9 Condition 6 – Stormwater System Upgrade	21
	10.11 Condition 7 – Progress Reports	22
	10.12 Condition 8 – As-builts	22
	10.13 Condition 9 – Stormwater System General Management	22
	10.14 Condition 10 Stormwater Discharge	23
	10.15 Condition 11 – Non-compliant discharges	28
	10.16 Condition 12 – Mangaone Stream Monitoring	29
	Mangaone Stream Monitoring - pH	29

	Mangaone Stream Monitoring – Total Suspended Solids	29
	Mangaone Stream Monitoring – Conductivity	30
	Mangaone Stream Monitoring – Total Nitrogen	30
	Mangaone Stream Monitoring – Nitrate-Nitrogen	30
	Mangaone Stream Monitoring – Nitrite-Nitrogen	31
	Mangaone Stream Monitoring – Ammoniacal-Nitrogen	31
	Mangaone Stream Monitoring – TKN	31
	Mangaone Stream Monitoring – DRP	32
	Mangaone Stream Monitoring – Total Phosphorous	32
	Mangaone Stream Monitoring – Sodium	32
	Mangaone Stream Monitoring – cBOD5	33
	10.17 Condition 13 – Mangaone Stream Ecological Monitoring Plan	34
	10.18 Condition 14 – Water analyses	34
	10.19 Condition 15 – Management and Monitoring Plan	35
	10.20 Condition 16 – Riparian Management	39
	10.21 Condition 17 – Non-Compliance and Complaints	40
	10.22 Condition 18 – Logging Non-Compliance and Complaints	40
	10.23 Condition 19 – Reporting	40
	10.24 Condition 20 – Reporting	40
	10.25 Condition 21 – Review	41
5.	Stormwater Irrigation – Consent #138453	42
6.	Non-Compliance Summary	43
7.	Incidents and Complaints	46
8.	Community Relations	48
9.	References	51

List of Figures

Figure 1	Volume Discharged to Waikato River	8
Figure 2	COD Levels in the River Discharge	9
Figure 3	Suspended Solids Levels in the River Discharge	9
Figure 4	pH of the River Discharge	10
Figure 5	Ammonium-N levels in the River Discharge	11
Figure 6	Waikato River Temperature Readings Up and Downstream of the River Discharge	12
Figure 7	Quarterly Nitrogen Load to Waikato River	12
Figure 8	Quarterly Phosphorus Load to Waikato River	13
Figure 9	Total Available Chlorine in River Discharge	13
Figure 10	Faecal Coliforms in River Discharge	14
Figure 11	Continuous monitoring for pH and Conductivity on the River Discharge	14

List of Tables

Table 1 - ENC Summary	43
Table 2 – Incident and Complaint Summary	46

2. Executive Summary

This annual report covers the 2019/2020 dairy processing season, which is from the 1 July 2019 to 30 June 2020. The consents included in this report are for:

- 961133 – Discharge to the Waikato River
- 930685 – Discharge of Stormwater
- 138453 – Discharge of Stormwater to Land – This consent has not been used this season.

A number of these consents contain a requirement to produce an annual report. All the significant conditions in these resource consents are analysed and commented on in this report.

The site processed 735,527 million litres of milk commencing on the 15th of July 2019 and finishing on the 17th of May 2020, which is 6,484 million litres less than last season. The average during the peak month of October was 2.8 million litres per day. The main products were Milk Protein Concentrate, Casein and Cheese.

Note: the F20 peak is substantially lower as the site were receiving Organic Milk in October which is a slower process.

We look forward to the 2020/2021 season.

3. Discharge to Water – Consent #96133, River Discharge

This consent authorises the holder to;

Discharge dairy factory processing water to the Waikato River.

8.1 Introduction

Fonterra Hautapu operates a river line discharge which accommodates for the discharge of processing water from Hautapu site. The river line discharges low strength wastewaters consisting of permeate from reverse osmosis (RO) membrane plants, condensate from evaporator plants and plant flushes.

The discharge generally contains very low levels of nutrients and has a temperature of approximately 28-30°C. The system is set up with a collection tank on the Fonterra Hautapu site, from where the water is pumped to the Waikato River through a 7 km pipeline. This pipeline runs from the Hautapu site, along Hautapu & Peake Roads. It runs beneath State Highway 1 and through St. Peter's School to the bank of the river. The discharge occurs through a diffuser in the river.

To minimise bacterial growth in the pipeline and discharge water, sodium hypochlorite is dosed into the system via an on-line Free Available Chlorine (FAC) analyser at a set dose rate ensuring all bacterial growth is eliminated.

8.2 Condition 1 - General

The wastewater shall be discharged in general accordance with the application for this resource consent and the document titled "Riverline Discharge, application for resource consents", prepared by Anchor Products, dated September 1998 and as identified in the resource consent conditions below.

Compliant ✓

The discharge is operated in accordance with the application.

8.3 Condition 2 - Fees

The consent holder shall pay to the Waikato Regional Council any administrative charge fixed in accordance with section 36 of the Resource Management Act 1991, or any charge prescribed in accordance with regulations.

Compliant ✓

All fees are paid accordingly.

8.4 Condition 3 - Volume

The maximum volume of wastewater discharged shall not exceed 2500 cubic metres in any 24 hour period.

Compliant ✓

Volume discharged to the Waikato River for the season.

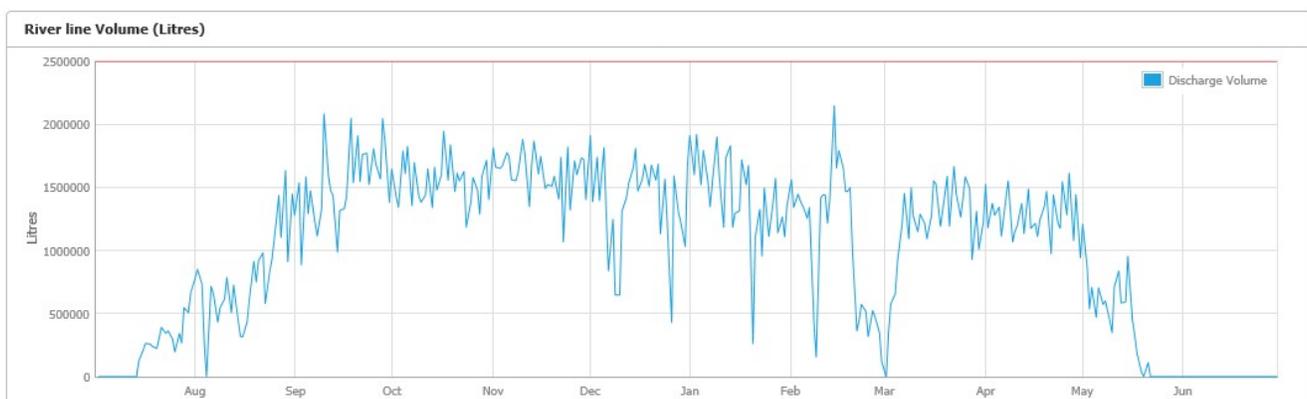


Figure 1 Volume Discharged to Waikato River

Generally, the volumes discharged were well below the consent limit. A set-point is entered into a system to ensure the volume that is discharged will not exceed 2500 m³ per day. The maximum volume discharged was 2,148 m³/day on 14 February 2020.

8.5 Condition 4 - Chemical Oxygen Demand

The Chemical Oxygen Demand (COD) load of the wastewater discharged, as measured by a 24hr flow composite, shall not exceed 600 kilograms per day, expressed as a ten week (that is, ten test results) rolling average.

Compliant ✓

A weekly sample of the river discharge is tested by Hill Laboratories for Chemical Oxygen Demand or COD. The results from this testing are used to calculate COD loads.

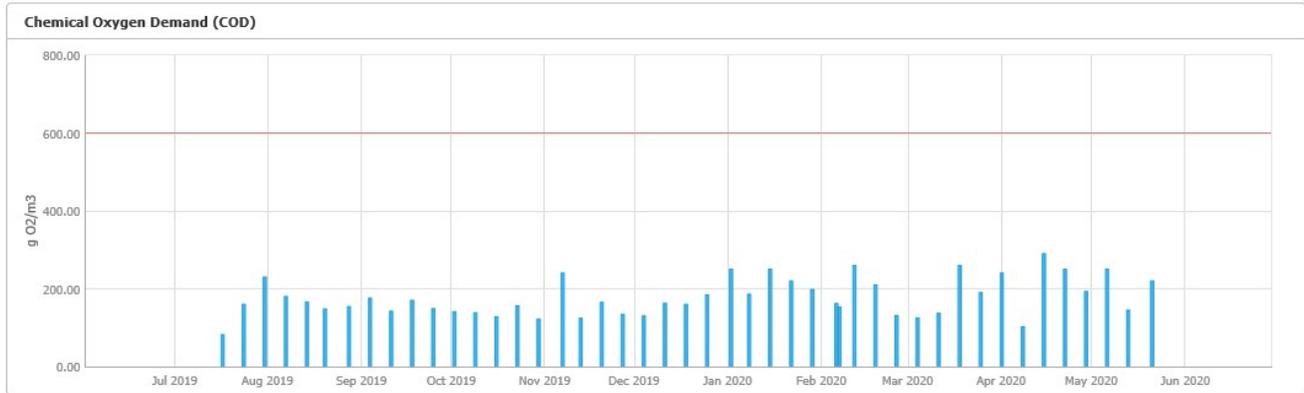


Figure 2 COD Levels in the River Discharge

The graph shows that the 10-day rolling average stayed well below the consent limit of 600kg per day for the rolling average.

8.6 Condition 5 - Suspended Solids

The suspended solids concentration of the wastewater discharged, as measured by a 24hr flow composite, shall not exceed 80 grams per cubic metre.

Compliant ✓

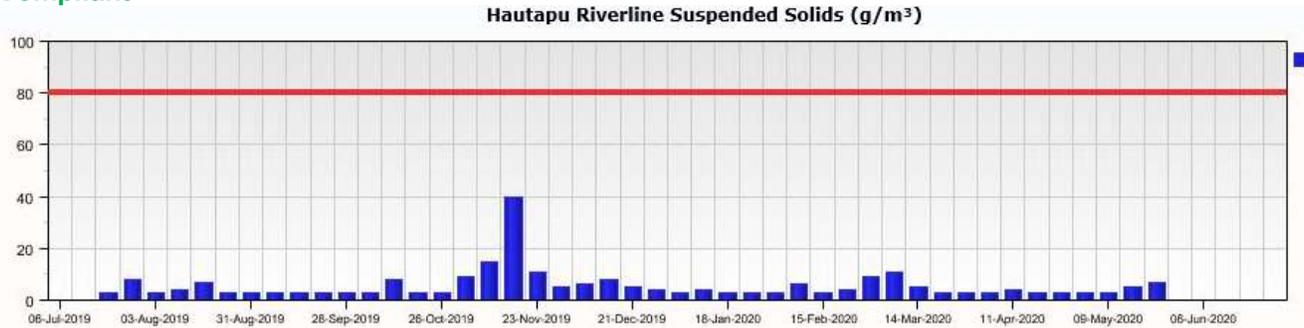


Figure 3 Suspended Solids Levels in the River Discharge

Suspended solid concentrations remain low and considerably below the consent limit.

8.7 Condition 6 - pH

The pH of the wastewater discharged, as measured by a 24 hr flow composite, shall have a pH not less than 5 and not more than 10 pH units. The pH of the wastewater as measured instantaneously shall not be less than 4 and shall not be more than 11.

Non-Compliant ✖

Composite samples of the river discharge were tested daily for pH by the operators on Hautapu site.

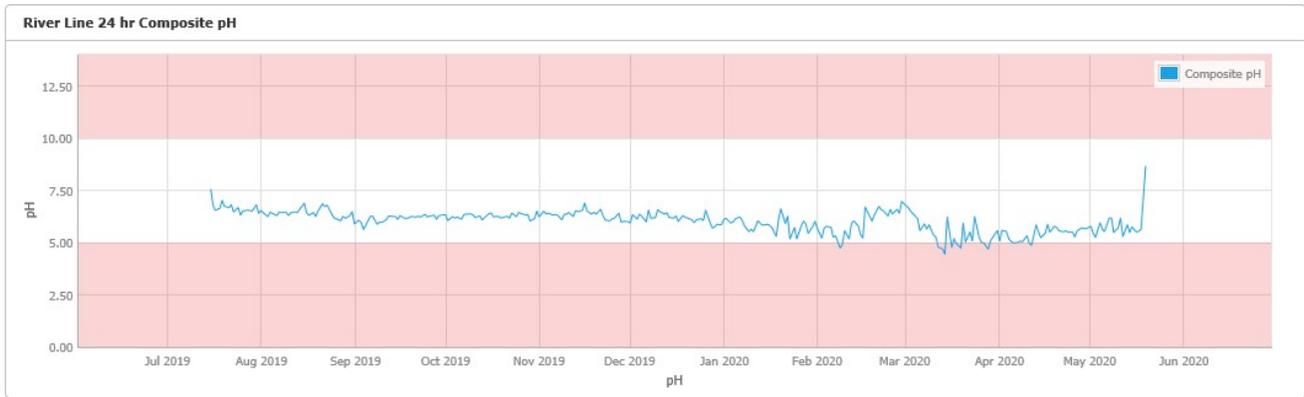
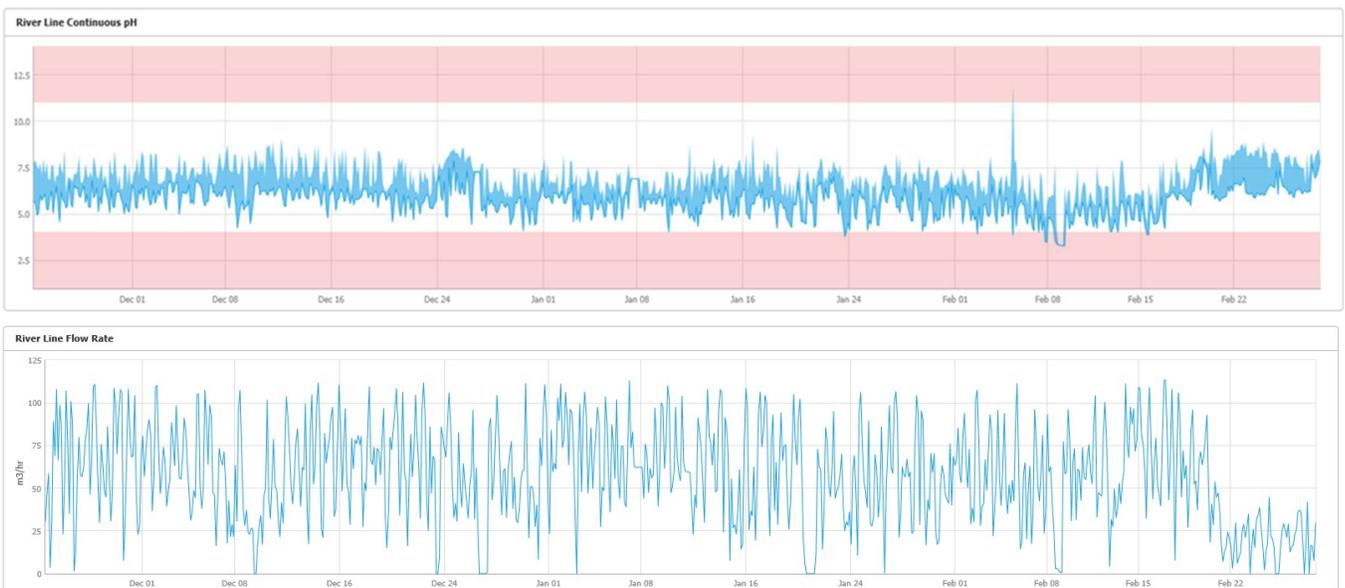


Figure 4 pH of the River Discharge

The graph shows most results to be within the limits. The drop in the pH in February / March to below the limits has been reported to WRC as an ENCR and is part of Section. 7, Non-Compliance Summary. The missing data on the shoulders of the graph is due to season shut periods.



