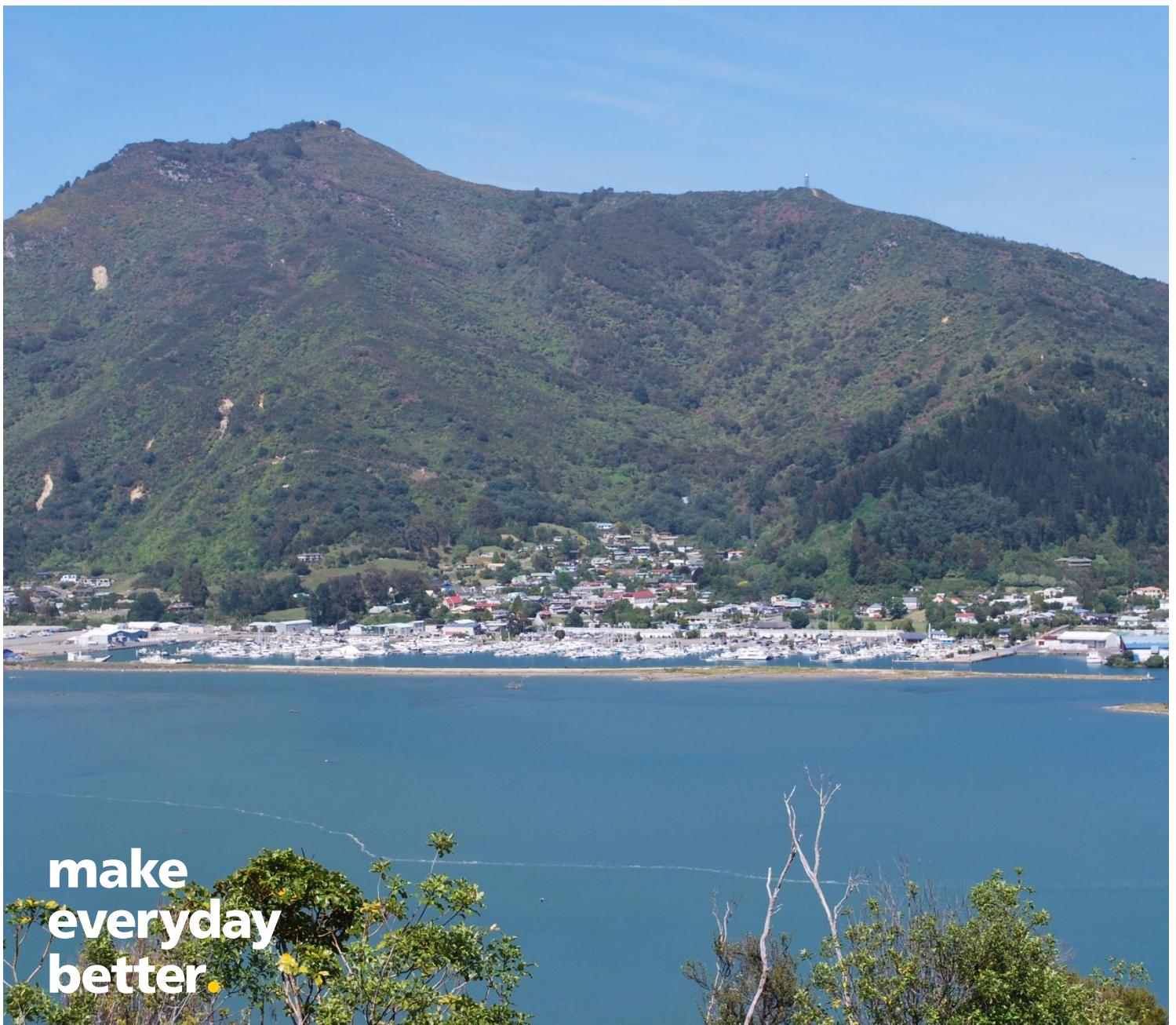


Havelock Sewage Treatment Plant Consent Compliance Report (1 June 2019 - 31 May 2020)

Consent U170942

Prepared for Marlborough District Council
Prepared by Beca Limited

1 February 2021



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Appendix A – Consent U170942

Appendix B – Havelock Sewage Treatment Ponds & Sampling Locations

Appendix C – Daily Flow Records

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Appendix E – Cawthron Report

Appendix F – Dissolved Oxygen Data

Revision History

Revision N°	Prepared By	Description	Date
A	Kevin Joeng	Draft for client review	18 September 2020
B	Liam Perry	Final	1 February 2021

Document Acceptance

Action	Name	Signed	Date
Prepared by	Liam Perry		1 February 2021
Reviewed by	Sarah Burgess		1 February 2021
Approved by	Graeme Jenner		1 February 2021
on behalf of	Beca Limited		

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Consent Compliance Summary

Condition	Requirement	Observation	Compliance
Consent U170942.1 (Discharge to Water)			
1 & 2	Discharge rate as measured by inlet to ponds must not exceed 2,400 m ³ /day.	90 th percentile flow of 482 m ³ /day and maximum flow of 1,069.7 m ³ /day.	Met
4	Discharge of treated effluent must not create stated effects (temperature, visual or dissolved oxygen) outside of the mixing zone.	High effluent quality and available dilution means that any significant effects on the parameters noted, outside of the mixing zone, are unlikely.	Met
5	Dissolved oxygen concentrations must be taken at the outlet of the pond weekly.	Average duration between DO measurements throughout the monitoring period was 6.4 days.	Met
6	Single grab sample must be taken from pond outlet in June or July and analysed for the required parameters.	Grab sample obtained on 18 July 2019 and tested for all parameters.	Met
7	Single grab sample must be taken from pond outlet in January or February and analysed for the required parameters.	Grab sample obtained on 17 January 2020 and tested for all the required parameters.	Met
8	Monthly grab samples to be obtained from pond outlet from November to April inclusive, and tested for the required parameters.	All samples taken for monitoring period; however, the January sample was not analysed for the all required parameters, due to a sampling scheduling error which has been resolved.	Partially met
9	24-hour composite influent sample to be obtained in January or February and tested for the required parameters.	Composite influent samples obtained on 17 January 2020. Tested for all the required parameters.	Met
10 a)	Monthly upstream and downstream sampling on the Kaituna River to be conducted in December, January and February. Samples to be tested for the required parameters.	All monthly samples were collected from upstream and downstream locations. All samples were analysed for the required parameters.	Met
10 b)	Monthly upstream and downstream sampling on the Kaituna River to be conducted in June, July and August. Samples to be tested for the required parameters.	July and August 2019 samples were taken and analysed for the required parameters. The June 2019 sample was not taken.	Partially met
10 c)	Weekly upstream and downstream sampling on the Kaituna River to be conducted from November to April inclusive. Samples to be tested for the required parameters.	All weekly samples obtained and analysed for the required parameters. Results show that effluent discharge may be increasing microbiological concentrations in the river. Sampling was not carried out at the Mahakipawa Road bridge, but this will be included in future reports.	Partially met
11 & 12	Annual reporting requirement.	Fulfilled by submission of report.	Met
13	Submission of report documenting the option(s) for the treatment plant upgrade or relocation of the discharge 24 months after grant of the report.	Submission of STP options report will be required by February 2021.	Not required for this monitoring period.
14	Update on investigations and progress made on treatment plant upgrades or relocation of the discharge by 1 August.	Update provided by memorandum on 22 August 2019	Partially met
Consent U170942.2 (discharge to air)			
1 & 2	No offensive or objectional odours detectable outside of STP site boundary.	No complaints received relating to odour.	Met

1 Introduction

1.1 Overview

The Havelock Sewage Treatment Plant (STP) is operated by Marlborough District Council (Council) and is located on the true left bank of the Kaituna River, just upstream of the road bridge on the Mahakipawa/Queen Charlotte Drive, Havelock. The STP was constructed in 1984 and originally consisted of a single pond (Pond 1) discharging to the Kaituna River. A second pond was constructed in 1999 to allow desludging of Pond 1 in the summer of 1999/2000.

The two ponds operate in series with continuous discharge of treated effluent to a tidal portion of the Kaituna River. An upgrade in 2008 consisted of adding a bund to Pond 2 to create two smaller ponds (Ponds 2 and 3) for improving disinfection performance (i.e. increased removal of potential pathogens), as well as further reduction of the biochemical oxygen demand (BOD) and suspended solids concentrations in the discharged effluent.

In June 2010, mechanical aeration was added to Pond 1 to increase the BOD loading capacity, for treating increased loads from local industries. An in-bank rock diffuser was also constructed to allow for more efficient disposal of treated effluent to the river.

Since 2010, some reduction in loads from local industries have been made through improved on-site treatment, but trade waste loads still remain significant and local industries are encouraged to reduce the discharge of high strength influent to the wastewater network. Mechanical aeration has been used regularly on Pond 1 over the past year.

Council was granted a new short term (5 year) consent U170942 on 1 February 2019 to discharge contaminants to water and air from the STP. This period will allow Council time to implement plans to relocate the STP discharge location and/or improve the treatment. A copy of Consent U170942 is attached in **Appendix A**.

A map showing the layout and location of the ponds, as well as the treated effluent and river sampling locations, is included in **Appendix B**.

1.2 Purpose of Report

The purpose of this report is to summarise the performance of the Havelock Sewage Treatment Plant (STP), for the period 1 June 2019 to 31 May 2020, against the requirements of Consent U170942.

This is the second consent compliance report produced for Consent U170942. This is also the first report for a complete monitoring period under Consent U170942, as the previous report assessed a truncated period of 1 February 2019 – 31 May 2019. The old and new consents have a number of common conditions, but some additional monitoring was introduced under the new consent.

Only those consent conditions that have numerical or qualitative monitoring requirements are assessed. For clarity, consent conditions are quoted in *italics*.

2 Consent U170942.1

2.1 Consent Purpose

Consent U170942.1 allows for the discharge of up to 2,400 cubic metres per day of treated municipal wastewater to the Kaituna River through an existing outfall subject to consent conditions.

2.2 Condition 1 & 2 – Discharge Quantity

2.2.1 Condition 1

The maximum daily discharge rate as measured by the inflow to the ponds shall not be more than 2400 cubic metres per day.

2.2.2 Condition 2

The consent holder shall record daily flows. The results shall be provided to the Compliance Manager, Marlborough District Council, as part of the reporting required under Condition 12 or on request.

A flow meter is installed at the terminal pump station, allowing compliance with Condition 1. No flow meter is currently installed at the outlet of the ponds. Daily flow records can be found in **Appendix C**.

A 90th percentile flow of 482 m³/d and a maximum flow of 1069.7 m³/d was recorded in the 2019/2020 monitoring period (see Figure 2-1). The average daily flow was 354 m³/d. This is well below the consent limit of 2,400 m³/d, so Condition 2 has been met.

The maximum daily discharge volume of 2,400 m³/d equates to the capacity of the two pumps at the terminal pump station and allows for a significant component of wet weather inflow and infiltration.