The limits on instantaneous pH are 4 to 11. These values were not exceeded as the pumps stop discharging once the pH measured with the in-line pH meter falls outside these values.

8.8 Condition 7 - Ammonium-N

The ammonium-N load of the wastewater discharged, as measured by a 24hr flow composite, shall not exceed 110 kilograms per day.

Compliant ✓

Ammonia levels during the season have again been well below the consent limit. All results have been below the detection limit for the tests and show as zero in the graph.



Figure 5 Ammonium-N levels in the River Discharge

8.9 Condition 8 - Discharge of Foam or Fat & Turbidity Changes

There shall be no visible discharge of floatable fat, grease or oil.

Compliant ✓

The river discharge is observed monthly when the weekly sampling is carried out. No fat, grease or oil has been observed at any of these times. There have been no complaints regarding this condition either.

8.10 Condition 9 - River Effects

After reasonable mixing, defined for the purposes of this consent as no more than 200 metres downstream from the point of discharge, there shall be:

- a) *No visible foam or scum produced by the discharge; and*
- b) *No conspicuous colour or turbidity change produced by the discharge; and*
- c) *The discharge shall not result in the river temperature increasing by more than 3 degrees Celsius above ambient river temperature, or exceeding 25 degrees Celsius*

Compliant ✓

Operators carried out weekly checks of the river discharge point. No scum foam, colour or turbidity change was detected.

Temperatures were measured from the river by boat, the largest difference measured was a decrease of 0.5°C (downstream compared to upstream) and all temperatures were below the maximum temperature consent limit 25°C. The highest temperature measured was 23.3°C on 31st January 2020.

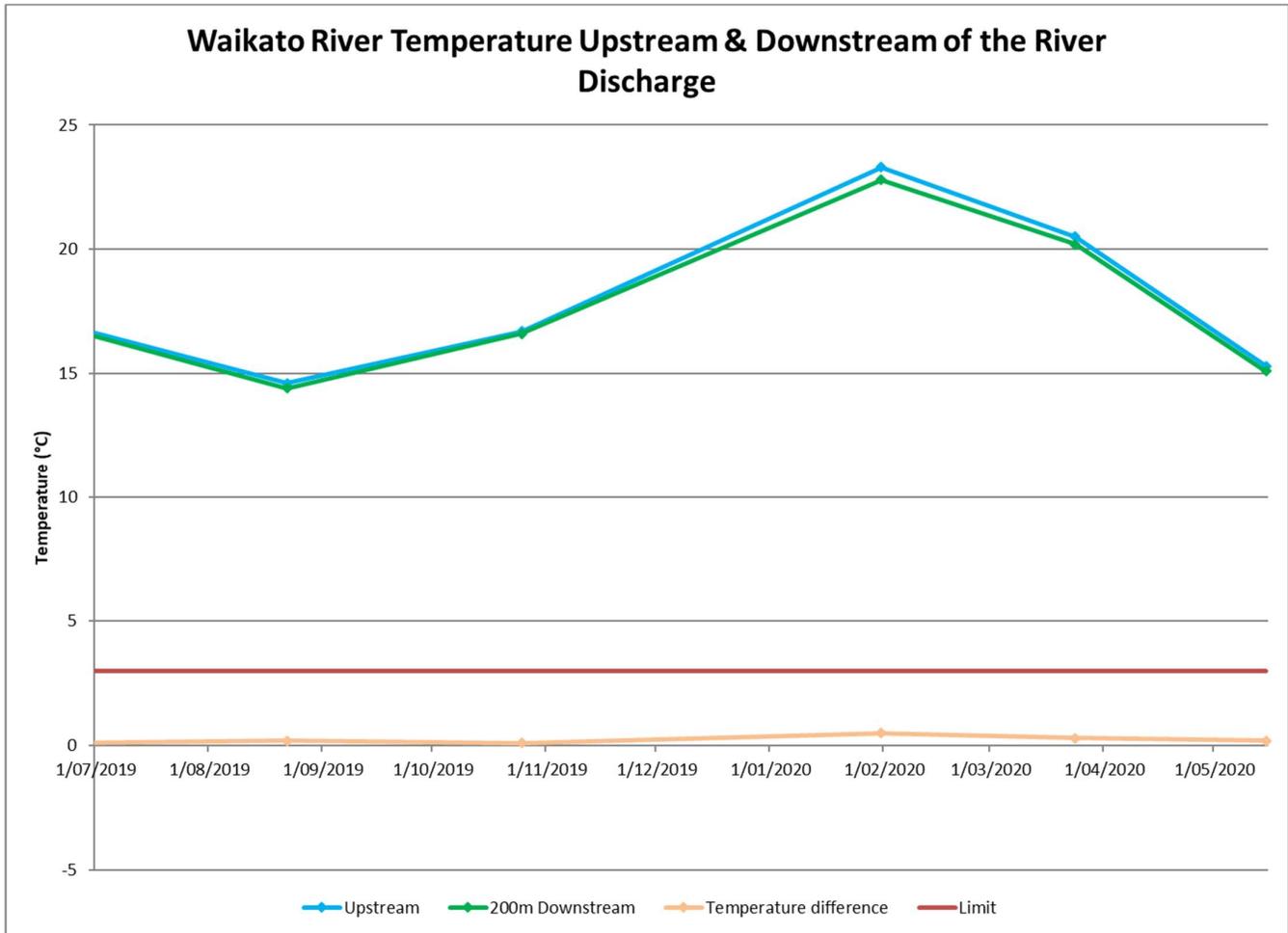


Figure 6 Waikato River Temperature Readings Up and Downstream of the River Discharge.

8.11 Condition 10 - Nitrogen Load

The average nitrogen load shall not exceed 125 kilograms per day. For compliance purposes, the average nutrient loads shall be calculated quarterly (July – September, October – December, January – March, April – June). From 1 July 2006 onwards the average total nitrogen load shall not exceed 100 kilograms per day in the quarter January – March.

Compliant ✓

The average quarterly total nitrogen (based on TKN + NO₃-N + NO₂-N concentrations) in the wastewater discharged to the river were below the maximum limit of 125kg per day.

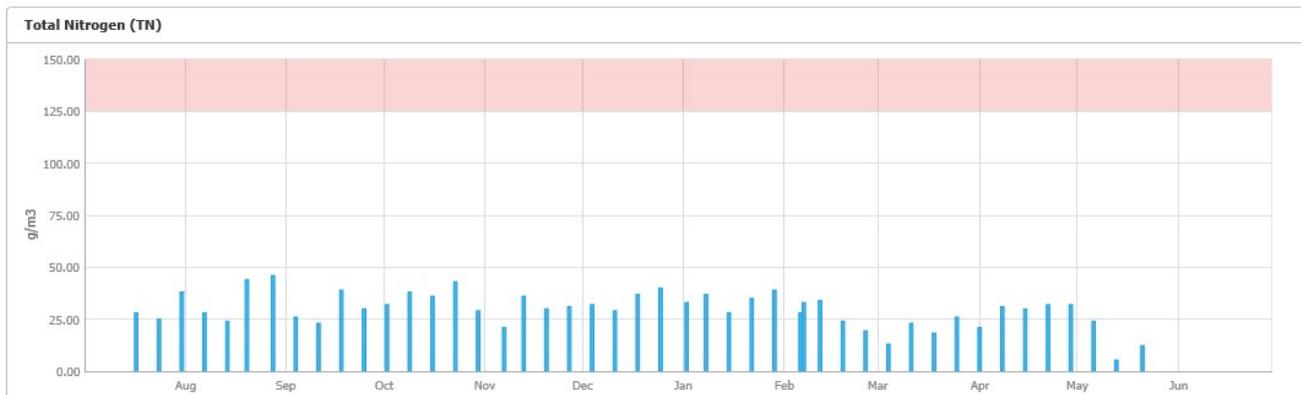


Figure 7 Quarterly Nitrogen Load to Waikato River

Results above show good compliance with the resource consent limit for nitrogen load. The results are in-line with previous season results.

8.12 Condition 11 - Phosphorus

From the date of granting this consent the average phosphorus load shall not exceed 5 kilograms per day. For compliance purposes the average nutrient loads shall be calculated quarterly (July – September, October – December, January – March, April – June).

Compliant ✓

The average quarterly total phosphorus in the wastewater discharged to the river was below the maximum limit of 5kg per day.

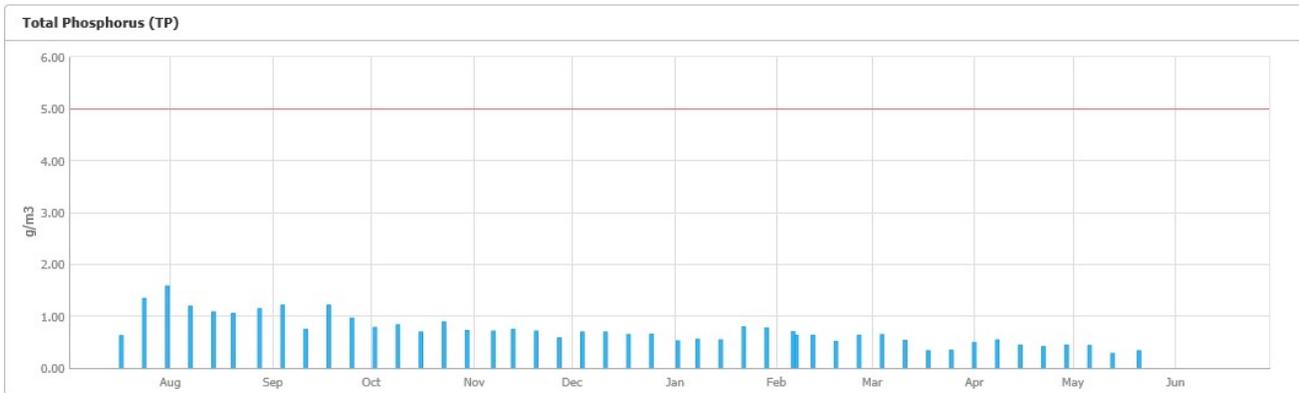


Figure 8 Quarterly Phosphorus Load to Waikato River

The actual quarterly phosphorus loads are well below the consent limit and in line with what was measured the previous season.

8.13 Condition 11A - Total Available Chlorine

The total available chlorine concentration in the discharge shall not exceed an average of 20 grams per cubic metre in any three month period, and shall not exceed 25 grams per cubic metre expressed as 95 percentile upper value over each processing year.

Compliant ✓

Grab samples were collected weekly from the river pipeline end and tested for total available chlorine. The average as a 3-month rolling average did not exceed 20g/m³.



Figure 9 Total Available Chlorine in River Discharge

Total Available Chlorine was measured by the site operators using the Orbeco Hellige Analyser.

8.14 Condition 11B - Faecal Coliforms

The median faecal coliform concentration in the discharge shall not exceed 1,000 cfu per 100ml in any three month period, and shall not exceed 10,000 cfu per 100ml at any time.

Compliant ✓

Grab samples from the discharge pipe end were sent on a weekly basis to Hill Laboratories in Hamilton for faecal coliform testing.

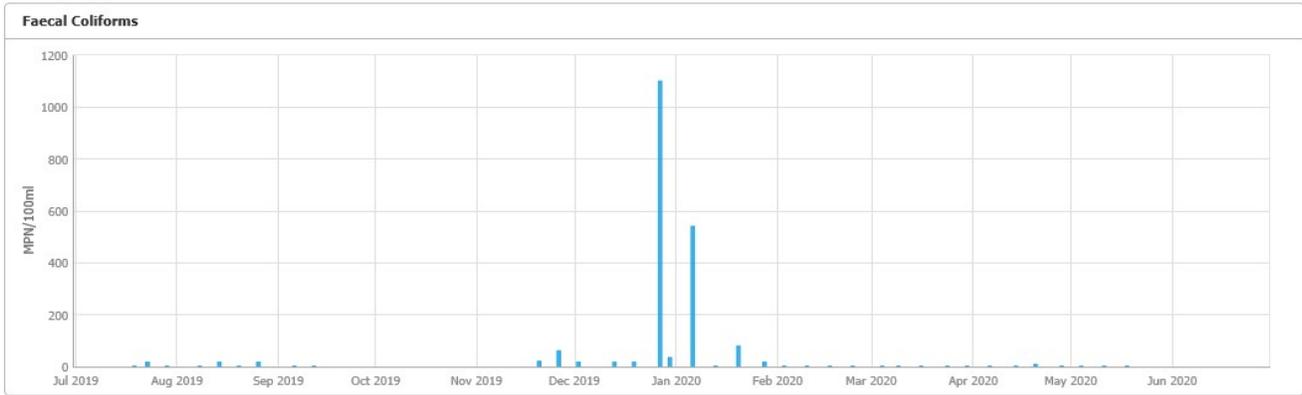


Figure 10 Faecal Coliforms in River Discharge

The residual chlorine in the discharge during the season was again neutralised with sodium thiosulphate prior to testing to get a better indication of the presence of faecal coliforms. There has been a couple of spikes in the results. It was established that the sample point had a rubber fitting that was contaminated due to the nature of the material. Some dirt had accumulated and caused the high reading. The rubber fitting has been changed to a stainless tap and can be efficiently sanitised before sampling.

8.15 Condition 12 - Continuous Monitoring

The wastewater discharged shall be monitored continuously for conductivity and pH, and the 24 hour discharge volume recorded.

Compliant ✓

Inline pH and conductivity probes are installed to allow continuous monitoring of these parameters. The volume of wastewater discharged is measured through a flowmeter installed in the pipeline at the factory site. The 24hr discharge volume is automatically recorded through the PLC.

Below is an example of the continuous monitoring for pH and conductivity from November 2019 to February 2020.