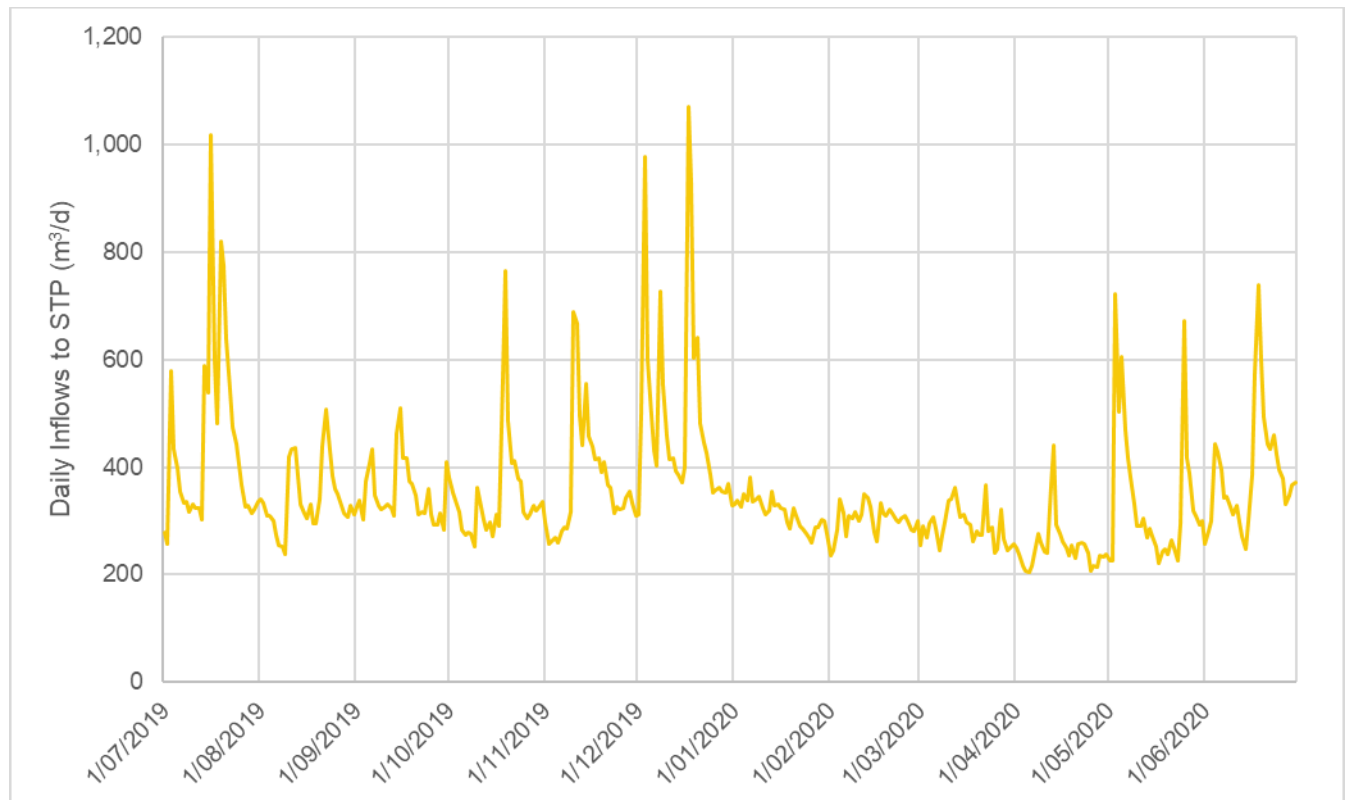


Figure 2-1 Daily flows to STP over 2019/2020 monitoring period

2.3 Condition 4 – Discharge Effects

The discharge of treated wastewater shall not cause any of the following effects outside of the 50 metre mixing zone:

- a) A change in the natural temperature of the receiving water of more than 3 degrees Celsius.*
- b) There shall be no production of conspicuous oil or grease films, scums or foams, or floatable or suspended materials.*
- c) A concentration of dissolved oxygen in the receiving water of below 80 percent of the saturation concentration provided upstream dissolved oxygen is no less than 85 percent of the saturation concentration.*

No active monitoring of the above parameters was carried out in the receiving water near the outfall location, over the 2019/2020 monitoring period. However, the high quality of effluent produced at the STP (as discussed in Section 2.5) and sufficient dilution in the Kaituna River suggests that the adverse discharge effects described in a) to c) above were unlikely to have occurred. No complaints were received from any effects observed that are attributable to the discharge. It can therefore be assumed that the requirements of Condition 4 were fulfilled.

2.4 Condition 5 – Dissolved Oxygen

The consent holder shall take weekly Dissolved Oxygen samples at the outlet of the tertiary pond.

A total of 58 dissolved oxygen measurements were taken at the outlet of the STP between and 6 June 2019 and 28 May 2020. The average time between DO samples was 6.38 days. There was one occurrence where a sample was not taken for 20 days (18 December 2019 – 7 January 2020), but this was acceptable, as it occurred over the Christmas and New Year period. Overall, the requirements of Condition 5 were fulfilled. The full set of monitoring results for the reporting period are included in **Appendix F**

There is a large spread in DO concentrations, varying between 0 – 35 g/m³ (see Figure 2-1). DO usually peaks between 11am – 2pm due to high algal activity (from sunlight) and drops in the evenings and mornings due to lower light intensity and temperatures. While there was no stipulated time frame for DO measurement in the consent conditions, most readings were taken between 11am – 2pm which is appropriate. A cluster of high DO concentrations occurred in April and May 2020 which may have been as a result of increased algal growth during warm autumn conditions. The median DO at the effluent for the 2019/20 monitoring period was 6.46 g/m³. The consent does not place minimum limits on DO concentrations in the tertiary pond outlet.

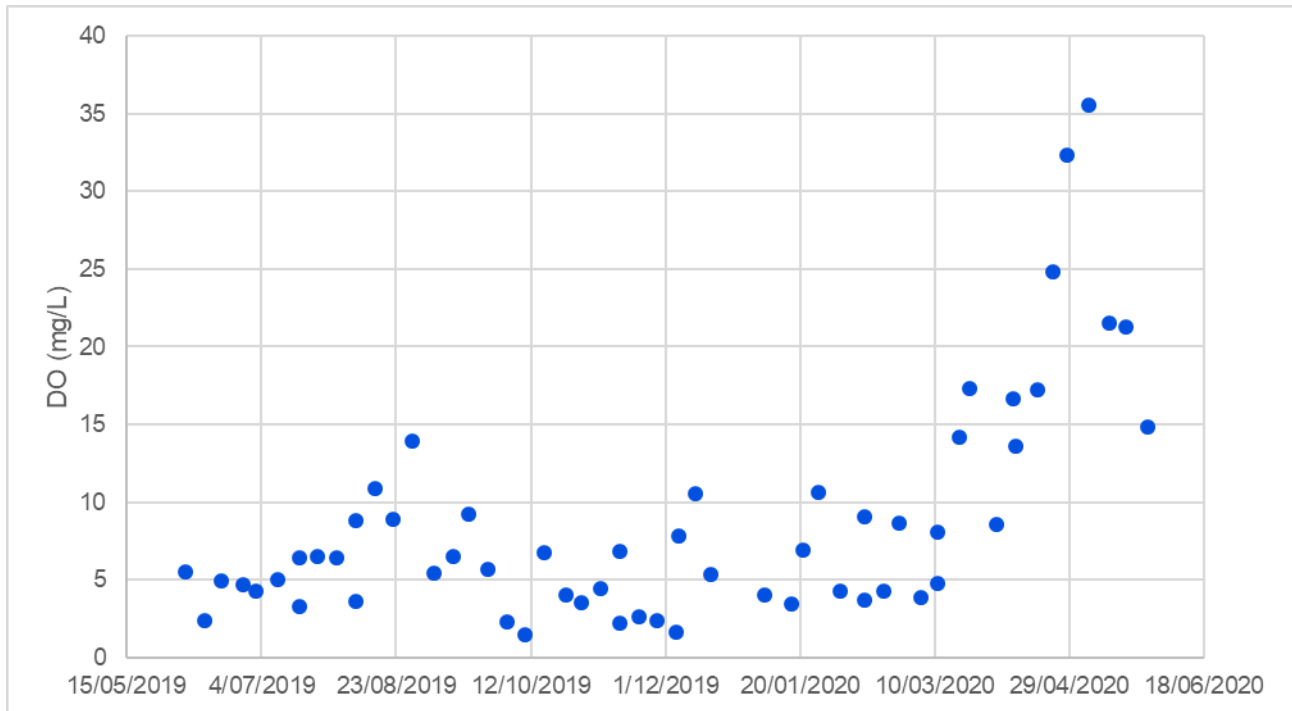


Figure 2-1 Dissolved oxygen concentrations at outlet of Havelock STP

2.5 Conditions 6 to 8 – Discharge Quality

2.5.1 Condition 6

The consent holder shall take one grab sample of the wastewater from the pond outlet once yearly in June or July and analyse the sample for the following:

- a) Chemical oxygen demand
- b) Biochemical oxygen demand (five day)
- c) Biochemical oxygen demand soluble (five day)
- d) Total suspended solids
- e) Conductivity
- f) Total nitrogen
- g) Nitrite nitrogen
- h) Nitrate nitrogen
- i) Total Kjeldahl nitrogen
- j) Ammonia-nitrogen
- k) Total phosphorus
- l) Dissolved reactive phosphorus
- m) Faecal coliforms
- n) Dissolved oxygen
- o) Temperature
- p) pH

A grab sample was taken on 18 July 2019 from the pond outlet and was tested for all the required analyses (see Table 2-1). Compliance with Condition 6 was therefore met.

The effluent quality of this grab sample is comparable with grab samples taken in previous years at the plant. Effluent pH, dissolved oxygen and temperature are routinely measured by the plant operator, and the average of the July 2019 measurements of these parameters are calculated below (Table 2-2).

Table 2-1 Condition 6 – Results of effluent monitoring on 18 July 2019

Parameter	Units	Result
Ammonia - nitrogen	g/m ³	26.00
C-BOD-5	g O ₂ /m ³	24.00
C-BOD-5 - dissolved	g O ₂ /m ³	7.00
COD	g O ₂ /m ³	152.00
Conductivity (field)	uS/cm	133.50
Dissolved oxygen concentration	g/m ³	3.34
Dissolved reactive phosphorus	g/m ³	3.10
Faecal coliforms	cfu/100mL	16,000.00
Nitrate - nitrogen	g/m ³	0.05
Nitrite - nitrogen	g/m ³	0.03
Nitrite-nitrate nitrogen	g/m ³	0.08
Suspended solids - total	g/m ³	36.00
Total Kjeldahl nitrogen	g/m ³	36.00
Total nitrogen	g/m ³	36.00
Total phosphorus	g/m ³	4.40
Water temperature (field)	°C	10.10
pH (field)		7.50

Table 2-2 Average of July 2019 pond effluent measurements

Parameter	Value
pH (field)	6.93
Dissolved oxygen (mg/L)	5.13
Water temperature (field) (°C)	9.36

2.5.2 Condition 7

The consent holder shall take one grab sample of the wastewater from the pond outlet once yearly in January or February and analyse the sample for the following:

- a) Chemical oxygen demand
- b) Total nitrogen
- c) Nitrite nitrogen
- d) Nitrate nitrogen
- e) Total Kjeldahl nitrogen
- f) Ammonia-nitrogen
- g) Total phosphorus
- h) Dissolved reactive phosphorus

On 17 January 2020, a grab sample was taken from the pond outlet and analysed for all the required parameters. The results are shown in Table 2-3 Condition 7 has therefore been met.

Table 2-3 Condition 7 – Result of effluent monitoring on 17 January 2020

Parameter	Units	Result
COD	g O ₂ /m ³	250
Total nitrogen	g/m ³	43
Nitrite nitrogen	g/m ³	0.043
Nitrate nitrogen	g/m ³	0.059
Total Kjeldahl nitrogen	g/m ³	43
Ammonia-nitrogen	g/m ³	36
Total phosphorus	g/m ³	6.4
Dissolved reactive phosphorus	g/m ³	4.5

2.5.3 Condition 8

The consent holder shall take one grab sample of the wastewater from the pond outlet once monthly in November to April inclusive:

- a) *Biochemical oxygen demand (five day)*
- b) *Biochemical oxygen demand soluble (five day)*
- c) *Total suspended solids*
- d) *Conductivity*
- e) *Enterococci*
- f) *Faecal coliforms*
- g) *pH*
- h) *Dissolved oxygen*
- i) *Temperature*

Five out of the six grab samples taken over the November to April period were analysed for all the required parameters. The 17 January 2020 grab sample was analysed for the parameters under Condition 7, but not for those listed in Condition 8. Council has confirmed that this sample was missed due to an error in the sampling schedule when changing over to the new consent. The sampling schedule has been revised, and the issue should not occur in future monitoring periods. See Table 2-4 for the results of each grab sample.