Figure 11 Continuous monitoring for pH and Conductivity on the River Discharge

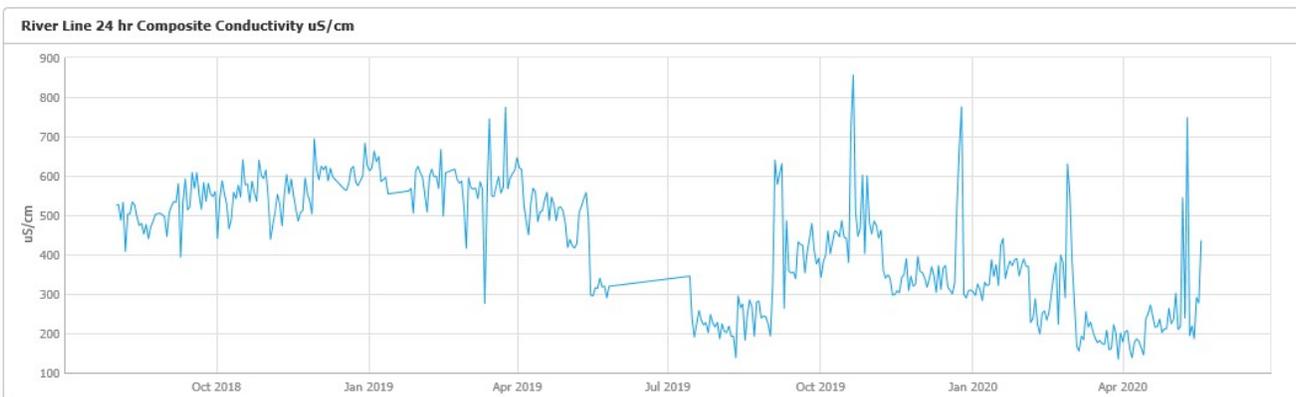
8.16 Condition 13 - Wastewater Characterisation

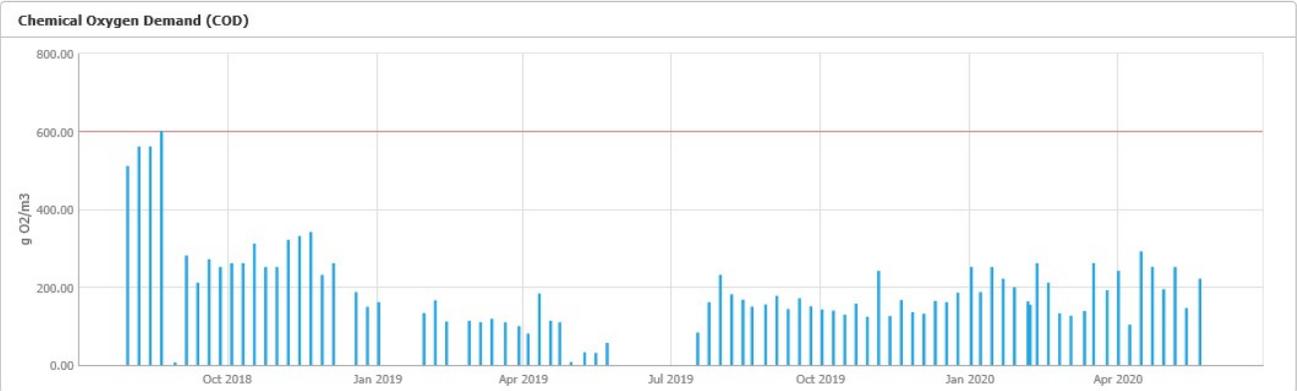
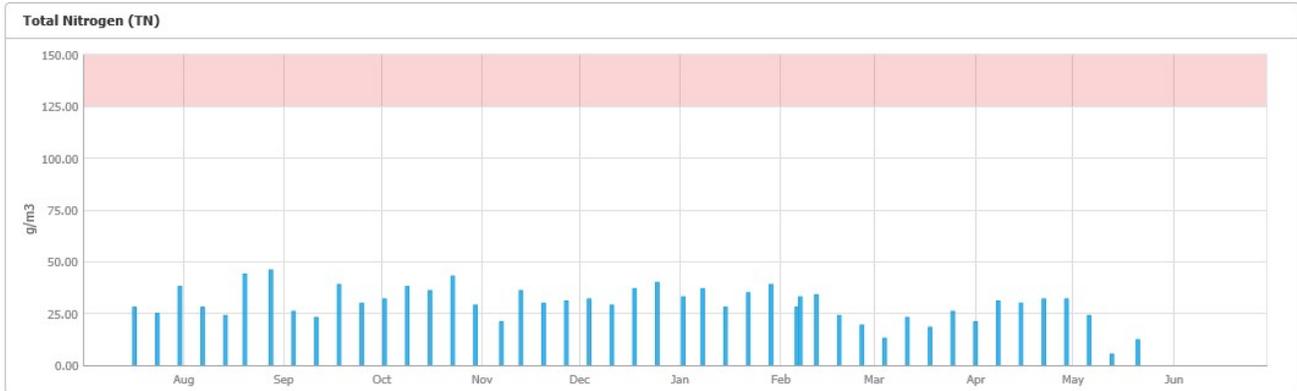
Once per week a 24hr flow proportional sample shall be collected of the wastewater discharged and shall be analysed for chemical oxygen demand, suspended solids, total nitrogen, ammoniacal-nitrogen, dissolved reactive phosphorus, and total phosphorus. In addition, one grab sample of the discharge just prior to the discharge entering the Waikato river, shall be collected on a weekly basis on any working day of the week, and shall be tested for the number of faecal coliforms per 100ml, and the total available chlorine. A visual inspection of the discharge at the outfall shall also be undertaken at least once per month, when discharging.

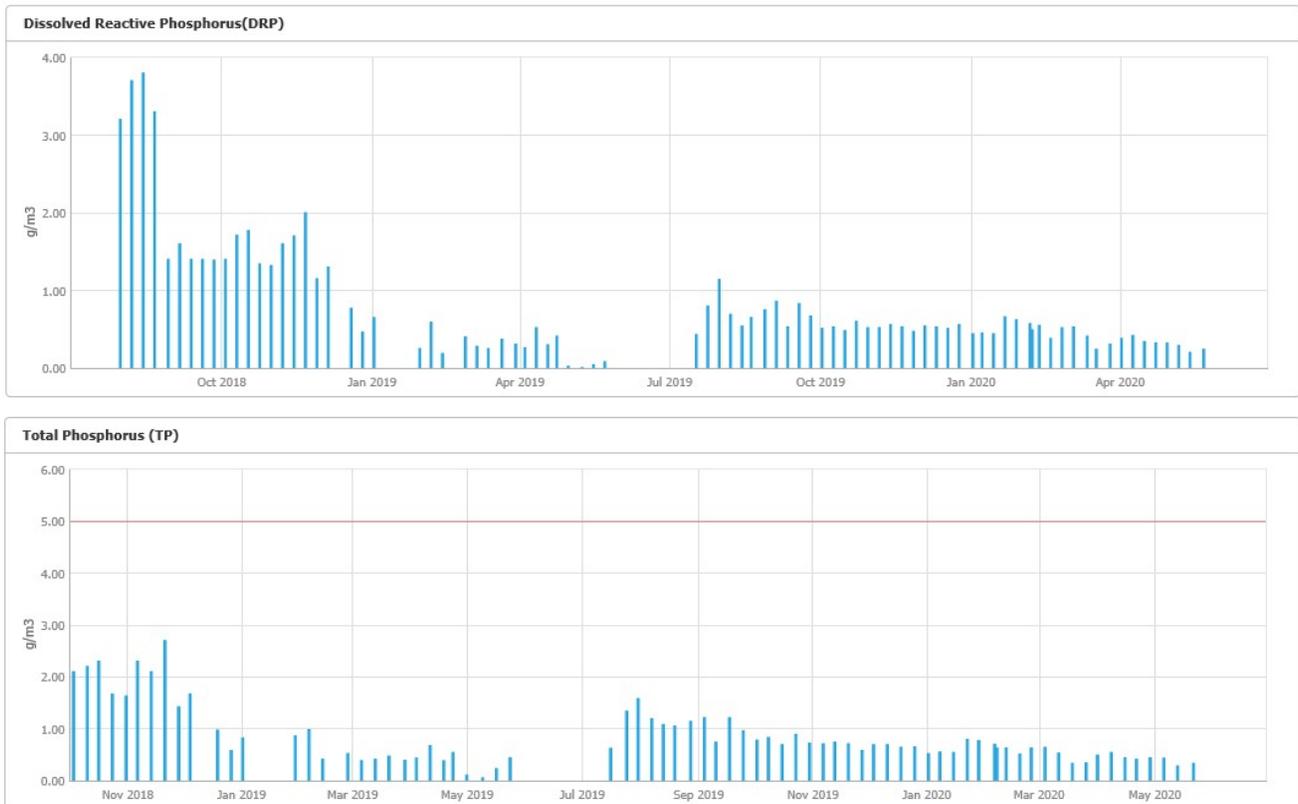
Compliant ✓

Daily (24hr composite) samples of wastewater were taken on a flow proportional basis at the river silo. Daily composite samples were analysed for pH and conductivity on the Hautapu site. Weekly composite samples were analysed for Total Nitrogen, Chemical Oxygen demand, Suspended Solids, Ammoniacal Nitrogen, Dissolved Reactive Phosphorus and Total Phosphorus. These tests were carried out by Hill Laboratories in Hamilton.

Grab Samples were taken at the discharge point into the Waikato River and tested for faecal coliform and total available chlorine testing. Monitoring results are shown in Figure 10 above. Faecal coliform testing is carried out by Hill laboratories, while the chlorine testing is carried out at the Fonterra Hautapu Site. A visual check of the discharge is carried out once per month by the operators while discharging.







All parameters were similar to previous seasons, there have been no changes to the operation of the river discharge and the quality remains consistent.

8.17 Condition 14 - Reporting

All monitoring required under conditions 12 & 13 shall be reported monthly to the Waikato Regional Council, and within 4 weeks of receipt of any laboratory test results.

Compliant ✓

All the reports were supplied within 4 weeks during the F19/20 season.

8.18 Condition 15 - Survey

The consent holder shall carry out a river survey least once every five years within the period January to May to assess the effects of the discharge on water quality. The survey shall include, but not necessarily be limited to, a comparison of water quality upstream and downstream of the discharge point, and include parameters such as temperature, turbidity, pH, conductivity, BOD, ammonium-N, total nitrogen, Total phosphorus, and E-Coli. The river survey report shall be forwarded to the Waikato Regional Council by 1 August.

Compliant ✓

The river survey was carried out on 17 March 2017 by Pattle Delamore Partners Ltd. The completed report was sent through to Ben Murphy, Waikato Regional Council, on 14 June 2017.

8.19 Condition 16 - Annual Report

The consent holder shall forward by 31 August each year and Annual report in conjunction with resource consents 961142 (Bardowie/Bruntwood), 940554 (air), 930685 (storm water), 930913 (Buxton). As a minimum this report shall include the following:

- i) A summary of all data collected as required under conditions 12, 13 & 15 of this resource consent*
- ii) A summary of the monitoring results required by condition 15 of this resource consent and a critical analysis of the information in terms of compliance and environmental effects*
- iii) A comparison of data with previously collected data identifying any emerging trends in wastewater quality*
- iv) Comment on compliance with conditions 2-11, 12 and 13 of this resource consent*
- v) Any reasons for non-compliance or difficulties in achieving compliance with the condition 2-11, 12, 13 of this resource consent*
- vi) Any works that have been undertaken to improve the quality of the wastewater discharged*
- vii) Recommendations on alterations to the monitoring required by conditions 14 and 15 of this resource consent*
- viii) Any other issues considered important by the consent holder*

Compliant ✓

The previous annual report was forwarded to the council by 30 September 2019.

One annual monitoring report covering all resource consents is compiled for the site which covers all the requirement of condition 16.

We have optimised our hypo dosing system throughout the season. Previously we dosed sodium hypo to a target conductivity set-point in order to prevent bacterial growth in the pipeline. However, a successful trial across F20 has demonstrated an on-line Free Available Chlorine (FAC) analyser is a better option for optimal dosing. Since the trials we have successfully commissioned an inline FAC analyser, which doses to 20ppm, our trials have confirmed this dosage rate is effective in controlling bacterial growth. The FAC project has been successful and has also reduced the sodium hypo usage significantly.

8.20 Condition 17 - Sample Analysis

All sample analyses shall be undertaken in accordance with the methods detailed in the 'Standard Methods For The Examination of Water and Wastewater, 1998' 20th edition by A.P.H.A. and A.W.W.A. and W.E.F. or any subsequent updated version of that document, or any other method approved by the Waikato Regional Council.

Compliant ✓

In-house testing (pH & conductivity) is carried out to a laboratory procedure which can be supplied on request. External testing is carried out at Hill laboratories. Hill Laboratories currently refer to APHA methods described in the 22nd edition, 2012.

8.21 Condition 18 - Diffuser

The discharge shall be through a permanently submerged outlet diffuser structure such that the discharge will enter the main flow of the river. The consent holder shall be responsible for the structural integrity and maintenance of the discharge diffuser and for any erosion control works in the vicinity of the diffuser that become necessary to preserve the integrity and stability of the river bank and/or to control erosion as a result of the exercise of this resource consent.

Compliant ✓

A new diffuser was installed in 2016 as part of the continuous replacement programme. A work order is generated in SAP as part of the maintenance system, and the diffuser is checked every fortnight by services.

The diffuser has been inspected in February by Continuous Stainless and checked for structural integrity, nozzles were cleaned and determined if any erosion was present at discharge. It can be confirmed that the structural integrity of the diffuser is sound, the nozzles are free of any blockages and there was no visible erosion.

8.22 Condition 19 - Reviews

The Waikato Regional Council may in October 2004, October 2009, and October 2014, serve notice on the consent holder under section 128 (1) of the Resource Management Act 1991, of its intention to review the conditions of this resource consent.

Compliant ✓

No reviews have taken place

8.23 Regional Council Audits & Liaison

Compliant ✓

Regular contact with the Regional Council has been maintained throughout the year.

No follow up actions were required from the 2018-2019 Site compliance report by Ben Murphy;

4. Discharge of Stormwater – Consent #137761.01.02

10.1 Condition 1 – Scope

Fonterra Hautapu Site includes the dairy manufacturing activities and the DairyFert operational activities annually. Shall be the period of the dairy season being from 1 July of one year to 30 June inclusive of the following year.

Compliant ✓

This resource consent includes discharge of stormwater from the Hautapu manufacturing and DairyFert site. This report covers the period 1 July 2019 to 30 June 2020.

10.2 Condition 2 - General

Except as specifically provided for by other conditions of this consent, all activities to which this consent relates shall be undertaken generally in accordance with the information contained in the application of this consent.

Compliant ✓

Activities are undertaken in accordance with the resource consent application.

10.3 Condition 3 - Changes

The consent holder shall not undertake any changes which would fundamentally alter the quantity or quality of the stormwater discharge without written approval of the Council.

Compliant ✓

No changes have been made that would alter the quantity or quality of the stormwater discharge.

10.4 Condition 4 (i) - fat & oil

(i) The discharge shall not contain floatable fat and shall not produce conspicuous oil or grease films, scums, foams, or floatable materials in the Mangaone Stream.

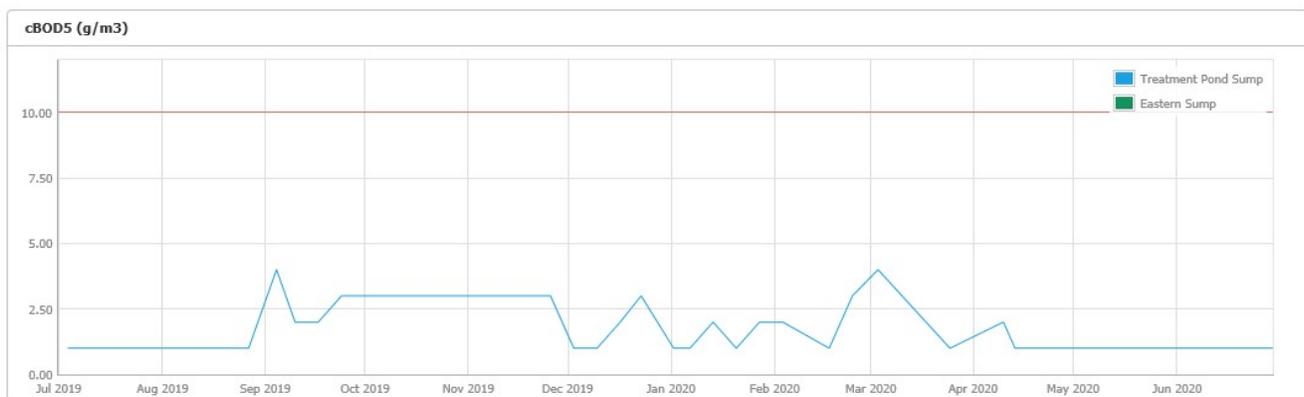
Compliant ✓

There was no observation of fat, grease or oil being discharged into the Mangaone Stream.