Table 2-4 Condition 8 – Results of effluent monitoring November 2019 to April 2020

Parameter	Units	14-Nov 2019	06-Dec 2019	17-Jan 2020	13-Feb 2020	11-Mar 2020	09-Apr 2020
BOD ₅	g O ₂ /m ³	16	53	-	59	34	42
BOD ₅ - Dissolved	g O ₂ /m ³	14	18	-	13	8	16
Total suspended solids	g/m ³	16	103	-	125	89	58
Conductivity	uS/cm	1,741	1,889	-	2,640	3,270	320
Enterococci	number/100 ml	173	63	-	428	2,420	2,420
Faecal coliforms	number/100 ml	790	110	-	92,000	16,000	3,500
pH		7.40	8.20	8.20	8.10	8.00	8.03
Dissolved oxygen	g/m ³	2.21	7.80	3.47	3.68	4.79	13.64
Temperature	°C	18.4	18.8	17.9	24.4	18.3	17.7

Medians were calculated using the available data for this monitoring period and compared with data from previous monitoring periods to show long term trends in the effluent quality (

Table 2-5).

Table 2-5 Median pond effluent quality between November and April inclusive (2013 - 2020)

Parameter	2013 - 2014 (six samples)	2014 - 2015 (six samples)	2015 - April (six samples)	2016 - 2017 (six samples)	2017 - 2018 (six samples)	2018 - 2019 (six samples)	2019 - 2020 (five samples)
BOD ₅ (g O ₂ /m ³)	52	46	57	50.5	45 ¹	26.5	42
C-BOD ₅ – Dissolved (g O ₂ /m ³)	6	11	17.5	21.5	7.0 ²	9.5	14
Conductivity (uS/cm)	213	271	258.5	190.7	180.9 ³	304 ¹	1,889
Dissolved Oxygen Concentration (mg/L)	10	4.84	11.62	6.8	6.68	9.37	4.24
Enterococci (number/100mL)	243	1,378	3,130	5,302	1,962	2673	428
Faecal Coliforms (cfu/100mL)	8,950	25,500	92,000	80,000	71,000	16,000 ¹	3,500
Suspended Solids – Total (mg/L)	116	67	108.5	101	70.5	90	89
Water Temperature (°C)	21	18.1	19.4	20.3	18.05	21.9	18.35
pH	8	7.9	8.2	7.8	7.6	7.5	8.1

Condition 8 does not set effluent quality limits. However, a comparison of the results over the last six years shows that median BOD and TSS concentrations are consistent with expected performance of similar STPs

¹ Only five samples in this average due to one measurement not being taken.

² Only four samples in this average due to two measurements not being taken.

³ Value was initially recorded as 1,809 mS/m however, MDC has confirmed this was an error.

with a three-pond layout. Median BOD₅ and soluble BOD₅ concentrations were slightly higher than the previous monitoring period but are still lower than the highest recorded median values at the STP over the past seven years. Median suspended solids concentrations remained stable and are comparable with the median values measured in previous monitoring periods.

Median conductivity concentrations were significantly higher than in previous years, approximately six times greater than the previous year's median. Errors during measurement or reporting, saltwater contamination or higher TDS loads from industry are potential reasons for this high median.

Median dissolved oxygen concentrations were at the lowest concentration in seven years, but results remain over the years are variable. The median pH value is consistent with results from previous years. Median faecal coliform counts were the lowest in seven years and the median enterococci count was the lowest in six years.

2.6 Condition 9 – Influent Analysis

The consent holder shall take a 24 hour composite sample of sewage influent once yearly in January or February and analyse the sample for the following:

- a) *Chemical oxygen demand*
- b) *Biochemical oxygen demand (five day)*
- c) *Total suspended solids*
- d) *Conductivity*
- e) *Total nitrogen*
- f) *Ammonia-nitrogen*
- g) *Nitrate nitrogen*
- h) *Nitrite nitrogen*
- i) *Total Kjeldahl nitrogen*
- j) *Total phosphorous*
- k) *Dissolved reactive phosphorous*
- l) *Faecal coliforms*
- m) *Enterococci*
- n) *pH*

On 17 January 2020, a 24-hour composite sample of the influent was collected and analysed for all the required parameters. The results are presented in Table 2-6. Full compliance with Condition 9 was achieved.

Table 2-6 Condition 9 - Results of 24 hr composite influent monitoring

Parameter	Units	17 Jan 2020
Chemical oxygen demand	g O ₂ /m ³	830
BOD-5	g O ₂ /m ³	410
Total suspended solids	g/m ³	280
Conductivity	uS/cm	3,030
Total nitrogen	g/m ³	81
Ammonia nitrogen	g/m ³	48
Nitrate nitrogen	g/m ³	0.002
Nitrite nitrogen	g/m ³	0.007
Total kjeldahl nitrogen	g/m ³	81
Total phosphorus	g/m ³	9.3
Dissolved reactive phosphorous	g/m ³	7.2
Faecal coliforms	number/100mL	16,000
Enterococci	number/100mL	106,800
pH	-	6.80

The COD:BOD ratio of the January sample is 2.02, which is typical for raw municipal wastewater with some industry sources. The COD concentration is on the high end of the expected range for municipal wastewater, according to Metcalf & Eddy (see Table 2-7). As mentioned earlier, local industries are being encouraged to reduce wastewater loads to the STP due to a previous overloading incident. To date, the STP has been coping with the influent BOD loads as reflected in the effluent monitoring data.

Table 2-7 Typical composition of raw municipal wastewater (Metcalf & Eddy 4th Ed, 2004)

Parameter	Low Strength	Medium Strength	High Strength
Chemical Oxygen Demand (mg/L)	250	430	800
Biochemical Oxygen Demand (mg/L)	110	190	350
TSS (mg/L)	120	210	400
COD:BOD ratio	2.27	2.26	2.29

2.7 Condition 10 – Receiving Environment Monitoring

The consent holder shall carry out a programme of receiving environment monitoring for the duration of the consent as follows:

- a) Water samples (grab samples) shall be taken from the Kaituna River each summer; once in December, once in January and once in February. Samples shall be taken approximately 350 metres upstream of the discharge and 50 metres downstream of the discharge. Samples shall be taken between two and four hours after high tide and analysed for the following:
 - i. Total biochemical oxygen demand (five day)
 - ii. Total suspended solids
 - iii. Total nitrogen
 - iv. Ammoniacal nitrogen
 - v. Nitrate nitrogen
 - vi. Nitrite nitrogen
 - vii. Total Kjeldahl nitrogen

- viii. *Total phosphorus*
 - ix. *Dissolved reactive phosphorus*
- b) *Water samples (grab samples) shall be taken from the Kaituna River each winter; once in June, once in July and once in August. Samples shall be taken approximately 350 metres upstream of the discharge and 50 metres downstream of the discharge. Samples shall be taken between two and four hours after high tide and analysed for the following:*
- i. *Total biochemical oxygen demand (five day)*
 - ii. *Total suspended solids*
 - iii. *Total nitrogen*
 - iv. *Ammoniacal nitrogen*
 - v. *Nitrate nitrogen*
 - vi. *Nitrite nitrogen*
 - vii. *Total Kjeldahl nitrogen*
 - viii. *Total phosphorus*
 - ix. *Dissolved reactive phosphorus*
- c) *Water samples (grab samples) shall be taken from the Kaituna River weekly from November to April inclusive. Samples shall be taken approximately 350 metres upstream of the discharge, 50 metres downstream of the discharge and near the Mahakipawa Road bridge. Samples shall be taken between two and four hours after high tide and analysed for the following:*
- i. *Faecal coliforms*
 - ii. *Enterococci*
 - iii. *Dissolved oxygen*
 - iv. *pH*
 - v. *Temperature*
 - vi. *Conductivity*

2.7.1 Condition 10 a) Summer Sampling

Grab samples were collected in the months of December 2019, January 2020 and February 2020, and analysed for all the parameters required under Condition 10 a). A new upstream sampling point was utilised in March 2019 in accordance with Condition 10. For these reasons, full compliance with Condition 10 a) has been met. From the summer grab sampling results tabulated in Table 2-8 below, it can be seen that the downstream samples were slightly higher in total nitrogen, ammonia and phosphorus (total and dissolved reactive phosphorus) However, overall the discharge of effluent into the Kaituna River does not appear to have had a significant impact on the water quality during the December 2019 to February 2020 period.

Table 2-8 Condition 10 a) Results of sampling from Kaituna River in summer of 2019/2020

Parameter	Units	6 Dec 2019		17 Jan 2020		12 Feb 2020	
		U/S	D/S	U/S	D/S	U/S	D/S
BOD ₅	g/m ³	2	2	2	2	2	2
Suspended solids - total	g/m ³	3	4	3	6	15	7
Total nitrogen	g/m ³	0.84	0.89	1.18	1.3	0.9	1.03
Ammonia - nitrogen	g/m ³	0.01	0.168	0.012	0.42	0.048	0.26
Nitrite - nitrogen	g/m ³	0.002	0.004	0.003	0.008	0.02	0.01
Nitrate - nitrogen	g/m ³	0.72	0.67	1.04	0.9	0.74	0.65
Total Kjeldahl nitrogen	g/m ³	0.12	0.22	0.14	0.4	0.15	0.37
Total phosphorus	g/m ³	0.016	0.052	0.016	0.08	0.038	0.076
Dissolved reactive phosphorus	g/m ³	0.009	0.032	0.005	0.052	0.04	0.06

2.7.2 Condition 10 b) winter sampling

Winter sampling was only carried out in the months of July and August 2019. In the previous monitoring period, upstream and downstream grab sampling in the Kaituna River was carried out on all months except June 2018, which may explain why the June 2019 sample was missed. All samples were analysed for the required parameters. From Table 2-9, it can be seen that the downstream samples were generally slightly higher in suspended solids, total nitrogen, ammonia and phosphorus (total and dissolved reactive-P). Overall, however, the discharge did not appear to have had a significant effect on water quality in the June and July 2019 period.

Due to the missed June 2019 sample, only partial compliance with Condition 10 b) was achieved.

Table 2-9 Condition 10 b) Sampling from Kaituna River in winter of 2019.

Parameter	Units	June 2019		18 July 2019		13 August 2019	
		U/S	D/S	U/S	D/S	U/S	D/S
BOD-5	g/m ³	-	-	2	2	2	2
Suspended solids - total	g/m ³	-	-	6	7	7	8
Total nitrogen	g/m ³	-	-	0.94	1.05	1.01	1.24
Ammonia - nitrogen	g/m ³	-	-	0.01	0.109	0.01	0.087
Nitrite - nitrogen	g/m ³	-	-	0.002	0.002	0.002	0.002
Nitrate - nitrogen	g/m ³	-	-	0.88	0.89	0.89	0.91
Total Kjeldahl nitrogen	g/m ³	-	-	0.1	0.16	0.12	0.33
Total phosphorus	g/m ³	-	-	0.018	0.044	0.024	0.04
Dissolved reactive phosphorus	g/m ³	-	-	0.012	0.022	0.008	0.015

2.7.3 Condition 10 c) Weekly Sampling

Weekly sampling was carried out 350m upstream of the discharge on the Kaituna River from 7 November 2019 to 28 April 2020, at an average sampling frequency of every 7.5 days. At the 50m downstream location, samples were taken at the same frequency. Twenty four grab samples were collected from each location in total. All samples were analysed for the required parameters. The results from the weekly sampling are attached in **Appendix D**.

Condition 10 c) reads, " *Samples shall be taken approximately 350 metres upstream of the discharge, 50 metres downstream of the discharge and near the Mahakipawa Road bridge*". The Mahakipawa Road bridge is interpreted as a third sampling location. Some swimming occurs near the bridge and NIWA has identified occasional higher health risks from the discharge to swimmers at this location. Sampling was not carried out at the road bridge location in this monitoring period, so if this is interpreted as a third sampling location, compliance with Condition 10 c) was not achieved.

Due to a misinterpretation of Condition 10 c), sampling at the Mahakipawa Road bridge between November and April was not carried out. This has now been confirmed with the Compliance Manager, Marlborough District Council, and sampling at the Mahakipawa Road bridge will be included in the sampling data for the next monitoring period.

Data from the weekly samples is presented as box-and-whisker plots in Figure 2-2 to Figure 2-4. Median microbiological concentrations (shown in Figure 2-2) are higher in the downstream sampling site compared with the upstream site for both faecal coliforms and enterococci. The spread in the downstream samples is also comparably greater which implies that the discharged effluent is contributing to this increase in microbiological indicator concentrations.

Note that an outlier was excluded from the plot, to avoid skewing the y-axis. This outlier was a faecal coliform count of 11,000 CFU/mL in the downstream sample on 20 December 2020. This was accompanied by an 8,000 CFU/100mL faecal coliform count in the upstream sample collected on the same day, which suggests that other sources of microbiological contamination were also contributing to this spike.

From Figure 2-4, it can be seen that dissolved oxygen, temperature and pH measurements collected at the downstream location are similar to the upstream location. However, conductivity readings (Figure 2-4) in the downstream samples had a higher median and greater spread, indicating some effect on water quality from the effluent discharge.

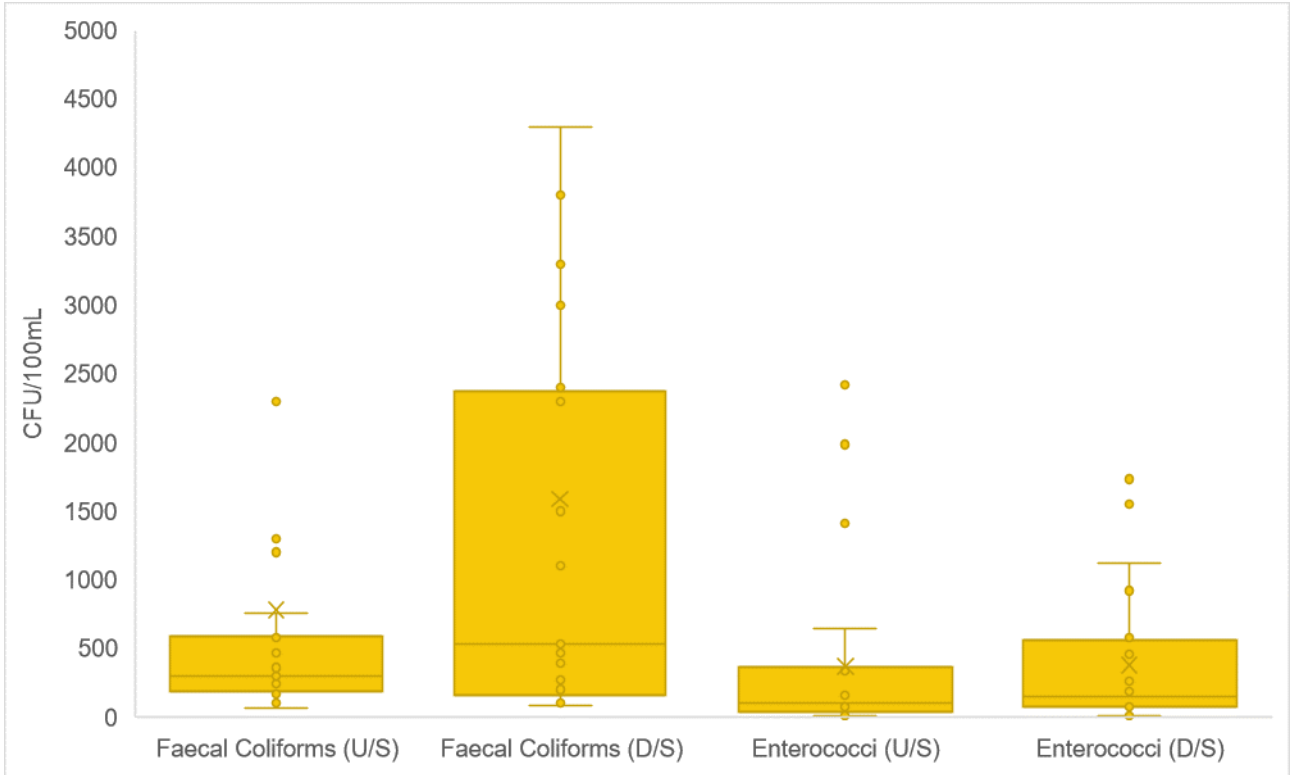


Figure 2-2 Microbiological concentrations measured in Kaituna River for period November 2019 to April 2020

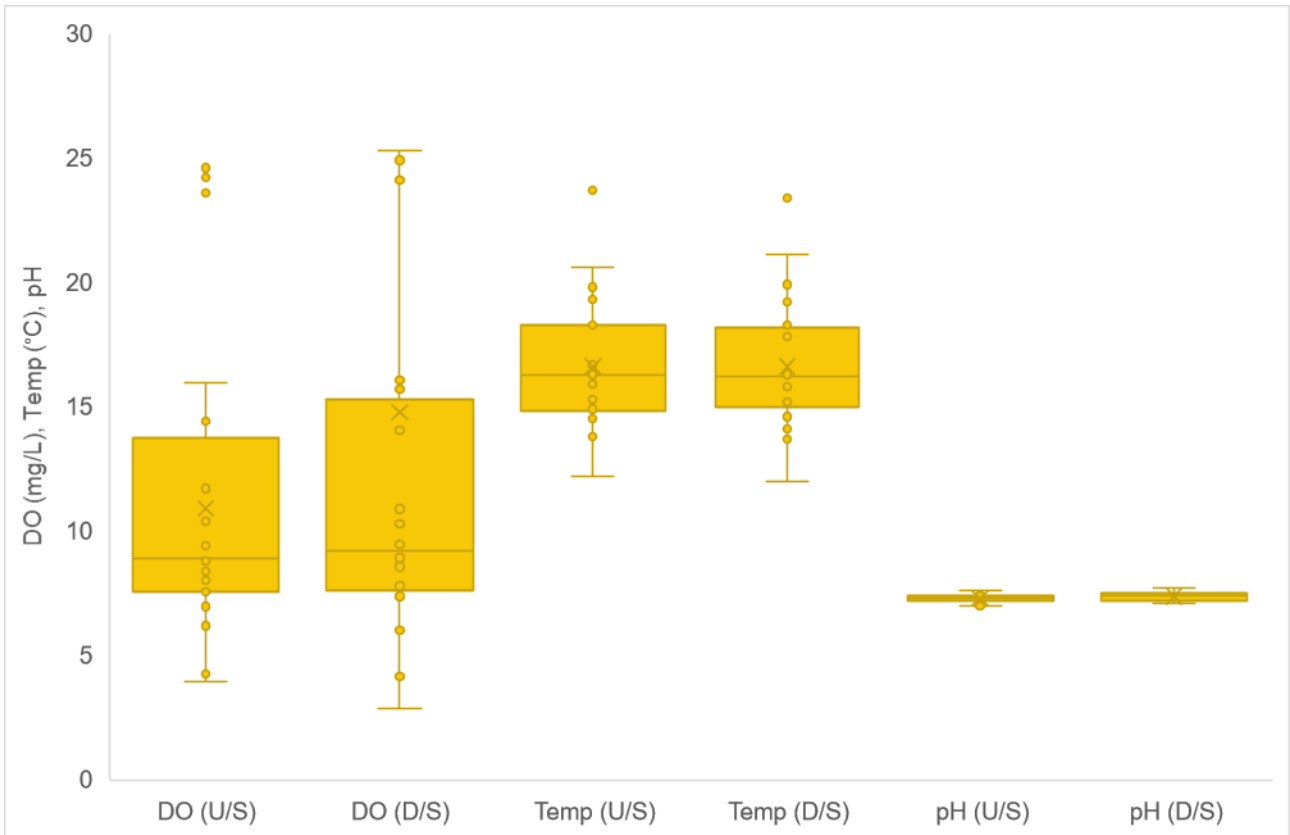


Figure 2-3 Dissolved oxygen, temperature and pH measured in Kaituna River for period November 2019 to April 2020

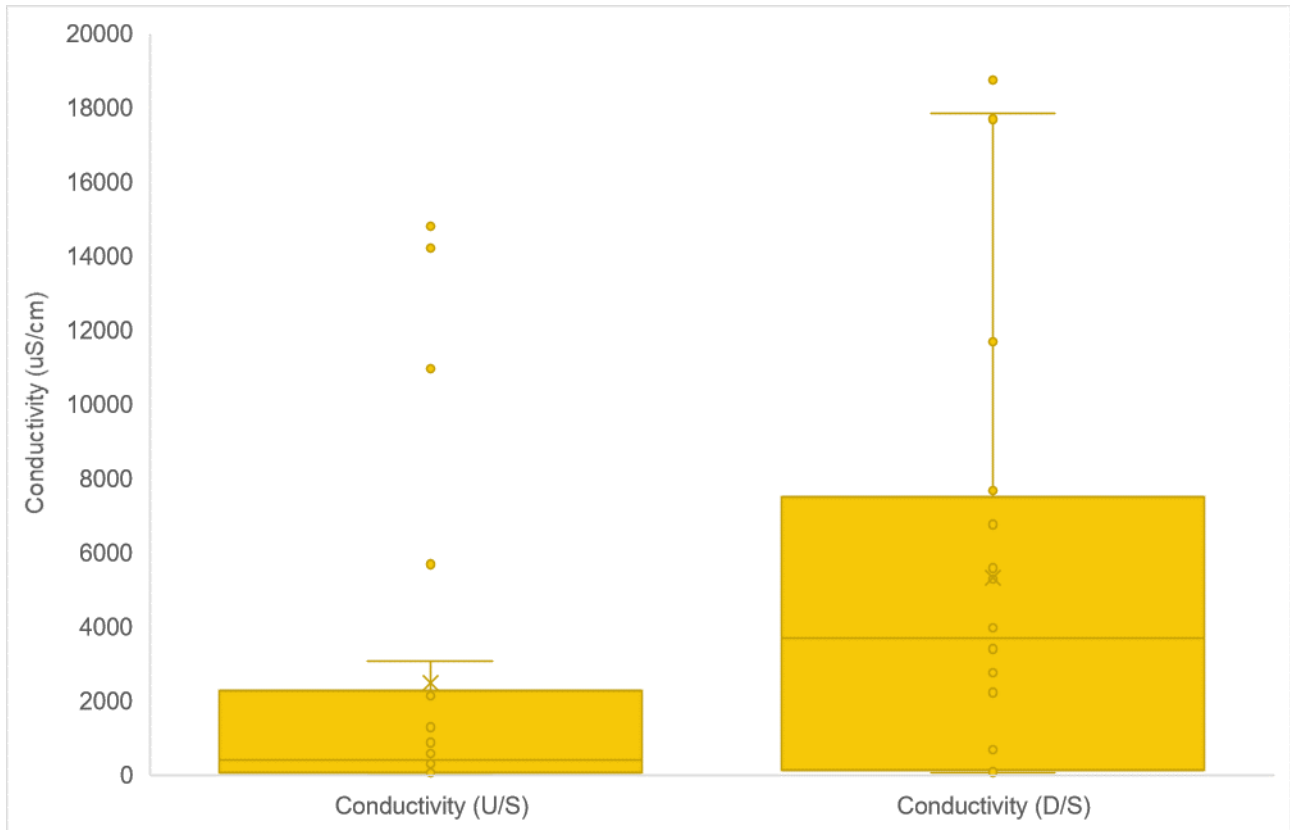


Figure 2-4 Conductivity measurements in Kaituna River for period November 2019 to April 2020

2.7.4 Commentary on Kaituna River monitoring results

In previous years, upstream samples for several water quality parameters, including E. Coli and faecal coliforms, were shown to have higher concentrations than the downstream samples. Questions were raised by Council's Regulatory Department regarding the suitability of the sampling point 50m upstream of the STP discharge following the submission of the 2016/17 monitoring report. To investigate the behaviour of the treated wastewater plume from the STP discharge under different tidal flow scenarios, Council commissioned Cawthron Institute to conduct a tracer dye study (see report in **Appendix E**).