10.5 Condition 4 (ii) - CBOD₅

(ii) The 5-day carbonaceous Biochemical Oxygen Demand (cBOD₅) concentration of the discharge shall not exceed 10 grams per cubic metre

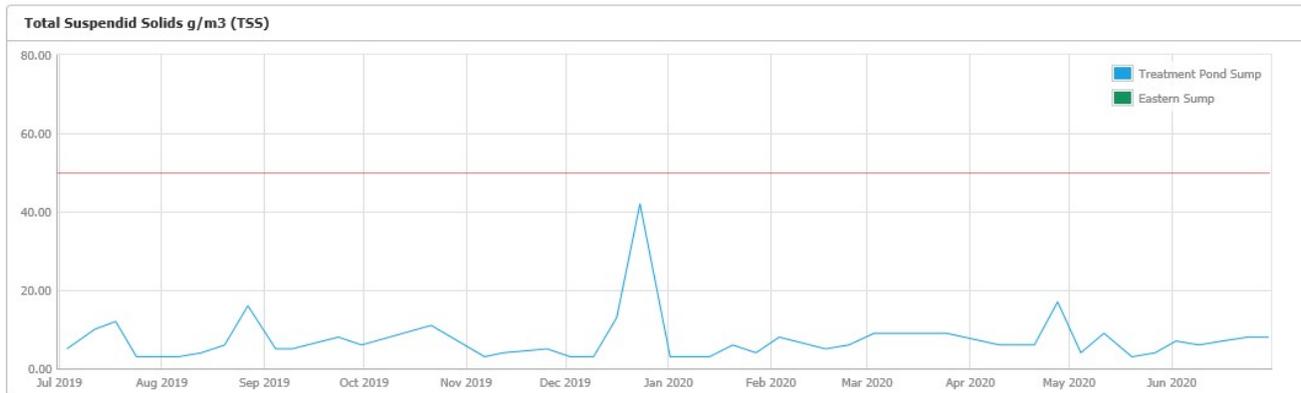
Compliant ✓



10.6 Condition 4 (iii) - Suspended Solids

(iii) The suspended solids concentration of the discharge shall not exceed 50 grams per cubic metre for more than one in twenty composite samples, calculated using a 20-sample day moving period, and no individual sample shall exceed 100 grams per cubic metres.

Compliant ✓

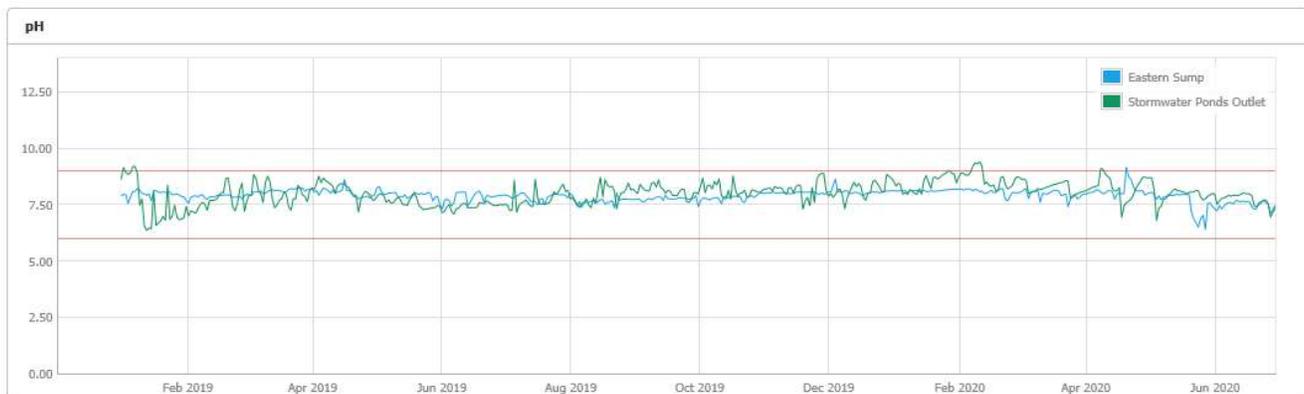


10.7 Condition 4 (iv) - pH

(iv) The pH of the water discharged shall not fall outside the range of 6-9 units

Compliant ✓

No stormwater discharges were outside of the pH limits. The pH is monitored and shows some values above pH 9. This was due to excessive algae growth on the stormwater pond and water circulating through the tundish continuously as part of monitoring. The gate valve has been shut during this time and no discharge could take place.



10.8 Condition 5 - Erosion

The consent holder shall ensure that the discharges to the Mangaone Stream do not create erosion or scour at the point of discharge.

Compliant ✓

There was no observation of any erosion or scour created at the point of discharge.

10.9 Condition 6 – Stormwater System Upgrade

The consent holder shall implement, by no later than August 2018, or by such other dates agreed to with Council, the stormwater upgrade in general accordance with the recommendations made in the Fonterra Hautapu Stormwater Management Investigations and Concepts report to minimise stormwater contamination.

Any amendments to the planned upgrades in the report shall have no potential to reduce the expected performance of the system outlined in that report – i.e. the expected performance of the stormwater management system outlined in the report is a minimum required standard.

Compliant ✓

During May 2018 permission was obtained from WRC to extend the implementation date to 1 December 2018 – as agreed with Ben Murphy at WRC. This was then further extended to 31st of March 2019 due to heavy rainfall in December 2018.

Ben Murphy confirmed on 28 May 2020 that he was satisfied that Hautapu is compliant with condition 6 of this resource consent.

10.11 Condition 7 – Progress Reports

The consent holder shall provide quarterly interim progress reports to the Council on progress to implement the recommended stormwater management option until completion of the stormwater upgrade as required by condition 6.

Compliant ✓

Quarterly progress reports were submitted to Council as required by condition 7.

10.12 Condition 8 – As-builts

The consent holder shall retain appropriately qualified and experienced person to prepare and sign as-built plans of any new infrastructure, ponds, and treatment devices that are constructed because of the report prepared under condition 8 and any upgrades and changes to the sites stormwater and groundwater take reticulation over the term of this consent.

Compliant ✓

Ben Murphy confirmed on 28 May 2020 that he was satisfied that Hautapu is compliant with this condition.

10.13 Condition 9 – Stormwater System General Management

The consent holder shall manage stormwater system, so far as is practicable, to minimise the contaminant load of the stormwater entering the Mangaone Stream. This includes but is not limited to the following prior to final discharge:

- the routine capture and treatment of “first flush” stormwater;
- the capture and appropriate treatment of spill-contaminated stormwater.

Compliant ✓

General management was in accordance with this condition.

10.14 Condition 10 Stormwater Discharge

The Consent Holder shall characterise the quality of the discharges at the following specific discharge points to the Mangaone Stream;

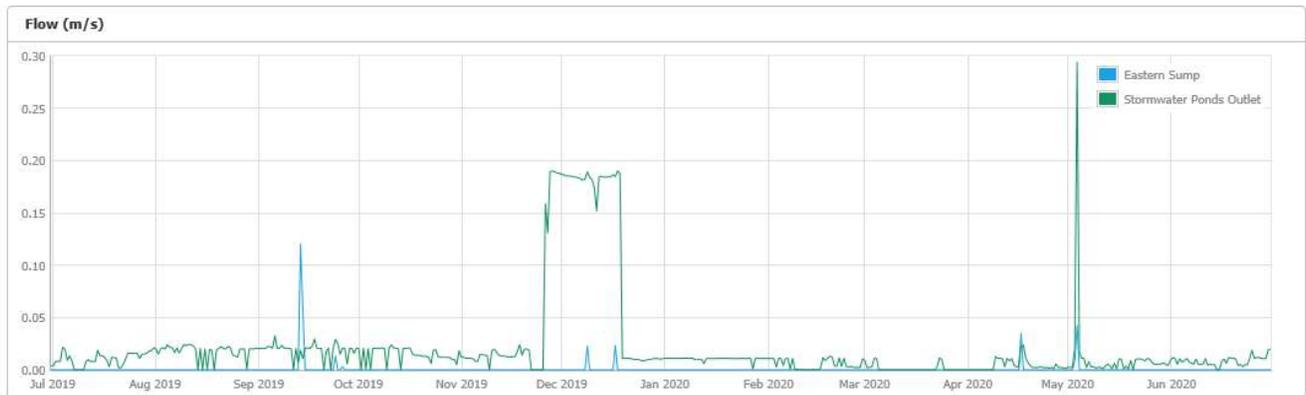
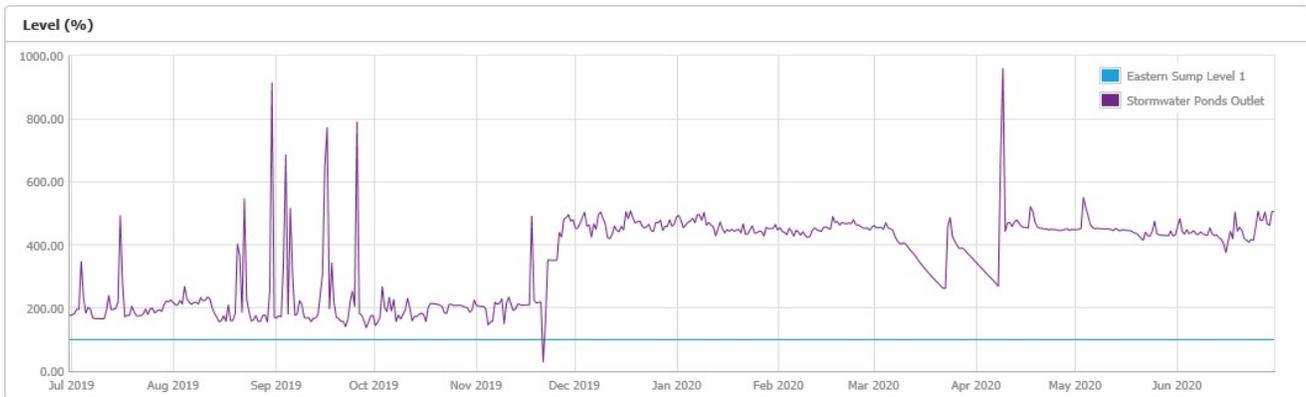
- Eastern Stormwater Sump
- Treatment Pond Sump

To this end, the consent holder shall at least, unless otherwise required in writing to do so by the Council following consultation with the the consent holder, characterise the discharge for the following parameters;

Continuous:	Stormwater sump water level pH Conductivity ($\mu\text{S}/\text{cm}$) Turbidity (NTU)
Daily:	Rainfall (mm)
Weekly:	cBOD ₅ (g/m^3) Total Suspended solids (g/m^3)
Monthly:	Total nitrogen (g/m^3) Nitrate-nitrogen (g/m^3) Nitrite-nitrogen (g/m^3) Ammoniacal nitrogen (g/m^3) Total kjeldahl nitrogen (g/m^3) Dissolve Reactive Phosphorous (g/m^3) Total Phosphorous (g/m^3)