The results from this study carried out in March 2018 indicated that the STP effluent is unlikely to be contributing to the higher concentrations upstream, and there are other likely factors at play, which include:

- The position of the sampling point is a shallow area close to the riverbank and may be accumulating contaminants.
- Faecal contamination may be coming from alternative sources such as a farm drain located 150m upstream, or wildfowl, such as paradise ducks, that frequent the area.

The report recommends that future monitoring be taken as near as possible to low tide, to allow for maximum possible flushing from the upstream site, as well as avoiding sample collection too close to the riverbank.

Council moved the upstream sampling location further upstream (by 300m) mid-way through the sampling period in March 2019. This did not appear to result in any significant difference compared to the previous year's results. However, in this year's monitoring report, a complete set of data from the new location was obtained. These results (see Figure 2-2) show that the downstream samples are now higher in microbiological concentrations than the upstream samples.

Due to misinterpretation of Condition 10 c), sampling at the Mahakipawa Road bridge between November and April was not carried out. Sampling at the Mahakipawa Road bridge will be included in the sampling data for the next monitoring period.

2.8 Condition 11 & 12 – Reporting

2.8.1 Condition 11

The results of the monitoring period required under Conditions 2 and 6 to 10 shall be provided to the Compliance Manager, Marlborough District Council, in accordance with Condition 12 or on request.

2.8.2 Condition 12

The consent holder shall annually from the commencement of this consent and for the period 1 June to 31 May of each year, provide to the Compliance Manager, Marlborough District Council, by 1 August a written annual compliance report that:

- a) Includes all sampling and monitoring results and records;*
- b) Provides an analysis of sampling and monitoring results and trends and actions taken;*
- c) Includes details of any complaints received regarding the operation of the treatment plant and how they have been responded to and, where necessary, the actions undertaken to address the cause of the complaint; and*
- d) Summarises the state of compliance with the conditions of these consents.*

The submission of this report fulfils the requirements of Conditions 11 and 12. Regarding Condition 12 c), no complaints were received regarding the operation of the treatment plant in this monitoring period.

2.9 Condition 13 & 14 – Treatment Upgrade Investigations

2.9.1 Condition 13

Within 24 months of the grant of this consent the consent holder shall submit to the Compliance Manager, Marlborough District Council, and Te Rūanga o Ngāti Kuia a report with the option(s) for the treatment plant including improvement of treatment and/or alteration of the discharge. A preferred option shall be provided with the timeline for the works to be implemented. The report shall document how Ngāti Kuia has been involved in the investigations.

In accordance with Condition 13, a report documenting the options for the treatment plant upgrade will need to be submitted to the Compliance Manager, Marlborough District Council and Te Rūanga o Ngāti Kuia in February 2021, 24 months after consent grant (1 February 2019).

2.9.2 Condition 14

By 1 August of each year, the consent holder shall provide an update of investigations undertaken and progress made.

An update was provided by MDC to the Compliance Manager, Marlborough District Council, and Te Rūanga o Ngāti Kuia on 22 August 2019. This noted that a wastewater characterisation study was carried out between 18 October 2018 and 14 May 2019, and the results were being analysed. The update also noted some 'unusual characteristics' in Havelock's wastewater which were thought to be due to trade waste discharges. The proposed next steps are:

- Complete the evaluation of the sewage testing results
- Develop a plan to investigate sources of specific loadings to the sewer and reduce these loads
- Preliminary design of a new sewage treatment plant
- Purchase of the site for the new plant
- Consenting
- Detailed design
- Construction

Condition 16 & 17 – Signage

2.9.3 Condition 16

A warning sign highlighting the presence of the discharge shall be maintained warning people of the treated wastewater discharge.

2.9.4 Condition 17

A sign shall be erected at the Mahakipawa Road bridge when the enterococci results exceed 180/100 millilitres. The sign wording shall be agreed with the Public Health Service.

In accordance with both Condition 16 and Condition 17, the warning signs required to fulfil this consent condition have been put in place. The warning sign required for Condition 16 will be permanently left in place until the new Havelock treatment plant has been built, as agreed with the Compliance Manager, Marlborough District Council.

Condition 18 & 19 – Outfall and Notifications

2.9.5 Condition 18

The consent holder shall ensure that all structures and works authorised under this consent are maintained in a structurally sound condition at all times to the satisfaction of the Compliance Manager, Marlborough District Council.

All structures and works required to fulfil Condition 18 have been maintained to the satisfaction of the Compliance Manager, Marlborough District Council, so it can be concluded that compliance with this condition has been achieved.

2.9.6 Condition 19

The consent holder shall notify the Compliance Manager, Marlborough District Council, in writing of any maintenance or upgrade works to the plant which may increase discharges of contaminants to air on a short term basis and explain any processes in place to manage the potential effects.

No maintenance or upgrade works were required during this monitoring period, so it can be concluded that compliance with this condition has been achieved.

Condition 20 & 21 – Notifications

2.9.7 Condition 20

The consent holder shall notify the Compliance Manager, Marlborough District Council, the Medical Officer of Health and iwi as soon as practicable and, as a minimum requirement, within 48 hours of any accidental discharge, plant breakdown or other contingency (Incident) which is likely to result in an abnormal discharge quality.

2.9.8 Condition 21

Within seven working days of an Incident occurring, the consent holder shall submit a written report describing the Incident, the reasons for it occurring, its consequences (including the nature of any complaints), the measures taken to remedy or mitigate its effects, and any measures taken to prevent a recurrence of the Incident, including any changes to operating procedures to the Compliance Manager, Marlborough District Council.

No incident regarding Condition 20 or 21 occurred during this monitoring period, so it can be concluded that compliance with this condition has been achieved.

Condition 24 – Complaints

Complaints which may indicate non-compliance with the conditions of this resource consent shall be forwarded to the Compliance Manager, Marlborough District Council, within five working days of the complaint being received.

No complaints were received by Council during this monitoring period, so it can be concluded that compliance with this condition has been achieved.

3 Consent U170942.2

3.1 Consent Purpose

Consent U170942.2 allows for the discharge of odour and gases from the Havelock STP to air. The expiry date is 1 February 2024.

3.2 Condition 2 – Odour

There shall be no odour detectable beyond the boundary of the property that in the opinion of a Marlborough District Council Officer is offensive and objectionable.

No complaints of odour were received by Council, during this monitoring period, so it can be concluded that compliance with this condition has been achieved.

4 Conclusions

Based on the data available, the Havelock STP produces a reasonably good quality effluent with BOD and TSS concentrations generally within the expected range for the current pond layout. Discharge of effluent into the Kaituna River has a minor, but measurable impact on the downstream water quality. Based on monitoring data, the microbiological concentrations downstream of the discharge location in the 2019/20 period were higher than the upstream location. This differs from previous years and is likely due to the change in the upstream sampling location in March 2019.

Weekly sampling at the Mahakipawa Road bridge during the summer months was not carried out, and so compliance with this condition was not achieved.

Sampling of the STP influent shows that the wastewater loads entering the STP are typical of high strength municipal wastewater. However, the STP appears to be coping well with the organic loading from local industrial wastewater inputs at the time the sampling occurred.

No odour complaints, or other complaints relating to the operation of the Havelock STP, were made to Council during the monitoring period.

Adhering to the sampling frequency required by the consent was an issue for this monitoring period, due to the requirements of the new consent. However, Council has confirmed that these issues have now been resolved.

Overall, based on the available results, the STP is operating to expectations for the pond layout and organic loading. The effects of the discharge are generally minor, although the impacts on river microbiological water quality are noted. A 2015 NIWA report identified the elevated health risks to swimmers at the Mahakipawa Road bridge under certain conditions.

As a result, Council is currently assessing future options for the STP and discharge which could upgrading or include relocation of the plant.

A

Appendix A – Consent U170942

RESOURCE MANAGEMENT ACT 1991**Decision of Marlborough District Council**

RESOURCE CONSENT: U170942
APPLICANT: Marlborough District Council
LOCATION: 62 Queen Charlotte Drive, Havelock

THIS IS THE DECISION ON THE APPLICATION FOR RESOURCE CONSENT:

DECISION: **Granted**

RESOURCE CONSENTS ISSUED:

Type of Consent	Number	Activity	Page
Discharge Permit (to Water)	U170942.1	To discharge treated municipal wastewater to the Kaituna River through an existing outfall (Grid Ref 1655097E 5428945N) up to a maximum rate of 2400 cubic metres per day.	1
Discharge Permit (to Air)	U170942.2	To discharge odour and gases from the Havelock sewage treatment pond to air.	7
Land Use (River Surface or Bed Activity)	U170942.3	To maintain an existing sewage outfall structure in the Kaituna River (Grid Ref 1665097E 5428945N).	8

Certificate of Resource Consent

Consent Holder: Marlborough District Council

Consent Type: Discharge Permit (to Water)

Consent Number: U170942.1

Lapse Date: This consent will lapse on 1 February 2021 unless given effect to prior to that date.

Expiry Date: This consent expires on 1 February 2024.

Pursuant to sections 34A(1) and 104B and after having regard to Part 2 matters and sections 104, 105 and 107 of the Resource Management Act 1991, the Marlborough District Council **grants** consent to discharge treated municipal wastewater to the Kaituna River through an existing outfall (Grid Ref 1655097E 5428945N) up to a maximum rate of 2400 cubic metres per day, subject to the following conditions imposed under section 108 of the Resource Management Act 1991.

Conditions

Discharge Quantity

1. The maximum daily discharge rate as measured by the inflow to the ponds shall be not more than 2400 cubic metres per day.
2. The consent holder shall record daily flows. The results shall be provided to the Compliance Manager, Marlborough District Council, as part of the reporting required under Condition 12 or on request.

Mixing Zone

3. The mixing zone in the Kaituna River shall be defined as 50 metres from the discharge point both upstream and downstream.

Discharge Quality

4. The discharge of treated wastewater shall not cause any of the following effects outside of the 50 metre mixing zone:
 - a) A change in the natural temperature of the receiving water of more than 3 degrees celsius.
 - b) There shall be no production of conspicuous oil or grease films, scums or foams, or floatable or suspended materials.
 - c) A concentration of dissolved oxygen in the receiving water of below 80 percent of the saturation concentration provided upstream dissolved oxygen is no less than 85 percent of the saturation concentration.
5. The consent holder shall take weekly Dissolved Oxygen samples at the outlet of the tertiary pond.

6. The consent holder shall take one grab sample of the wastewater from the pond outlet once yearly in June or July and analyse the sample for the following:
 - a) Chemical oxygen demand
 - b) Biochemical oxygen demand (five day)
 - c) Biochemical oxygen demand soluble (five day)
 - d) Total suspended solids
 - e) Conductivity
 - f) Total nitrogen
 - g) Nitrite nitrogen
 - h) Nitrate nitrogen
 - i) Total Kjeldahl nitrogen
 - j) Ammonia-nitrogen
 - k) Total phosphorus
 - l) Dissolved reactive phosphorus
 - m) Faecal coliforms
 - n) Dissolved oxygen
 - o) Temperature
 - p) pH

7. The consent holder shall take one grab sample of the wastewater from the pond outlet once yearly in January or February and analyse the sample for the following:
 - a) Chemical oxygen demand
 - b) Total nitrogen
 - c) Nitrite nitrogen
 - d) Nitrate nitrogen
 - e) Total Kjeldahl nitrogen
 - f) Ammonia-nitrogen
 - g) Total phosphorus
 - h) Dissolved reactive phosphorus

8. The consent holder shall take one grab sample of the wastewater from the pond outlet once monthly in November to April inclusive:
 - a) Biochemical oxygen demand (five day)
 - b) Biochemical oxygen demand soluble (five day)
 - c) Total suspended solids
 - d) Conductivity
 - e) Enterococci
 - f) Faecal coliforms
 - g) pH
 - h) Dissolved oxygen
 - i) Temperature

Influent Analysis

9. The consent holder shall take a 24 hour composite sample of sewage influent once yearly in January or February and analyse the sample for the following:
- a) Chemical oxygen demand
 - b) Biochemical oxygen demand (five day)
 - c) Total suspended solids
 - d) Conductivity
 - e) Total nitrogen
 - f) Ammonia-nitrogen
 - g) Nitrate nitrogen
 - h) Nitrite nitrogen
 - i) Total Kjeldahl nitrogen
 - j) Total phosphorus
 - k) Dissolved reactive phosphorus
 - l) Faecal coliforms
 - m) Enterococci
 - n) pH

Receiving Environment Monitoring

10. The consent holder shall carry out a programme of receiving environment monitoring for the duration of the consent as follows:
- a) Water samples (grab samples) shall be taken from the Kaituna River each summer; once in December, once in January and once in February. Samples shall be taken approximately 350 metres upstream of the discharge and 50 metres downstream of the discharge. Samples shall be taken between two and four hours after high tide and analysed for the following:
 - i) Total biochemical oxygen demand (five day)
 - ii) Total suspended solids
 - iii) Total nitrogen
 - iv) Ammoniacal nitrogen
 - v) Nitrate nitrogen
 - vi) Nitrite nitrogen
 - vii) Total Kjeldahl nitrogen
 - viii) Total phosphorus
 - ix) Dissolved reactive phosphorus
 - b) Water samples (grab samples) shall be taken from the Kaituna River each winter; once in June, once in July and once in August. Samples shall be taken approximately 350 metres upstream of the discharge and 50 metres downstream of the discharge. Samples shall be taken between two and four hours after high tide and analysed for the following:
 - i) Biochemical oxygen demand (five day)
 - ii) Total suspended solids
 - iii) Total nitrogen

- iv) Ammoniacal-nitrogen
 - v) Nitrite nitrogen
 - vi) Nitrate nitrogen
 - vii) Total Kjeldahl nitrogen
 - viii) Total phosphorus
 - ix) Dissolved reactive phosphorus
 - x) Faecal coliforms
 - xi) Enterococci
 - xii) Dissolved oxygen
 - xiii) pH
 - xiv) Temperature
 - xv) Conductivity
- c) Water samples (grab samples) shall be taken from the Kaituna River weekly from November to April inclusive. Samples shall be taken approximately 350 metres upstream of the discharge, 50 metres downstream of the discharge and near the Mahakipawa Road bridge. Samples shall be taken between two and four hours after high tide and analysed for the following:
- i) Faecal coliforms
 - ii) Enterococci
 - iii) Dissolved oxygen
 - iv) pH
 - v) Temperature
 - vi) Conductivity

Reporting

11. The results of the monitoring required under Conditions 2 and 6 to 10 shall be provided to the Compliance Manager, Marlborough District Council, in accordance with Condition 12 or on request.
12. The consent holder shall annually from the commencement of this consent and for the period 1 June to 31 May of each year, provide to the Compliance Manager, Marlborough District Council, by 1 August a written annual compliance report that:
- a) Includes all sampling and monitoring results and records;
 - b) Provides an analysis of sampling and monitoring results and trends and actions taken;
 - c) Includes details of any complaints received regarding the operation of the treatment plant and how they have been responded to and, where necessary, the actions undertaken to address the cause of the complaint; and
 - d) Summarises the state of compliance with the conditions of these consents.

Treatment Upgrade Investigations

13. Within 24 months of the grant of this consent the consent holder shall submit to the Compliance Manager, Marlborough District Council, and Te Rūnanga o Ngāti Kuia a report with the option(s) for the treatment plant including improvement of treatment and/or alteration of the discharge. A preferred option shall be provided with the timeline for the works to be implemented. The report shall document how Ngāti Kuia has been involved in the investigations.

14. By 1 August of each year, the consent holder shall provide an update of investigations undertaken and progress made.
15. The consent holder shall lodge any resource consent applications and (if necessary) notices of requirement to implement the option identified prior to the expiry of these consents.

General

Signage

16. A warning sign highlighting the presence of the discharge shall be maintained warning people of the treated wastewater discharge.
17. A sign shall be erected at the Mahakipawa Road bridge when the enterococci results exceed 180/100 millilitres. The sign wording shall be agreed with the Public Health Service.

Outfall

18. The consent holder shall ensure that all structures and works authorised under this consent are maintained in a structurally sound condition at all times to the satisfaction of the Compliance Manager, Marlborough District Council.

Notifications

19. The consent holder shall notify the Compliance Manager, Marlborough District Council, in writing of any maintenance or upgrade works to the plant which may increase discharges of contaminants to air on a short term basis and explain any processes in place to manage the potential effects.
20. The consent holder shall notify the Compliance Manager, Marlborough District Council, the Medical Officer of Health and iwi as soon as practicable and, as a minimum requirement, within 48 hours of any accidental discharge, plant breakdown or other contingency (Incident) which is likely to result in an abnormal discharge quality.
21. Within seven working days of an Incident occurring, the consent holder shall submit a written report describing the Incident, the reasons for it occurring, its consequences (including the nature of any complaints), the measures taken to remedy or mitigate its effects, and any measures taken to prevent a recurrence of the Incident, including any changes to operating procedures to the Compliance Manager, Marlborough District Council, and iwi.

Complaints

22. The consent holder shall maintain and keep a file for all complaints made about the treatment and discharge operations received by the consent holder. The following shall be recorded:
 - a) The date, time and duration of the event/incident that has resulted in the complaint;
 - b) The name and address of the complainant;
 - c) The location of the complainant when the event/incident was detected;
 - d) The outcome of all investigations including site and boundary surveys following notification of the issue including an assessment as to whether the odour was likely to have been of an intensity or nature that was offensive;
 - e) The possible cause of the Incident;

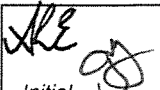
- f) The weather conditions and wind direction at the site when the Incident allegedly occurred, if significant to the complaint; and
 - g) Any corrective action undertaken by the consent holder in response to the complaint.
23. The complaints information shall be made available to the Compliance Manager, Marlborough District Council, on request.
24. Complaints which may indicate non-compliance with the conditions of this resource consent shall be forwarded to the Compliance Manager, Marlborough District Council, within five working days of the complaint being received.

Review of Conditions

25. The Compliance Manager, Marlborough District Council, may within two months of receiving the annual report required under Condition 12 serve notice of its intention to review and amend or add to the conditions of this resource consent under section 128 of the Resource Management Act 1991 for the purpose of:
- a) Dealing with any adverse effect on the environment which may arise from the exercise of the resource consent and which it is appropriate to deal with at a later stage; or
 - b) Requiring the adoption of the best practicable option to remove or reduce any adverse effect on the environment; or
 - c) Requiring the consent holder to carry out monitoring in addition to or instead of that required by the resource consent; or
 - d) Addressing any issues identified in the annual reports submitted under Condition 12 of this resource consent.

Advice Notes

1. The consent holder is reminded of the general duty under section 17 of the Resource Management Act 1991 to avoid, remedy or mitigate any adverse effect of the discharge on the environment irrespective of this consent. Such adverse effects could include generation of an offensive or objectionable odour beyond the boundary of the property upon which this consent is exercised. Such an adverse effect could result in Marlborough District Council taking enforcement action under section 17.
2. In accordance with section 137 of the Resource Management Act 1991, the discharge permit is transferrable to another owner or occupier of the land on which the permit is exercised, on the same conditions and for the same use as originally granted. Such a transfer should occur whenever there is a change in property ownership. Written notice of the transfer must be provided to the Marlborough District Council.
3. In accordance with section 36 of the Resource Management Act 1991, the consent holder will be responsible for all actual and reasonable costs associated with the monitoring of this resource consent. The costs will be charged in accordance with the Marlborough District Council's current Schedule of Fees. The consent holder is advised that the costs of monitoring may include costs associated with site visits, assessment of results and reports, administration and if complaints bring to Marlborough District Council's attention non-compliance with resource consent conditions.
4. Any and all archaeological sites are protected under the Heritage New Zealand Pouhere Taonga Act 2014. It is an offence under that Act to modify, damage or destroy any archaeological site, whether the site is recorded or not. Application must be made to Heritage New Zealand for an authority to modify, damage or destroy an archaeological site. This may include the planting of trees within an archaeological site.


Initial

Certificate of Resource Consent

Consent Holder: Marlborough District Council

Consent Type: Discharge Permit (to Air)

Consent Number: U170942.2

Lapse Date: This consent will lapse on 1 February 2021 unless given effect to prior to that date.

Expiry Date: This consent shall expire on 1 February 2024.

Pursuant to sections 34A(1) and 104B and after having regard to Part 2 matters and sections 104, 105 and 107 of the Resource Management Act 1991, the Marlborough District Council **grants** consent to discharge odour and gases from the Havelock sewage treatment pond to air, subject to the following conditions imposed under section 108 of the Resource Management Act 1991.

Conditions

1. The discharge to the air shall be in general accordance with resource consent application U170942, received by the Marlborough District Council on 10 November 2017.
2. There shall be no odour detectable beyond the boundary of the property that in the opinion of a Marlborough District Council Officer is offensive and objectionable.

Advice Notes

1. A reminder to the consent holder, that in the event of relinquishing the discharge permit to a new owner, notification of the transfer must be lodged with the Marlborough District Council on the appropriate forms, containing signatures of both parties and with payment of the appropriate fee. Further, all conditions of consent must have been complied with.
2. Pursuant to section 36 of the Resource Management Act 1991 and the Marlborough District Council's schedule of fees, the consent holder will be responsible for all actual and reasonable costs associated with the monitoring of this resource consent.

Certificate of Resource Consent

Consent Holder: Marlborough District Council

Consent Type: Land Use (River Surface or Bed Activity)

Consent Number: U170942.3

Lapse Date: This consent will lapse on 1 February 2024 unless given effect to prior to that date.

Expiry Date: This consent shall expire on 1 February 2024.

Pursuant to sections 34A(1) and 104B and after having regard to Part 2 matters and sections 104, 105 and 107 of the Resource Management Act 1991, the Marlborough District Council **grants** consent to maintain an existing sewage outfall structure in the Kaituna River (Grid Ref 1665097E 5428945N), subject to the following conditions imposed under section 108 of the Resource Management Act 1991.