Compliant ✓

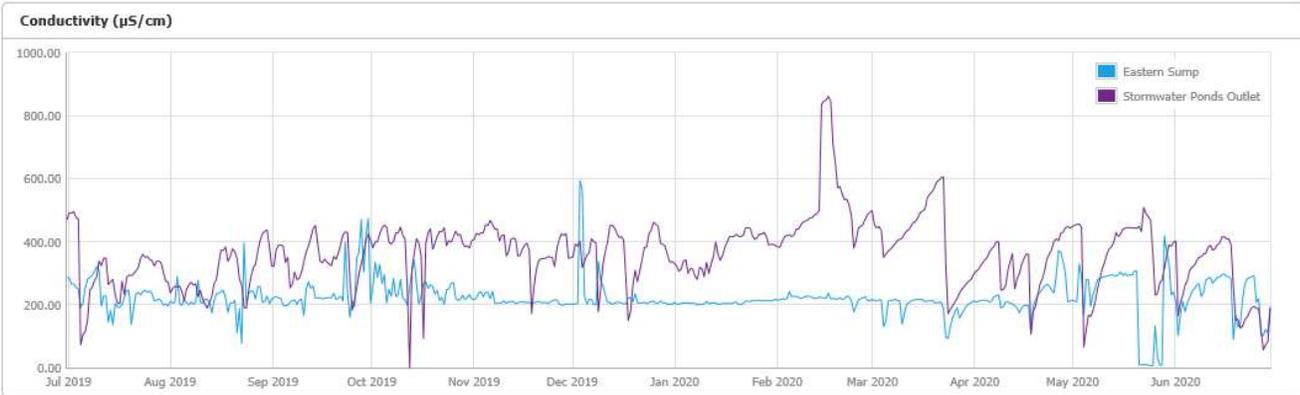
Stormwater sump water level and flow



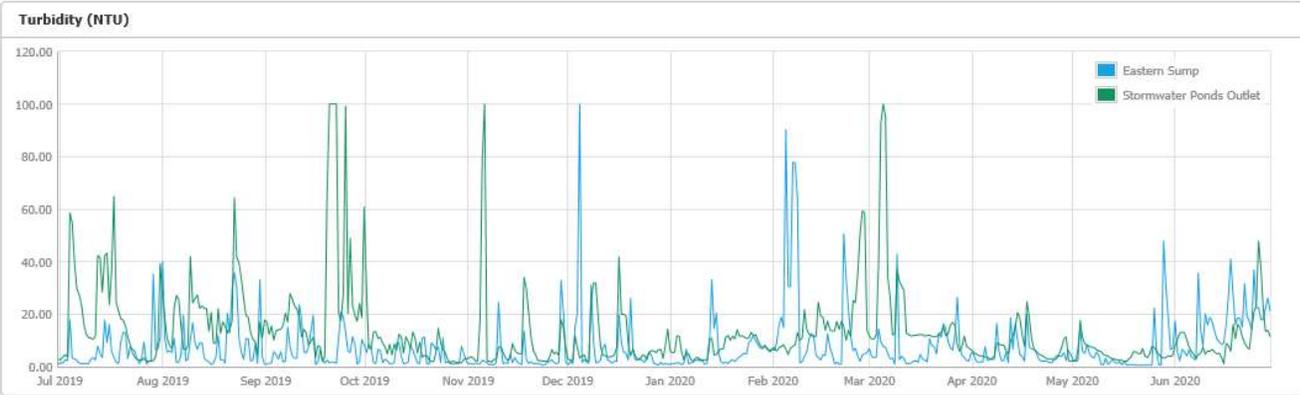
Continuous pH



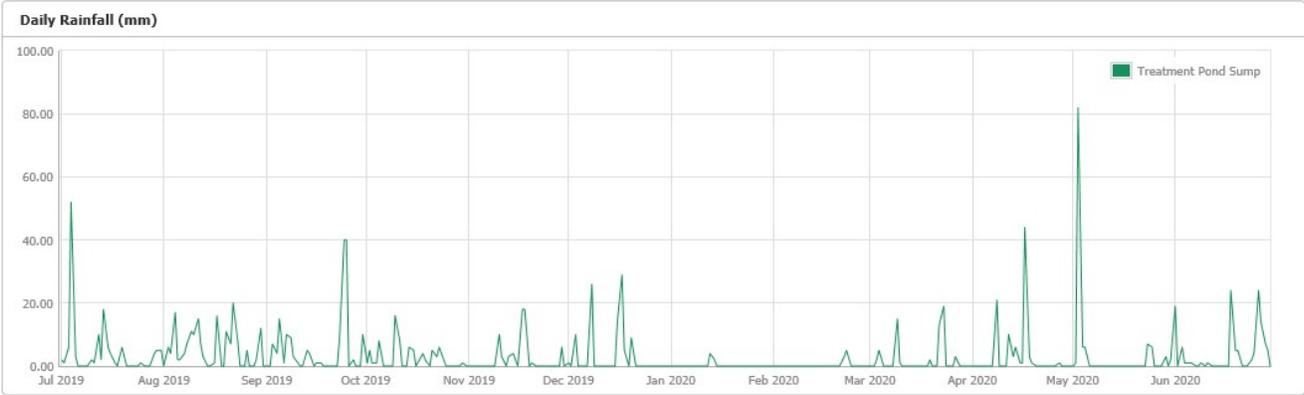
Continuous Conductivity



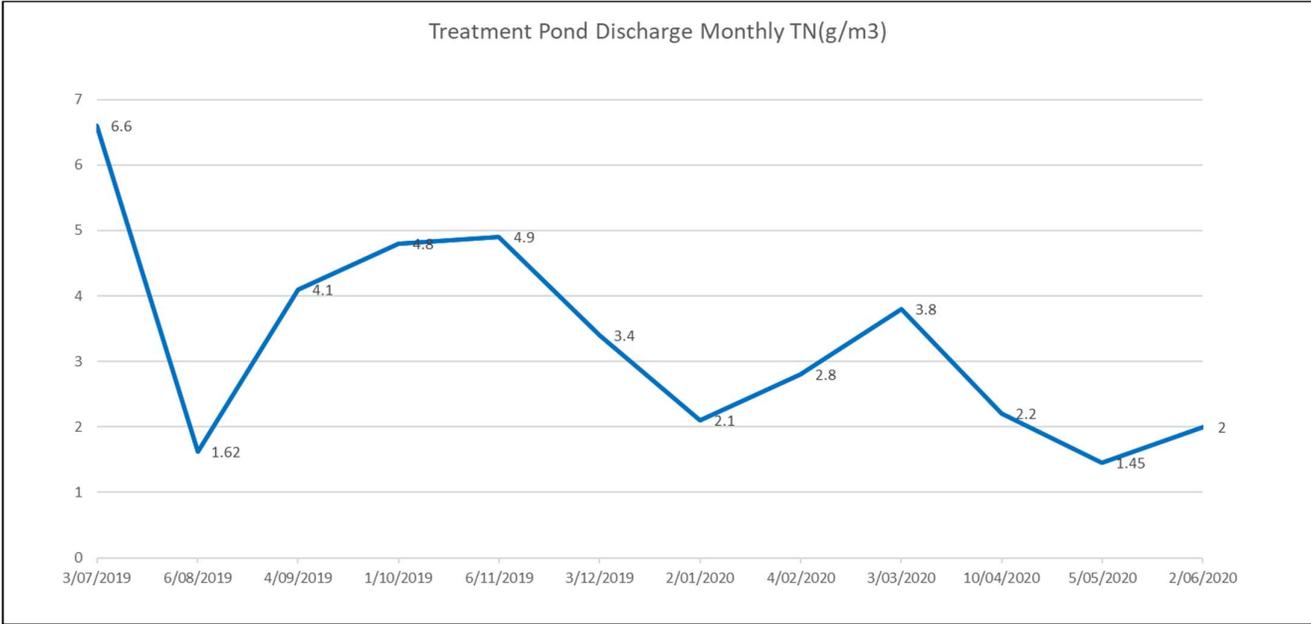
Continuous Turbidity



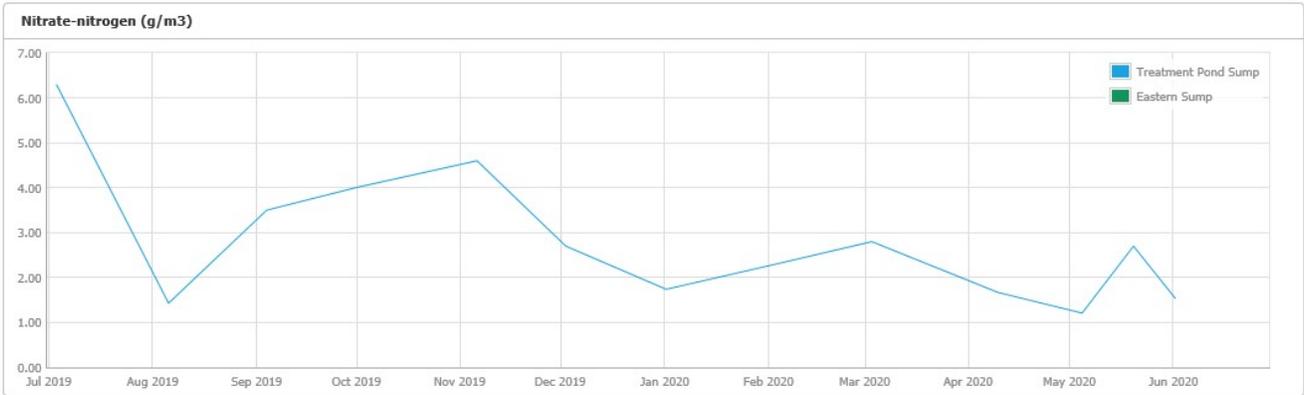
Daily Rainfall



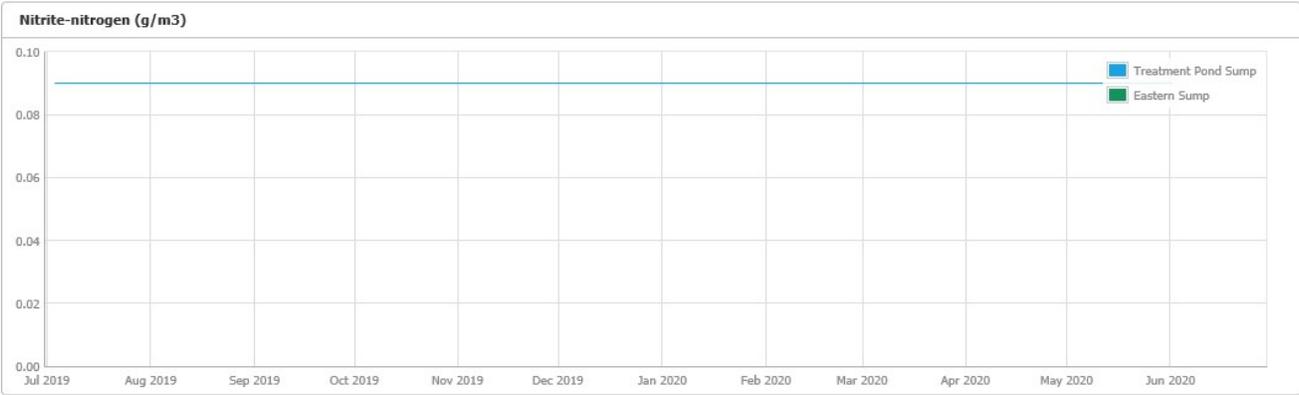
Monthly Total nitrogen



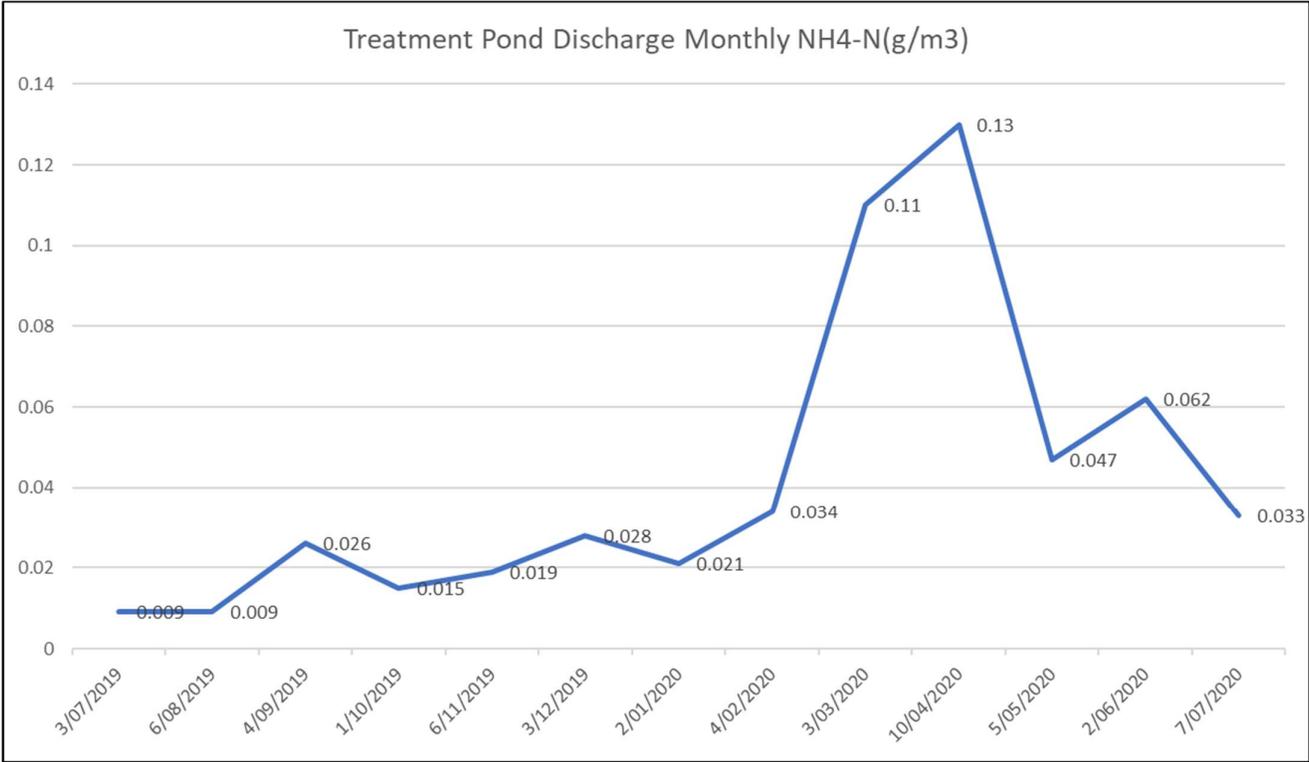
Monthly Nitrate-nitrogen



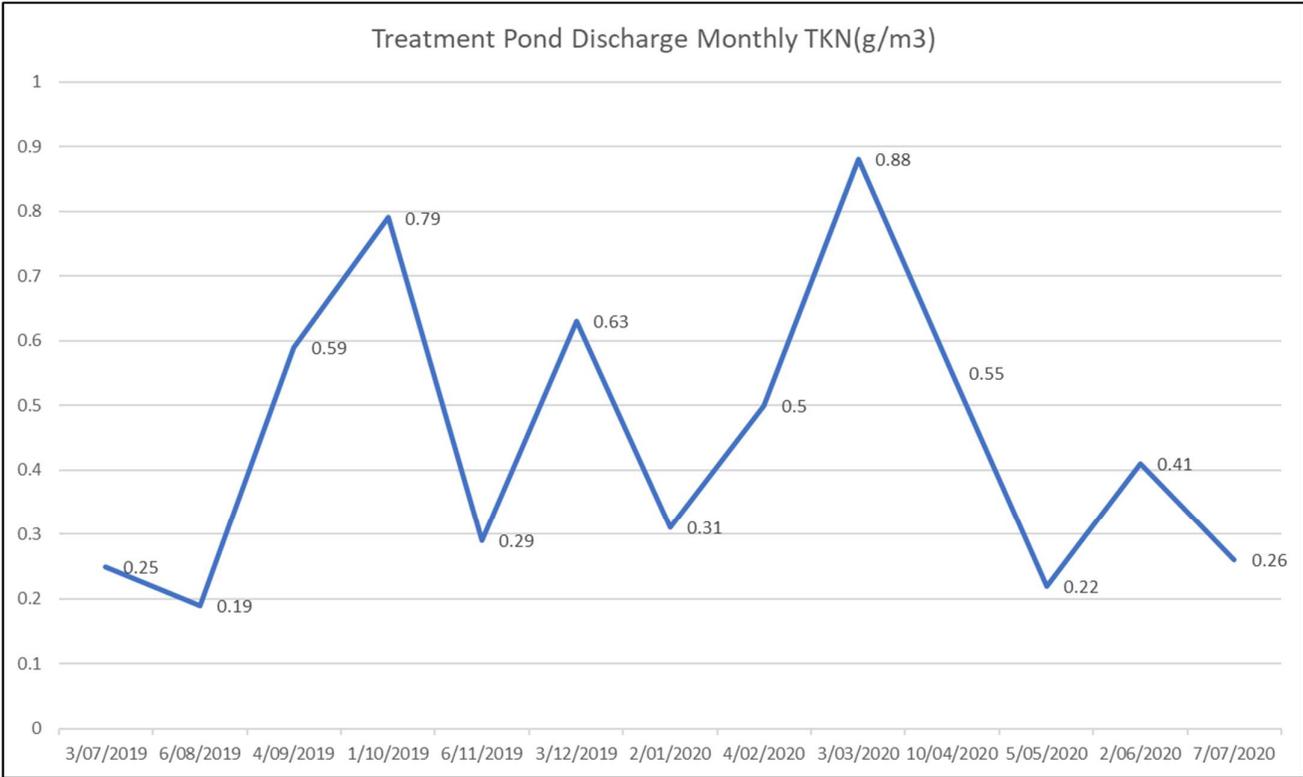
Monthly Nitrite-nitrogen



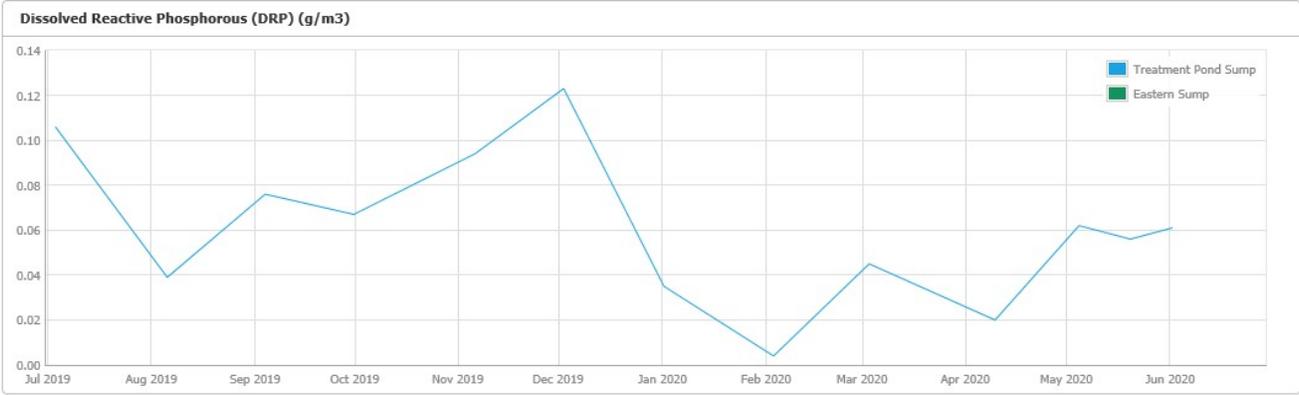
Monthly Ammoniacal nitrogen



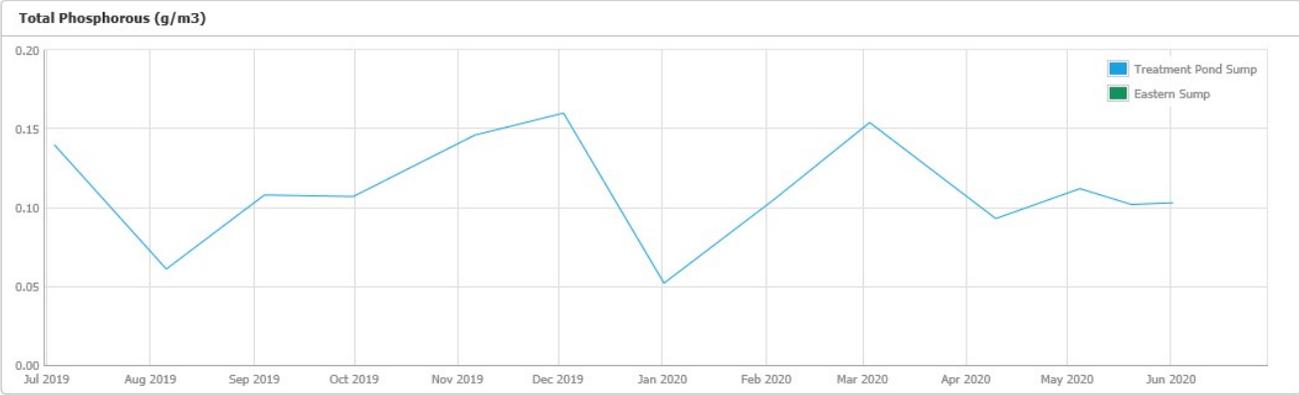
Monthly Total kjeldahl nitrogen



Monthly Dissolved Reactive Phosphorous



Monthly Total Phosphorous



10.15 Condition 11 – Non-compliant discharges

In the event of a non-compliant discharge or spill that is discharged to the Mangaone Stream, the consent holder shall monitor the Mangaone Stream at up and downstream points to adequately assess the impact of the discharge on water quality. All reasonable effort shall be made to undertake the sampling while the discharge is occurring. The samples shall be analysed for any necessary parameters to determine impacts on water quality. The consent holder shall, in consultation with the Council, confirm the duration of the sampling and analyses to determine that the downstream Mangaone Stream water quality has returned to typical values.