Conditions

1. The activity shall be undertaken in accordance with the application U170942, received by the Marlborough District Council on 10 November 2017, unless required otherwise by the following conditions of this consent.
2. Any equipment/machinery used shall be high pressure water blasted and air dried prior to arrival on the site.
3. The consent holder shall minimise the amount of works undertaken in the wetted part of the channel.
4. No works are to be undertaken in flowing water in weekends or public holidays.
5. No refuelling or fuel storage or the storage or placement of substances including but not limited to: oil; hydraulic fluid or other fluid lubricants; poly-aromatic hydrocarbons (PAHs); paint and solvents shall take place in or within 20 metres of the riverbed.
6. All practicable steps shall be taken to minimise the release of sediment to the river during the works authorised by this consent.
7. To prevent the spread of Didymo or other aquatic pest, the consent holder shall ensure that activities authorised by this consent are undertaken in accordance with Ministry of Primary Industries Didymo hygiene procedures.

Advice Notes

1. A reminder to the consent holder, that in the event of relinquishing the discharge permit to a new owner, notification of the transfer must be lodged with the Marlborough District Council on the appropriate forms, containing signatures of both parties and with payment of the appropriate fee. Further, all conditions of consent must have been complied with.
2. Pursuant to section 36 of the Resource Management Act 1991 and the Marlborough District Council's schedule of fees, the consent holder will be responsible for all actual and reasonable costs associated with the monitoring of this resource consent.

Reasons

Proposal

1. The applicant is proposing to:
 - a) Discharge treated municipal wastewater to the Kaituna River through an existing outfall (Grid Ref 1655097E 5428945N) up to a maximum rate of 2400 cubic metres per day;
 - b) Discharge odour and gases from the Havelock sewage treatment pond to air; and
 - c) Maintain an existing sewage outfall structure in the Kaituna River (Grid Ref 1665097E 5428945N).

Background

2. The Havelock Sewage Treatment Plant (STP) has been in operation for over 30 years. The pond is currently authorised under resource consent U070013, which was granted on 12 May 2008 and expired on 31 May 2018. The current consent allows for the discharge of up to 2400 cubic metres per day, but the average dry weather discharge is only estimated to be between 150-200 cubic metres per day. The maximum daily discharge volume of 2400 cubic metres per day is proposed as this flow equates to the capacity of the two pumps at the terminal pump station and allows for a significant component of wet weather inflow and infiltration.
3. The STP serves both the Havelock residential and commercial areas. There is only a relatively minor commercial contribution to the system and Marlborough District Council has a policy for controlling new industrial and commercial connections. Current population utilising the STP is estimated to be 550. The average inflow into the ponds is estimated at 370 cubic metres per day.
4. The plant is made up of a single facultative (oxidation) pond and two interlinked maturation ponds. The facultative pond is approximately 1.55 metres deep and the surface area is 5000 square metres. The system is essentially passive both in flow through and in aeration (although portable irrigators are used to combat anaerobic surface conditions in the facultative pond).
5. The applicant is proposing to investigate alternative options for treatment and disposal of the wastewater over the proposed consent term and apply for new consents to allow for the new system.

Description of Existing and Surrounding Environment

6. Currently the effluent is discharged through the existing pipe into the Kaituna River approximately 280 metres upstream from the Mahakipawa Road/Queen Charlotte Drive bridge. The Kaituna River flows into the Havelock estuary a few hundred metres downstream of the bridge. There are no water abstractions from the Kaituna River in the vicinity of the discharge and the nearest neighbouring house is located approximately 430 metres to the west. The neighbouring land is either estuary or dairy farm.
7. The ponds are zoned Rural 1 under the Marlborough Sounds Resource Management Plan (the Plan). The ponds are zoned Coastal Environment under the Proposed Marlborough Environment Plan (the Proposed Plan).

Planning Provisions

8. Section 15(1) of the Resource Management Act 1991 (the Act) states that no person may discharge any contaminant into water unless the discharge is expressly allowed by a rule in a regional plan, a resource consent or regulations. The Act defines a contaminant as any substance that either by itself when discharged into water, changes or is likely to change the physical, chemical or biological condition of water.
9. Section 15(2) of the Act states that no person may discharge any contaminant into the air from any place in a manner that contravenes a rule in a regional plan unless the discharge is expressly allowed by a resource consent. The Act defines a contaminant as any substance that either by itself when discharged into air changes or is likely to change the physical, chemical or biological condition of the air into which it is discharged.
10. Section 13(1)(a) of the Act states that no person may in relation to the bed of any river erect any structure on the bed unless expressly allowed by a rule in a regional plan.
11. Rule 36.4.3.10 of the Plan states that the discharge of contaminants into air and water associated with the treatment of reticulated sewage is a discretionary activity. The Plan does not provide for the maintenance of a structure in the riverbed, therefore in accordance with section 87B of the Act, the activity of maintaining the outlet is a discretionary activity.
12. Rule 2.19.2 of the Proposed Plan states any discharge to water not provided for is a discretionary activity.
13. Rule 4.6.13 of the Proposed Plan states any discharge of contaminants to the air not provided for as permitted or limited as prohibited, is a discretionary activity.
14. Rule 2.7.1 of the Proposed Plan states the maintenance of an existing structure is a permitted activity.
15. This entire proposal shall be bundled and treated a discretionary activity.

Notification and Affected Parties

16. The application was publicly notified on 19 January 2018 and the notification period ended on 19 February 2018. Marlborough District Council received no submissions on the application so a hearing was not required.

Assessment of Effects

17. The Plan sets the assessment criteria in Rule 36.4.3.10.1:
 - a) The nature of the contaminants entering the STP: The ponds collect domestic sewage and a small amount of industrial sewage from the Havelock area. The median biochemical oxygen demand (BOD) of the pond effluent over the three year period of the current consent was 386 grams per cubic metre, with a range from 250-300 grams per cubic metre. The total suspended solids (TSS) median for the same period was 238 grams per cubic metre, with a range from 250-300 grams per cubic metre. The average enterococci is 1,414,000 MPN per 100 millilitres.
 - b) Whether trade wastes are included and steps taken to reduce the volume and monitor the quantity: The applicant states that only small volumes are received from industrial premises and the quantities of this waste are monitored and receive special charges. The main industrial producer of trade waste in Havelock is the Talleys muscle processing factory located at the marina.

- c) The extent to which stormwater can enter the system: The Havelock STP does not have the same problem with stormwater entering the system as other urban areas have. Some stormwater does enter the system during very high rainfall events, but as the ponds have a much greater capacity than is currently required to process the existing levels of discharge, the occasional inflow of stormwater can be easily dealt with.
- d) Steps taken to avoid accidental discharges from the ponds: The ponds have discharge level alarms and they are well maintained by Marlborough District Council staff. Although the ponds are right beside the Kaituna River, they are protected from flooding by stopbanks. Pump station overflows in significant storm events have occurred in the past. Telemetry has been installed at the pump stations to detect pump faults, power failure and high level alarms which are automatically relayed to the on-call operator. This and the replacement of the original pumps with more reliable machines have reduced the likelihood of overflows.

The effects of overflows are difficult to anticipate as they could occur anywhere within the sewer network. However the likely effect would be a temporary short term discharge of untreated effluent immediately surrounding the affected area. In such an event, the area would be isolated and cleaned up immediately to minimise the contamination. The Public Health Unit would be advised along with other agencies and community groups.

- e) The extent of treatment in the ponds: The ponds treat the wastewater by a mixture of aerobic processes in the upper layers and anerobic processes in the sludge.
 - f) Any actual or potential effects of the discharge on surface water, coastal water and groundwater: This section will be dealt with in depth below.
 - g) Any effects of the odour discharge: Odourous compounds, including hydrogen sulphide and volatile acids, are produced in anerobic conditions in the sludge layer of the pond. A correctly functioning pond will be aerobic in the upper liquid layer, which controls odour release by oxidising the gases produced from the breakdown of sludge. Good management including controlling the depth of the sludge, monitoring pond performance and the intermittent use of an aerator will minimise the release of odours. Due to the exposed nature of the site and the distance to the nearest house, the risk of odour nuisance is reduced. Over the last 10 years Marlborough District Council has no records of any complaints with regard to odour generated by the ponds.
 - h) Any effect on human health and the ecosystems: This issue will be dealt with below in detail.
 - i) Any values placed upon the discharge site and the surrounding area by tangata whenua: The applicant undertook consultation with the local iwi, Te Runanga O Ngāti Kuia, before the application was lodged. Ngāti Kuia has indicated they would like to part of the process for identifying the new wastewater treatment site and disposal site.
18. The main effect of this application is on the water quality in both the Kaituna River and in the Havelock estuary. The Plan sets water quality standards for both the Kaituna River (F1 clear water managed for fishery purposes) and the coastal waters (SG water managed for the gathering or cultivation of shellfish for human consumption) in the Havelock estuary. These standards are for the Kaituna River at a point where there has been reasonable mixing as defined in the Plan.

F1 - Clear Water Managed for Fishery Purposes

19. There shall be no conspicuous oil, or grease films, scums or foams, or floatable or suspended material.

The applicant states that since monitoring began at the STP in 1996 there has been no sign of any of the above in the Kaituna River. Although there may be a scum layer in the oxidation ponds, this is not discharged out into the river.

20. There shall be no change in the colour or visual clarity of the receiving water.

Clarity is a measure of the transparency of a waterbody and decreases as suspended solids concentration and associated turbidity increases. Oxidation ponds often have the general characteristics of being yellow-green in colour and turbid, and therefore have the potential to change the clarity characteristics of the receiving water. A significant reduction in visual clarity can affect fish food chain, e.g. a reduction in photosynthetic algae reliant on light for growth will lead to reduced food for grazing invertebrates and in turn less prey for visually feeding fish such as trout.

Discolouration has been noted inside the pond and a distinct green discolouration was reported in the Kaituna River around the pond discharge. This discolouration was confined to a 1-2 metre strip along the left bank of the Kaituna River and extended no more than 5 metres downstream.

To estimate whether there will be any serious discolouration of the Kaituna River, the applicant undertook modelling of the dilution effect for the worst case scenario. The applicant concludes "*our estimation of 100:1 dilution factor at the edge of the 50 metre mixing zone suggest that SS levels (as a surrogate for turbidity measures) in the discharge are unlikely to cause a conspicuous change in Kaituna River water clarity after mixing*".

21. There shall be no objectionable odour beyond the property boundary.

Limited monitoring of the ponds indicate that there is little odour smell and, given the separation distances to neighbouring houses, there is unlikely to be any adverse effects on the neighbours.

22. The waterway shall not be rendered unsuitable for consumption by farm animals.

There are no numeric parameters set in the Plan for this standard so the applicant has used the ANZECC 2000 guidelines. The standards in these guidelines relate to pathogens and parasites, the presence of cyanobacteria toxins and high nitrate/nitrite levels.

Water quality monitoring downstream of the discharge point shows that faecal coliform levels are in excess of the ANZECC guidelines, but this may be due to stock access to the river upstream of the discharge. Upstream monitoring shows that the Kaituna River is already exceeding the ANZECC guidelines. These results could be a problem for stock, however the farm land downstream of the discharge is fenced off from the river so there is little chance of stock drinking the water. There may be an issue for swimmers downstream of the discharge though.

Monitoring of the effluent discharge indicates that algal blooms are rare and pose little risk to stock drinking water. Additionally, nitrate/nitrite levels are well within the ANZECC guidelines for stock drinking water.

23. There shall be no significant adverse effects on aquatic life.

Light penetration is closely linked to discolouration which has been dealt with above.

High levels of ammonia can be acutely toxic to fish and may cause loss of equilibrium, increased breathing, cardiac output and oxygen uptake may be affected and, in extreme situations, convulsions, coma and death. The results of current monitoring for ammonia in the river 50 metres downstream of the discharge show that the levels are well below threshold levels set in the Plan.