Compliant ✓

No non-compliant discharges were reported for the 2019/2020 season.

10.16 Condition 12 – Mangaone Stream Monitoring

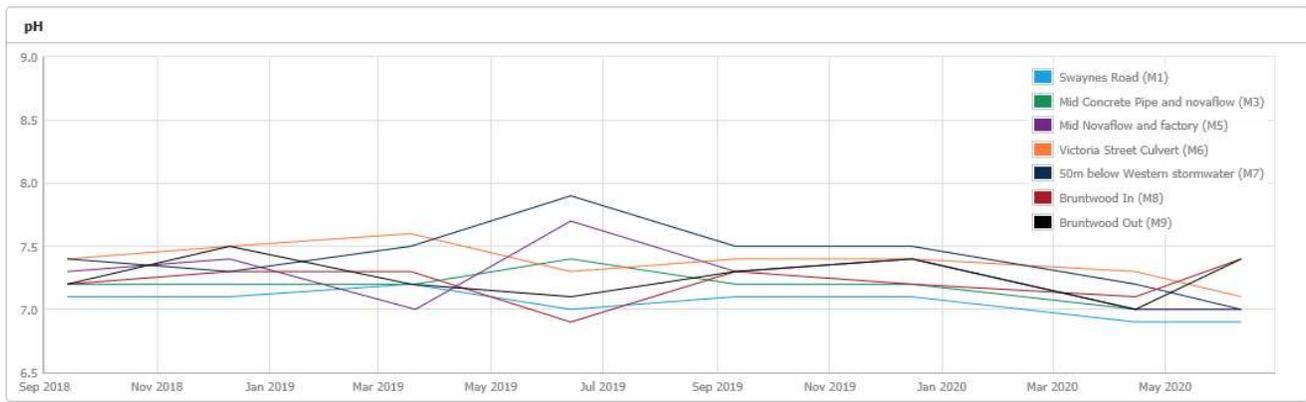
As a minimum all monitoring sites listed below shall be sampled and tested on a quarterly basis during the months of March, June, September and December:

<i>Frequency</i>	<i>Sample type</i>	<i>Parameter</i>
Quarterly	Swayne Road Mid Concrete Point and Novaflow Mid Novaflow and Factory Victoria rd Culvert 50m below Western sump Bruntwood In & Out	pH, total suspended solids, conductivity Total Nitrogen, Nitrate-nitrogen, Nitrite-nitrogen Ammoniacal-nitrogen, total Kjeldahl nitrogen Dissolved reactive phosphorous, total phosphorous 5 day carboneous biochemical oxygen demand, Sodium.

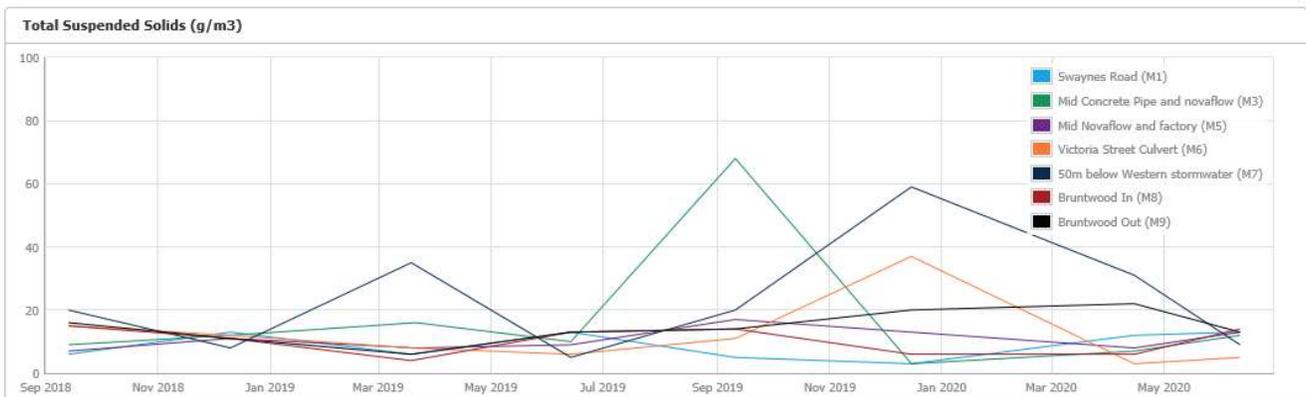
Compliant ✓

Samples were taken in September 2019, December 2019, April 2020. The March samples could not be taken due to the Covid-19 pandemic restrictions and the samples were taken in April 2020.

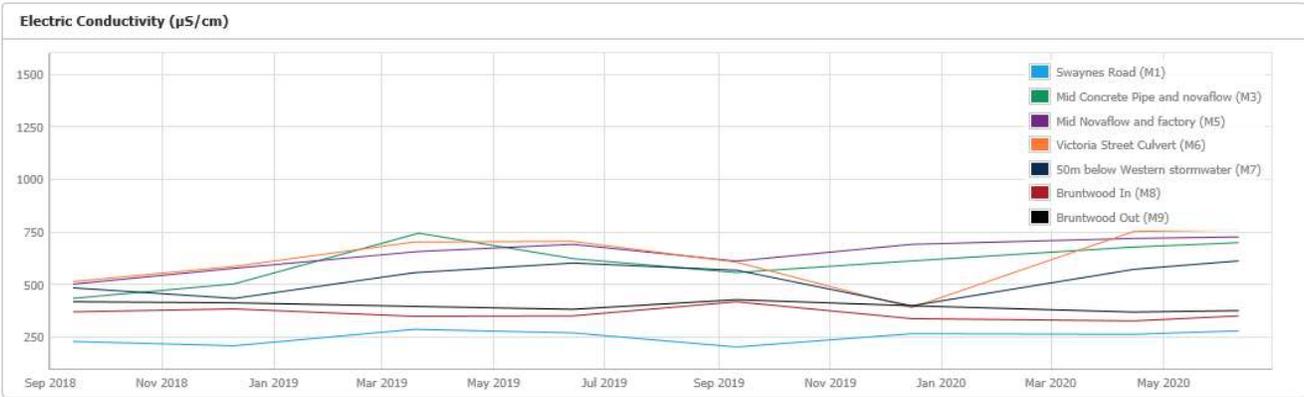
Mangaone Stream Monitoring - pH



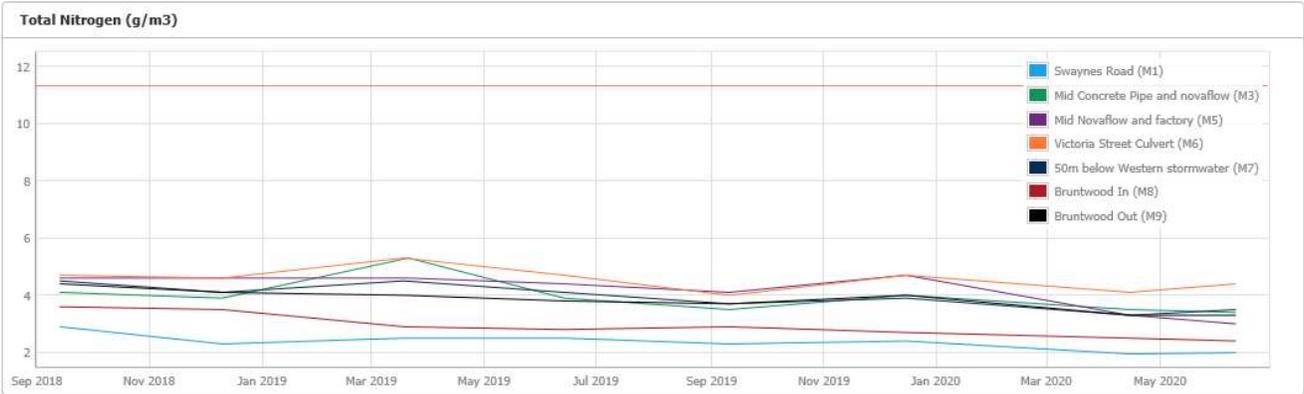
Mangaone Stream Monitoring – Total Suspended Solids



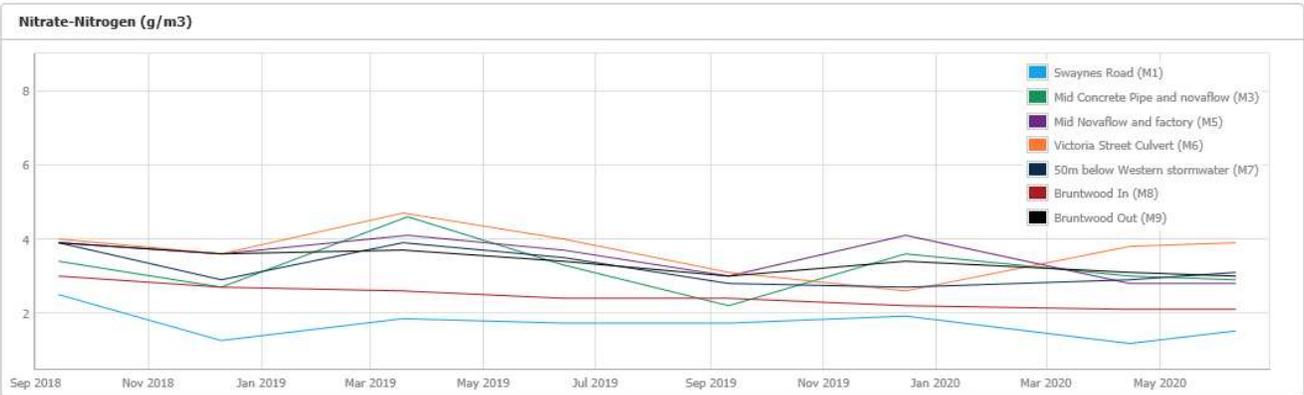
Mangaone Stream Monitoring – Conductivity



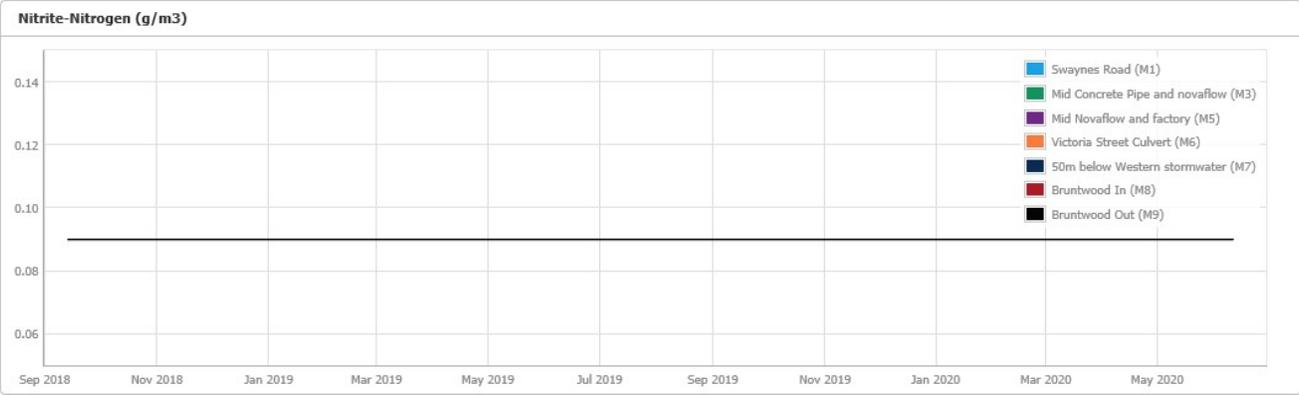
Mangaone Stream Monitoring – Total Nitrogen



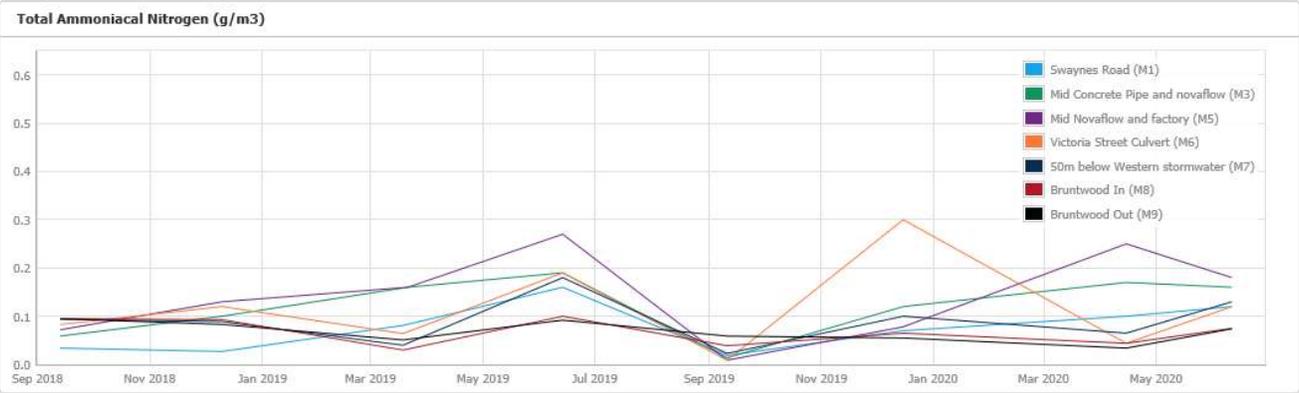
Mangaone Stream Monitoring – Nitrate-Nitrogen



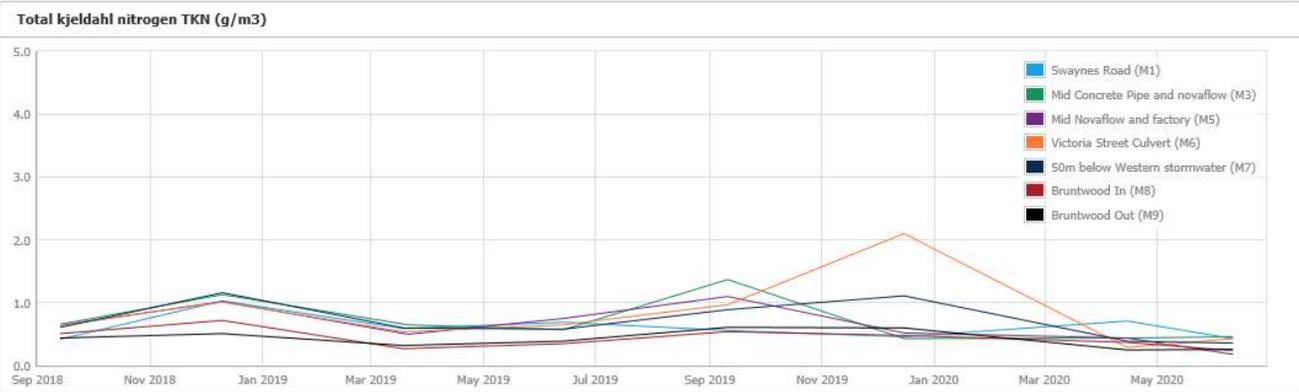
Mangaone Stream Monitoring – Nitrite-Nitrogen



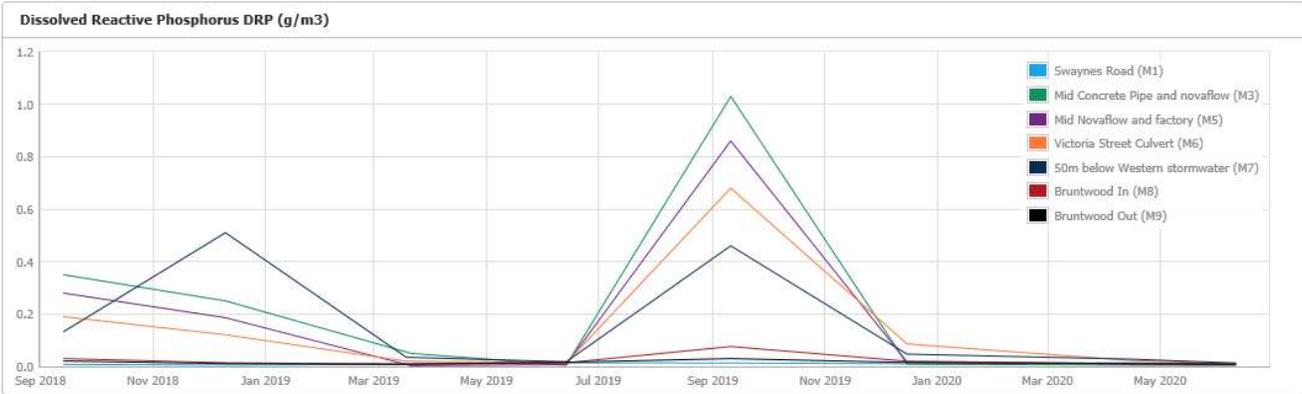
Mangaone Stream Monitoring – Ammoniacal-Nitrogen



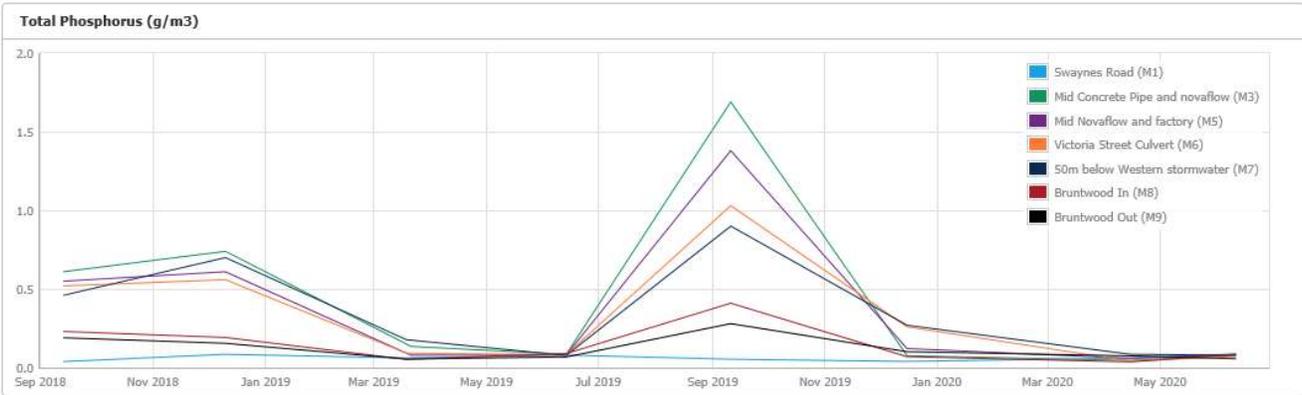
Mangaone Stream Monitoring – TKN



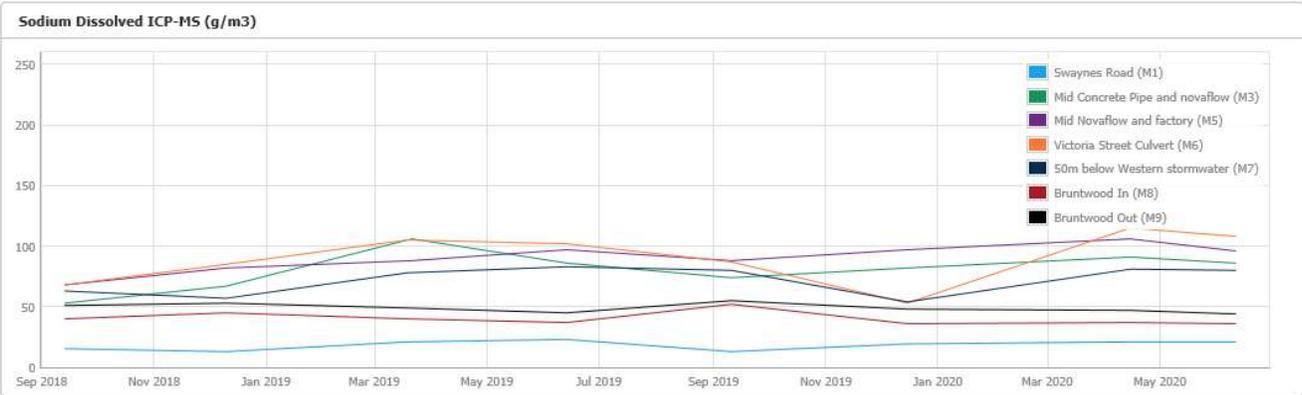
Mangaone Stream Monitoring – DRP



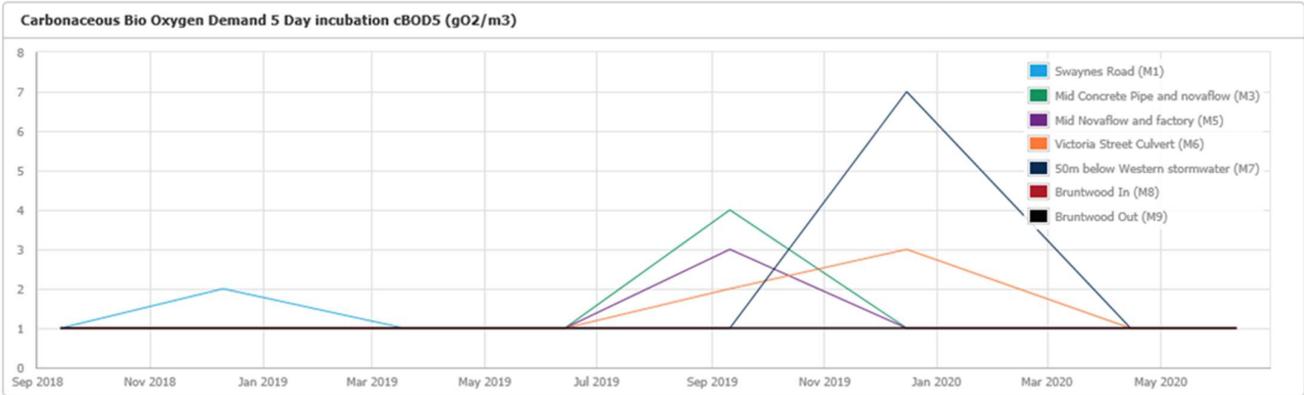
Mangaone Stream Monitoring – Total Phosphorous



Mangaone Stream Monitoring – Sodium



Mangaone Stream Monitoring – cBOD5



10.17 Condition 13 – Mangaone Stream Ecological Monitoring Plan

The consent holder shall retain a suitably qualified and experienced person(s) to prepare a Mangaone Stream Ecological Monitoring plan, for characterising the ecological condition of the Mangaone stream. The assessment shall be undertaken utilising both matauranga Maori and scientific methods. To this end the consent holder shall, unless otherwise required in writing by Council following consultation with the consent holder, carry out a survey of the Mangaone Stream during the months January – April, no later than 2 years from the date this consent is determined, or an alternative date agreed in writing by the Council, and five yearly thereafter to assess the ecological condition of the Mangaone Stream and evaluate the potential impact on the stream from the Hautapu sites activities.

The Mangaone Stream Ecological Monitoring Plan shall be provided to the Council at least one month before the date of the first survey for certification, identifying and monitoring locations and the method and procedures for the survey, which shall include an assessment of physical characteristic, water quality, periphyton and macroinvertebrates.

The survey results, and the evaluation of the results and comparison against previous surveys shall be submitted to the Council within 6 weeks of the survey results becoming available.

If after the completion of the two consecutive ecological assessment surveys the results indicate the discharges of the stormwater are having less than minor effect on the water quality and the ecology of the Mangaone Stream, the consent holder can stop monitoring in accordance with this condition after gaining written approval from Council.

Advice note: The methodology of the matauranga Maori-based assessment shall be determined following consultation with Ngati Haua Iwi Trust.

Compliant ✓

The ecological assessment was planned for January 2020 – March 2020 but has not occurred yet, due to limitations in finding a suitable experienced person to carry out the assessment within this timeframe. Consultation is ongoing with Ngati Haua Iwi Trust who are working to identify a suitable experienced person to conduct the assessment.

10.18 Condition 14 – Water analyses

All sample methods of analyses shall be as detailed in the most recent edition of “Standard Methods for the Examination of Water and Waste Water”, by APHA and AWWA and WCF or by some other method approved in writing and in advance by the Council.

Compliant ✓

In-house testing (pH & conductivity) is carried out to a laboratory procedure which can be supplied on request. External testing is carried out at Hill laboratories. Hill Laboratories currently refer to APHA methods described in the 22nd edition, 2012.

10.19 Condition 15 – Management and Monitoring Plan

The consent holder shall prepare a Fonterra Hautapu Discharge Management and Monitoring Plan (DMMP) for the management and operation of the site's discharges to the Mangaone Stream. The DMMP shall take account of all operations potentially affecting the quality of the stormwater and groundwater discharged, and shall include at least the following matters:

1. the roles and responsibilities of those persons responsible for the operation, monitoring and maintenance of the stormwater systems and their contact details (including after hours).
 2. standard operating procedures, maintenance procedures and contingency procedures to be followed during the routine operation of the stormwater system, and including but not limited to, in the event of a breakdown, shut-down, or spills and emergencies.
 3. an up-to-date drawing showing the location of the stormwater underground piping, including all manholes and cesspits, piping layouts and the direction of drainage towards these stormwater manholes and cesspits. Key risks to the stormwater system posed from waste water piping shall also be identified.
 4. provision for routine and regular inspection of the sites reticulated stormwater underground pipework to ensure its structural integrity and the process by which any identified defective pipework shall be rectified.
 5. the provision for the identification and labelling of all wastewater and stormwater drains and including all pipes either discharging to or crossing the Mangaone Stream.
 6. a schedule of all pipes, including their GPS co-ordinates, discharging stormwater or groundwater to the Mangaone Stream.
 7. identification and quantification of all chemicals and hazardous substances, including fuels and oils, held on site and the methods used to avoid accidental discharge to the stormwater system (e.g. bunding, diversion to wastewater system, procedures).
 8. procedures for the management of activities, that have the potential to impact on either compliance of the quality of the discharges to the Mangaone Stream.
 9. include documentation stating what diversion set-points are in place including the parameter (e.g. conductivity, turbidity) and the actual setpoint settings. The purpose of the set points is to achieve compliance with the limits in conditions 4.
 10. the Mangaone Stream Monitoring Plan as required by condition 12 of this consent.
 11. the Mangaone Stream Ecological Monitoring Plan as required by condition 13 of this consent.
 12. procedures to ensure the discharge monitoring is undertaken as required.
 13. reporting requirements.
- Staff training – for spill management. Shared learnings with other Fonterra sites.
14. An aerial photograph map which clearly identifies the locations of all sampling points required by this consent (i.e. conditions 10 and 12).

Compliant ✓

1. Roles and responsibilities are specified in the Management and Monitoring Plan – after-hours contact is through an environmental on-call system
2. Standard Operating Procedures are available in the Stormwater Systems Management Manual
3. As built plans have been approved by Waikato Regional Council – see attached maps done before the as built maps – See below images.
4. A 5-yearly review of all drainage maps are done to ensure accuracy, with a minimum of 5-yearly drain integrity surveys. A replacement / maintenance programme is in development to focus on high-priority areas first. This is done through an annual capital review; last review was done in February 2020.
5. As built plans have been approved by Waikato Regional Council.
6. Quantification and identification of chemicals is done through the HSNO register for Hautapu site. The site has spill procedures for to prevent accidental discharges to the stormwater system e.g. bunding for all chemicals, bund draining procedures, triple rinsing of all used / empty chemical containers and spill kits at various locations around site. Awareness of stormwater risks and contamination is also part of the annual contractor and plant inductions to inform people about the risks and spill procedures around site. The stormwater system has continuous monitoring at a central sump (D8) and if any parameters go out of specification (pH, conductivity, Turbidity) a gate valve will shut, and contaminated water will divert to a spill pond. The final discharge and the eastern sump have the same functionality to prevent any out of spec discharges.
7. As above.
8. Monitoring Parameters displayed below is respective tables.

Sump	Parameter	Tag ID	Diversion Set-point
Main Monitoring Sump MHD8 entry to Treatment Pond	Conductivity	CTT 1422040	900µS/cm
	Turbidity	STT 1422040	150NTU or Above 100 NTU for more than 2 minutes (may be lowered during dry weather)
	pH	PHT 1422040	6 – 9
	Temperature	TTT 1422040	NA, recorded only
	Level	LTT 1422041	NA, recorded only
	Rainfall sensor	MTT1422042	NA, recorded only
Eastern – Main Sump			
	Conductivity	CTT 1426040	350µS/cm
	Turbidity	STT 1426040	50NTU or
	pH	PHT 1426040	6 – 9
	Temperature	TTT 1426040	NA, recorded only
	Level	LTT 1426041/2	Recorded to confirm a discharge to the stream
	Sampler	SAM1426050	Triggered when there is discharge to the stream
Treatment Pond Discharge			
	Conductivity	CTT 1421140	750µS/cm
	Turbidity	STT 1421140	50NTU
	pH	PHT 1421140	6.2 – 8.9
	Temperature	TTT 1421140	25°C
	Level	LTT 1421141	Recorded to confirm a discharge to the stream
	Sampler	SAM1421150	Triggered when there is discharge to the stream

9. Mangaone Stream Monitoring is taking place every quarter – see condition 12 for monitoring results.
10. The Mangaone Stream Ecological Monitoring Plan is being finalised in consultation with Ngati Haua Iwi Trust to confirm the monitoring locations and the method and procedures for the survey, which shall include an assessment of physical characteristics, water quality, periphyton and macroinvertebrates. The plan was to carry-out the assessment during the summer January – March 2020, but due to resourcing limitations there are ongoing consultations with Ngati-Haua Iwi Trust.
11. Procedures as per the Stormwater Systems Management Manual.
12. Reporting carried out as per Condition 20 of the resource consent.
13. Sampling points / maps below;

Stream Sampling Points – Bardowie Farm



Stream Sampling Points Hautapu Manufacturing Site



Stream Sampling Points Bruntwood Farm



Location Monitoring and Discharge Points – Hautapu Site



10.20 Condition 16 – Riparian Management

The consent holder shall prepare a Mangaone Stream Riparian Management Plan (RMP) for, but not limited to, improving the stream water quality, minimising sediment run-off, shading of the surface water and including the following aspects;

1. Review of existing riparian planting adjacent to the Mangaone Stream and any maintenance aspects of these where the stream flow adjacent to or through the Bardowie, dairy manufacturing site and Bruntwood farms.
2. Any opportunity for additional riparian planting within these areas, and
3. The types of trees and vegetation suitable for planting and to achieve the RMP and the timing for any planting, while recognising the operational requirements of the Hautapu dairy manufacturing site.
4. clearly outline the scope of the plan, including specific short, medium and long-term riparian management goals, long term being the duration of the consent granted. For example, planting plan outlining areas to be progressively planted and maintained over specified time periods.
5. Acknowledging that the Waikato Regional Council has an interest in the Mangaone Stream in term of maintaining land drainage and therefore requires the consent holder to forward to them any riparian planting proposal so WRC can review it regarding their land drainage duties prior to the implementation of the plan.

The RMP shall be documented and a copy of the proposal shall be provided to the Council and Ngati Haua by 30 March 2019, and any updated version shall also be provided to both parties by the due date of the next annual monitoring report.

Compliant ✓

Riparian Management Plan has been completed the first stage of the planting has been done in November 2019. Further planting is planned for the second half of 2021.

10.21 Condition 17 – Non-Compliance and Complaints

The consent holder shall notify the Council as soon as practicable, and as a minimum requirement within 24 hours, of the consent holder becoming aware of the limits and performance standards specified in this resource consent being exceeded and/or of any plant breakdown or other circumstances which are likely to result in the limits and performance standards of this resource consent being exceeded. The consent holder shall, within 7 days of the incident occurring, provide a written report to the Council, identifying the exceedance, possible causes, steps undertaken to remedy effects of the incident and measures that will be undertaken to ensure future compliance. The report shall also briefly outline what relevant learnings have been shared with other Fonterra sites.

Compliant ✓

No non-compliances were reported for the 2019/2020 season relating to stormwater discharges.

10.22 Condition 18 – Logging Non-Compliance and Complaints

The consent holder shall maintain a log of all complaints (including those received from third-parties, including the Council) regarding the stormwater discharges to the Mangaone Stream. The consent holder shall notify the Council of each complaint as soon as practicable, but within 24hrs. The consent holder shall record the following details in a complaint log.

1. time and type of complaint including details of the incident, e.g. duration, location and any effects noted;
2. name, address and the contact phone number of the complainant (if provided);
3. where practicable, weather conditions including wind direction at the time of the incident;
4. the likely cause of the complaint and the response by the consent holder including any corrective action undertaken if applicable;
5. future actions proposed because of the complaint, if applicable; and
6. the response from the consent holder to the complainant.

The complaint log shall be made available to the Council at all reasonable times and a summary of the complaints received shall be forwarded to the Council annually in accordance with Condition 20.

Compliant ✓

No non-compliances were reported for the 2019/2020 season relating to stormwater discharges. All non-conformances to this consent are logged into the Fonterra Compliance System (FCS) as per the Environmental Management Systems Manual.

10.23 Condition 19 – Reporting

Monthly the consent holder shall prepare and forward to council a report on the management and performance of the stormwater systems including all monitoring results required under this consent. The report shall highlight and explain any non-compliances for that month.

Compliant ✓

A report is forwarded to WRC Monthly.

10.24 Condition 20 – Reporting

The consent holder shall compile an annual monitoring report for the activities authorised by the consent and forward that report for to the Council by 30 September each year. As a minimum the report shall:

1. Explicitly address every condition of the consent;
2. Summarise all the data collected as required under the conditions of this consent and critically analyse the information in terms of compliance and environmental effects, and outline what actions, if any, the consent holder will take in response to that analyses;
3. Compare the data obtained with those of previous years to identify any trends and whether action needs to be taken as a result.
4. Report and discuss and operational changes or improvements undertaken on the Hautapu dairy Manufacturing site and the DairyFert transfer Depot which could result in significant variation in the volume or characteristics of the discharge;
5. Highlight and discuss important environmental trends relevant to the discharge;
6. Make recommendations on alterations/additions to the monitoring programme;
7. Report and discuss feedback received from community liaison activities;
8. Include a summary of the complaints received.

Compliant ✓

An annual report is forwarded to WRC by 30 September and includes the required information as per this condition,

10.25 Condition 21 – Review

The Council may during 2019, 2019 and every third year thereafter, and within 6 months of receiving the Mangaone Stream Ecological Monitoring survey results required by condition 13 of this consent, serve notice on the consent holder under section 128(1) of the Resource Management Act 1991, of its intention to review the conditions of this resource consent for the following purposes:

1. To review the effectiveness of the conditions of this resource consent in avoiding or mitigating any adverse effects on the environment and if necessary to avoid, remedy or mitigate such effects by way of further or amended conditions; and/or
2. If necessary and appropriate, to require the holder of the consent to adopt the best practicable option to remove or reduce adverse effects on the surrounding environment; and/or
3. To review the adequacy of and the necessity for monitoring and reporting undertaken by the consent holder.

Compliant ✓

No review has taken place during the past season.

5. Stormwater Irrigation – Consent #138453

Resource consent 138453 authorises the consent holder to;

Irrigate out-of-spec stormwater to land at the Fonterra Hautapu site.

Since the installation and the commissioning of the new stormwater treatment system the stormwater irrigation system has been decommissioned. Currently the stormwater irrigation system is not required, but some of the infrastructure (Pods and Pipelines) have been left in place should it be needed in the future.

6. Non-Compliance Summary

Fonterra operates a system of Environmental Non-Conformance Reports (ENCRs). This reporting system requires the Environmental Manager to enter any environmental non-compliance event into the national Fonterra ENCR database, complete an investigation and co-ordinate relevant corrective actions through to close out. This system is a key requirement for continued certification of the site to the ISO140001 Environmental Management System.

The Fonterra Environmental Management Manual specifies within section 10.2.1 immediate notification to the Regional Council for all environmental non-compliances (ENCs). ENCs are reported in writing within 2 working days of the incident being discovered, followed by an investigation report.

Table 4 shows the non-compliances that were reported for the 2019/2020 season for Hautapu Site.

Table 1 - ENC Summary

ENC Number	Description	Environmental Effect	Action Taken	Resolved Y/N
HAU20-001 02-Oct-2019	Hautapu Domestic Wastewater Treatment Plant exceeding Total Suspended Solids (TSS) and cBOD consent limits.	Minimal – due to location and application. Location not near any drains or moving water bodies.	<p>Liaised with Innoflow and S3 Ltd for guidance to support Fonterra to get the plant up and running to an acceptable std.</p> <p>Cambridge Septic Service removed some sewage to reduce the load on the treatment plant.</p> <p>Full service and cleaning of the treatment plant and the irrigation dripper system.</p> <p>Weekly Samples of treated wastewater to monitor improvement.</p> <p>Samples of groundwater to ascertain if there were any effects.</p> <p>Communicated awareness to site to make people aware of chemicals and cleaning products that can't go into drains.</p> <p>Sampled influent to assess composition of black water received into the plant.</p> <p>Reviewed a full list of cleaning chemicals to determine if any of them could have an influence on the plant.</p> <p>Continued weekly plant checks to pro-actively identify potential issues.</p>	Yes.
HAU20-002 20-Mar-20	River Discharge Composite Sample returned with a pH <5 on several occasions. The resource consent requires	The discharge to the Waikato River was within specification for instantaneous	Inspected the sampling point and found that the sampler controlled by the solenoid valve was faulty, a work	Yes

ENC Number	Description	Environmental Effect	Action Taken	Resolved Y/N
	the 24-hour flow composite sample taken from the riverline to be above 5.	requirement of condition 6 i.e. pH above 4.	order was raised for the faulty solenoid sampling valve and it was replaced. Increased diversion set-points on the riverline. Removed all AC solenoids from stores to prevent installation of incorrect parts. Increased FAC setpoint on riverline to 20ppm, Confirmed pH of individual permeate streams. Reviewed effluent manual SOP to include riverline sampler checks. Confirmed calibration frequency of riverline pH probe in CMX and confirmed that calibrations have been compliant. Changed lower diversion setpoint to pH 5. Upgraded automation that in the event the pH drops to 5.2, RO3 permeate automatically diverts away from river silo to farms.	
HAU20-003 28 Apr 2020	Irrigation browser indicated that 5 paddocks on the satellite farms have exceeded the limit of 200 kg N/ha/year.	Environmental effect is thought to be minor. The actual nitrogen loading is only just exceeding the limit of 200 kg N/ha.	Annual review of irrigation browser default. Developed decision tree for product loss management, including a calculator for product dump impacts. Implemented SOP for entering fertiliser applications into irrigation browser. Train team on Satellite consent and obtain sign-off.	In progress.
HAU20-004 25 Mar 2020	Odour Complaint – Buxton Farm.	Objectional odour.	Flush volumes for irrigation lines have been recalculated by the Environmental Technical Group and verification flushes have begun on boundary paddocks. New flush volumes have been reviewed by an independent consultant from PDP and additionally PDP will conduct a full review of our odour controls.	In progress

ENC Number	Description	Environmental Effect	Action Taken	Resolved Y/N
			Once flush volumes are verified a Standard Operating Procedure (SOP) with flush volume checks will be implemented on an HMI and will be reviewed annually.	

7. Incidents and Complaints

Fonterra has a documented incident and complaint procedure to ensure that staff and public have a mechanism to express any concerns with site activities or operations and to record any complaints. The Fonterra Environmental Management Manual contains this procedure.

Below is a summary of complaints received in relation to the Hautapu Operations for the season.

Table 2 – Incident and Complaint Summary

Complaints Number	Area	Description	Action Taken	Resolved Y/N
HAU20-COM-001 29-Aug-19	Bardowie Farm	Complaint - Neighbour complained	Irrigation Team Leader went out to determine if any smells were present at the time. Visited the complainant and discussed their concerns with them. ITL walked the roadside, there was a prevailing wind, but no odour could be detected at that point. Informed complainant that Paddock 53 was being bled the first time causing the odour.	Yes.
HAU20-COM-002 04-Sept-19	Hautapu Site – Victoria Rd	Complaint - Complaint from a factory neighbour about dirty water in her taps.	Sample collected from the neighbour to visually inspect it. Minor discolouration and suspended solids suspected due to the repair works undertaken to the line in the paddock next door.	Yes.
HAU20-COM-005 12-Feb-20	Buxton Farm	Complaint - Complainant phoned the environmental manager and complained about an odour.	Confirmed if water flush occurred on the final day of the irrigation event prior to paddock 2 starting up on 12 th Feb 2020. The complaint was closed – but all further investigations / actions and outcomes are now captured under HAU20-004.	Yes
HAU20-COM-006 03-Mar-20	Buxton Farm	Complaint - Odour complaint from Buxton neighbours (Phil & Elena Butcher) about a very bad smell from the Buxton Farm.	Communicated with the neighbours that Hautapu were working on a wider issue to understand the odour issues coming from Buxton Farm.	Yes
HAU20-COM-007 25-Mar-20	Buxton farm	Complaint - Odour complaint from Buxton neighbour.	Undertook trial to determine volume of water required to flush paddock 2 line from irrigation station. Confirm if programmed flush volume is enough. Review Buxton flush volumes in PLC and update to reflect theoretically calculated volumes from ETG.	Open

Complaints Number	Area	Description	Action Taken	Resolved Y/N
			<p>Undertake flush volume validations on remaining boundary paddocks to determine adequacy of flush. Annual flush validations added to compliance calendar for each farm.</p> <p>Develop SOP to determine adequate flush volume (fresh water + effluent push) and check against volume settings in the HMI on an annual basis for each farm.</p>	
<p>HAU20-COM-009</p> <p>23-Jun-20</p>	<p>Buxton Farm Neighbours</p>	<p>Complaints - Four separate odour complaints coming from Buxton Farm – via local authority.</p>	<p>Currently the complaint is sitting with the WRC. Site has initiated a review of their practices and is confident no irrigation or farm activities were occurring on Buxton at the time of the odour complaints.</p> <p>No direct contact with neighbours has been initiated, we will await feedback from WRC on our response.</p>	<p>Yes</p>

8. Community Relations

The annual community meeting could not be held as per the standard in person meeting like every year. Due to the COVID-19 pandemic social and physical distancing measures had to be implemented as per Government Guidelines and Fonterra Protection Measures. However, as an alternative the site has communicated annual themes via a “Fonterra Hautapu Community Letter”. See below the inserts of the Community Letter and its contents.



Fonterra Hautapu Community Letter

Issue 1 — May 2020

Hello Neighbours & Interested Parties,

Due to the Covid-19 pandemic situation and to maintain social distancing practices within our communities, we have decided this year not to host our annual community meeting. The aim of this newsletter therefore is to provide an update on what's new, where we are up to with various projects, and how are we working with our communities.

About us



Located in the heart of the Waikato Fonterra Hautapu has been a leader in the dairy industry for more than 120 years. Hautapu site employs 300 staff and specialises in producing high-value products including casein, whey protein concentrate, hydrolysate, lactoferrin, milk protein concentrate and lactose. Fonterra Hautapu is the only site in New Zealand that produces organic cheese. Hautapu has a milk processing capacity of 3.2 million litres of milk every day and an annual production of 77,000 tonnes.

Doing our bit for the environment

Hautapu has supported our community by providing funds and participating in planting and other activities, including supporting Kids in Need Waikato, Breast Cancer Foundation NZ and Cambridge Community Garden. Hautapu site is also working with the Ngati Haua Mahi Trust to plant the banks of the Mangaone Stream and our storm water pond.

Well Done Mighty Hautapu YOU SHOULD BE PROUD



Thank you for the great teamwork to make the happen (prior to lockdown). Our 2019/2020 effort was delivered perfectly to a very delighted customer of Milk in New Zealand.



Key Environmental Performance

- Waste water reduction: For this season we saw an Average decrease of 676,000 litres per day (11.6%)
- Water reduction: On target to achieve target of reducing council water use.
- Energy reduction: Installation of Condensing Economiser on our 15MW Gas Boiler, which resulted in a saving of 11,000 Giga Joule saving per year.
- Complaints (within the past 12 months): 4 x odour complaints, 1 water take complaint, and one noise complaint.
- Non conformances: 3 x reported to the Waikato Regional Council this season.



Reference	Date of incident	Location	Description
HAU20 001	2 Oct 19	Sewage plant	Resource consent limit exceeded for suspended solids and biochemical
HAU20 002	20 Mar 20	River line	River discharge composite sample returned a pH of less than 5—this is below resource consent limit of 5
HAU20 003	28 Apr 20	Satellite farms	A number of paddocks have just exceeded the nitrogen loading limit





Projects

- ⇒ Bardowie farm: pump station relocation in progress
- ⇒ Waipa District Council: working with WDC on range of issues including stormwater discharges and water-line connection to water reservoir
- ⇒ Buxton extension: Extension of irrigation network to adjoining farm—working through resource consent process
- ⇒ Bardowie stage 2 sale on track



Dairy Fert Upgrades

- ◆ Janelle Jensen has joined DairyFert as Environmental Advisor
- ◆ Waikato Regional Council assessed 3 resource consents with 'Full Compliance'
- ◆ Achieved ISO14001:2015 certification
- ◆ Stormwater system upgrades completed



Before



After

Consenting Update

Fonterra recently lodged applications with Waikato Regional Council and Waipa District Council for continuation of the wastewater irrigation from the Hautapu dairy manufacturing site onto our Bardowie, Bruntwood and Buxton farms, and an application to irrigate wastewater onto our new property immediately to the north of the Buxton farm (referred to as the Buxton Extension Farm). In addition, applications have been lodged with Waikato Regional Council to discharge treated wastewater to the Waikato River and for two small ancillary consents for groundwater takes.

Fonterra is proposing to construct a wastewater treatment facility (WWTF) on the Buxton farm. Resource consent applications for the construction and operation of the wastewater treatment facility have been lodged with Waipa District Council and Waikato Regional Council.

The proposed WWTF will provide a highly treated wastewater suitable for discharge to either land or the Waikato River fulfilling the requirements to help protect and restore the Waikato River.

Waste reduction & Recycling

- F20 target of 35% reduction in waste to landfill compared to FY18—currently achieved 28%
- E-waste: all unused/ obsolete electronic equipment recycled
- Plastic: all plastic packaging (clear and coloured) is recycled
- Cardboard: all cardboard from packaging collected
- Gumboots/cleaning equipment from red line areas: collected and re-purposed
- Paper: recycled or shredded and re-used by Blewden Lillies to pack their flowers
- Air intake filters: metal separated and recycled
- Salt bags: returned to supplier



Introducing...

Alice Rackham—
Environmental Manager



Christian Gunter—
Irrigation Team Lead



How can you reach us?

If you have any queries, or are interested in an aspect of our site, your first step is to phone Alice Rackham, Site Environmental Manager on: 027 406 1765 or email: alice.rackham@fonterra.com, Alternatively you could contact Shane Harris, Hautapu Operations Manager via email: shane.harris@fonterra.com

9. References

1. **Ben Murphy.** Waikato Regional Council Compliance Audit Report for 2018/2019 season.
2. **Fonterra Environmental Management Manual** – 10.0 Environmental Improvement, Standard Operations Procedure 10.2.1 Non-Compliance and Corrective and Preventative Action – Version 4.0.