A build-up of particulate organic matter on the banks of the river and/or riverbed has the potential to fill in the riverbed thereby reducing habitat for invertebrates that live between the space created by gravels and cobbles. Monitoring during the last consent period did indicate that there was some sediment enrichment in the riverbank sediments but this was only within 10 metres downstream of the discharge and there was no detectable enrichment beyond 25 metres downstream. Monitoring also indicated that invertebrate communities were not affected beyond 25 metres downstream of the discharge point.

24. The temperature shall not be changed by more than 3 degrees celsius and the temperature shall not exceed 20 degrees celsius.

High temperatures outside the normal tolerance ranges of fish and invertebrates can have profound negative physiological effects.

Monitoring shows that high effluent temperatures are rapidly dissipated in the river and are not recognisable beyond 50 metres below the discharge.

25. Dissolved oxygen shall exceed 80 percent of saturation.

Dissolved oxygen is important for the functioning of many aquatic organisms and represents the balance between oxygen consuming and oxygen releasing processes.

Limited monitoring by the applicant during the last consent suggests that effluent dissolved oxygen is rapidly dissipated in the river by less than 10 metres downstream of the discharge.

26. Fish shall not be rendered unsuitable for human consumption by the presence of contaminants.

Poor water quality can be harmful to fish health, and can also taint fish flavour and endanger human health if bioaccumulation of toxic substances by fish is too high. The freshwater fish species most likely to be harvested for human consumption from the Kaituna River in the vicinity of the outfall are trout and eels. As the STP receives, by and large, domestic sewage, chemical contamination is very low and unlikely to affect fish in the Kaituna River.

Given the high mobility of trout and eels, and the high dispersion of the discharge, these species are unlikely to be exposed to high levels of contamination.

SG - Water Managed for the Gathering or Cultivation of Shellfish for Human Consumption

27. The applicant has adopted a conservative approach which assumes that there are shellfish beds at or near the mouth of the river in the estuary, although there is no evidence that there are any beds in this area. The applicant has also used predicted dilutions which do not take into account die-offs in natural water, and has used effluent quality figures based upon the existing treatment which will be substantially higher than when the second maturation pond is used.

28. The temperature shall not be changed by more than 3 degrees celsius and dissolved oxygen shall exceed 80 percent of saturation.

Based upon the data collected during the last consent, it is very unlikely the temperature and dissolved oxygen from the oxidation pond discharge would affect shellfish as indications are that both dissipate within 50 metres mixing zone downstream of the discharge.

29. Fish shall not be rendered unsuitable for human consumption by the presence of contaminants.

The standards identified in the Plan relate to discharges directly from the source to the shellfish beds. As the discharge point is approximately 850 metres upstream from the theoretical site of the shellfish beds, the applicant had to model the dilution effects in the Kaituna River. The model results suggest that the discharge would be diluted by 440:1 by the time it gets to the estuary.

By using the figures for the existing effluent quality and the dilution effects, the results for faecal coliforms is much higher than the standard allowed in the Plan, i.e. 318 colony forming units per 100 millilitres as opposed to the standard of 14 colony forming units per 100 millilitres. However, as the applicant intends to introduce a second maturation pond which will reduce the faecal coliform level down a median of 94,000 colony forming units per 100 millilitres to around 10,000 colony forming units per 100 millilitres, the level after dilution will be within the standard. Once the diluted effluent in the river meets the estuary, it will undergo even more dilution.

CR - Water Managed for Contact Recreation

30. Although the water quality standards for the Kaituna River do not include contact recreation, the applicant does note that people do swim in the river in the vicinity of the Mahakipawa Road/Queen Charlotte Drive bridge, so has included the standards for contact recreation.

31. Visual clarity of the water shall not be so low as to be unsuitable for bathing.

As mentioned in the other standards above, it is unlikely that the discharge will cause any significant change in colour or visual clarity in the Kaituna River beyond the mixing point.

32. The water shall not be rendered unsuitable for bathing by the presence of contaminants.

Sampling of the enterococci levels in the Kaituna River have been taken since 2001 by the applicant. The levels of enterococci at the point 50 metres downstream of the discharge point are mostly above the standards set out in the Plan, but the applicant states that these measurements are one-off samples that may not be representative of the river water quality. The results show some variability and some of the upstream results are higher than the downstream results. As the applicant will be significantly improving the quality of the discharged effluent with the introduction of the second maturation pond, it is likely that the bathing water standards will be met.

33. There shall be no undesirable biological growths.

Biological growths can impact on the aesthetic quality of a river (e.g. excessive river algal growth) or be an indirect or direct concern for human health (e.g. aquatic plant growth covering submerged underwater hazards, toxic algal blooms, or bacterial borne diseases). Biological growths such as aquatic plants, river algae are nutrient dependant and changes in the nutrient status of a river can affect the rate of growth.

Monitoring by Marlborough District Council staff and their consultant during the last consent period did not find any evidence of algal growths or periphyton mats. Additionally, there were no bacterial or fungal growths in the river downstream of the discharge. The applicant's agent states the absence of biological growths may be due to the strong tidal influence which could prevent significant growths being established.

34. Possible mitigation measures for this discharge are improving the quality of the discharge, putting up signs to warn people against swimming near the discharge and collecting shellfish, and providing better communication with interested parties for times when there may be accidental discharges.
35. The effects of maintaining the discharge structure in the Kaituna Riverbank should be relatively minor as they will only involve a minor disturbance of the riverbed. These works could produce some small amount of sedimentation but this should only be for a very short time and will be either rapidly diluted by the river or flushed away.

Relevant Statutory and Plan Provisions

Wairau/Awatere Resource Management Plan

36. Objective 3.2.2 requires the maintenance and enhancement of aquatic ecosystems and the management of the effects of activities on water quality of rivers that enables contact water recreation, food gathering and cultural integrity. Supporting policies aim to avoid discharges that will modify, damage or destroy any significant ecological value. Discharges that adversely affect important areas identified by iwi, areas identified as outstanding landscapes and the quality of water in the coastal marine area.
37. When assessing discharge applications to discharge contaminants to rivers, Marlborough District Council is to have particular regard to the water classification of that waterbody and the need to:
 - a) Preserve, and where appropriate, restore the natural character of rivers and their margins;
 - b) Protect public health;
 - c) Protect the olfactory aesthetics of the area;
 - d) Protect sites of spiritual, historical or cultural significance to Māori;
 - e) Avoid, remedy or mitigate adverse effects on ecological systems.
38. In terms of the coastal marine water quality, Objective 9.3.2.1 requires the management of effects of activities so that water quality in the coastal marine area is at a level which enables the gathering or cultivation of shellfish for human consumption. Supporting policies requires Marlborough District Council to avoid discharges that will modify, damage or destroy any significant ecological value, and will adversely affect areas identified by iwi as important.

Proposed Marlborough Environment Plan

39. Policy 3.1.3 states that where an application is likely to affect the relationship of Marlborough's tangata whenua iwi and their culture and traditions, decision makers shall ensure:
 - a) Mauri is maintained or improved where degraded.
 - b) For waterbodies, the elements of physical health to be assessed are:
 - i) Aesthetic and sensory qualities;
 - ii) Life supporting capacity, ecosystem robustness and habitat richness;

- iii) Productive capacity; and
- iv) Fitness to support human use, including cultural uses.

Given the applicant is proposing to continue discharging treated human effluent to the Kaituna River, the mauri of the waterway will continue to be affected. The quality of the wastewater will ensure there is no change from the current situation and the applicant is investigating alternative discharge sites which will eventually restore the mauri of the waterway. In terms of the parameters identified above, the applicant's monitoring has shown no significant adverse effects on the waterway, although it is unknown whether the waterway downstream of the discharge site is fit to support human use.

- 40. Policy 3.1.5 seeks to ensure iwi management plans are taken into account in the resource management decision making process. Ngāti Kuia do not have an iwi management plan but have been consulted as part of the application process.
- 41. Policy 4.2.1 recognises the social, economic, environmental, health and safety benefits from listed infrastructure as regionally significant. The Havelock STP is one of the listed infrastructure and therefore is considered to be regionally significant as it provides a relatively safe method of treatment and disposal of sewage for the community.
- 42. Policy 15.1.8 seeks to encourage the discharge of contaminants to land in preference to water. The applicant recognises that the discharge of treated wastewater to the Kaituna River is not supported by some parts of the community, particularly iwi, and has begun investigations into alternative discharge options.
- 43. Policy 15.1.9 seeks to enable point source discharge of contaminants to water where the discharge will not result in any of the following adverse effects beyond the zone of reasonable mixing:
 - a) The production of conspicuous oil or grease films, scums, foams or floatable or suspended materials. *The applicant states that none of these effects have been found downstream of the discharge site.*
 - b) Any conspicuous change in the colour or significant decrease in the clarity of the receiving waters. *The applicant states there has been some evidence of change in colour or the receiving waters but these changes are confined to the discharge site.*
 - c) The rendering of freshwater unsuitable for consumption by farm animals. *The applicant states nitrate concentrations measured downstream of the discharge site are well below the 15 grams per cubic metre ANZECC 2000 Guideline to prevent toxicity in stock.*
 - d) Any significant adverse effect on the growth, reproduction or movement of aquatic life. *There has been no evidence that this discharge adversely affects the aquatic life.*
- 44. Policy 15.1.10 requires applicants that propose to discharge contaminants to water to consider all potential receiving environments and adopt best practicable options having regard to the nature of the contaminants, the relative sensitivity of the receiving environment, the financial implications and effects on the environment of each option and the current state of technical knowledge and likelihood that each option can be successfully applied. The applicant is undertaking a review of alternative discharge methods, including membrane treatment and land disposal, but this review will take some time. Therefore, the applicant has requested a short consent term of five years to allow for the current discharge to continue while the review is completed.

45. Policy 15.1.11 requires Marlborough District Council to have regard to:
- a) The potential adverse effects of the discharge on spiritual and cultural values of Marlborough's tangata whenua iwi. *Ngāti Kuia has been consulted and has indicated they wish to be part of the decision process for the new wastewater treatment system.*
 - b) The extent to which contaminants present in the discharge have been removed or reduced through treatment. *The Havelock STP consists of a facultative pond followed by a maturation pond which reduce the BOD level to around 30 grams per cubic metre, the TSS down to 60 grams per cubic metre and the Faecal Coliforms level down to around 180 cfu per 100 millilitres. Further treatment options are available, such as biofilter treatment and membrane filtration, but the final treatment method needs to be assessed in light of the decision on whether the discharge will be to land or to water.*
 - c) Whether the discharge is temporary or short term. *The applicant has only applied for a five year consent term which will enable the investigation into alternative methods of treatment and disposal.*
46. Policy 15.1.12 requires Marlborough District Council, after considering Policies 15.1.10 and 15.1.11, approve discharge permit applications to discharge contaminants into water where:
- a) In the case of non-compliance with the water quality classification standards:
 - i) The consent holder for an existing discharge can demonstrate a reduction in the concentration of contaminants and a commitment to a staged approach for achieving the water quality classification standards within a period of no longer than five years from the date the consent is granted; and
 - ii) The degree of non-compliance will not give rise to significant adverse effects.
- The applicant states the BOD, DRP and DIN levels can be above the standards stipulated in the Proposed Plan, but these may be due to the relatively high background levels seen upstream of the discharge site. Overall, the applicant concludes the discharge does have some impact on water quality and ecology immediately downstream of the discharge with effects further reducing downstream. The applicant has requested a five year consent term to investigate alternative discharge options which will either improve the quality of the discharge or totally eliminate the need to discharge to the Kaituna River by discharging to land.
47. Policy 15.1.16 states the duration of any new discharge permit will be no more than five years where the existing discharge will not comply with the water quality classification standards. Given the applicant has only requested a five year consent period, the proposal is in accordance with this policy.
48. Policy 15.1.17 requires discharge permits to be reviewed to impose new conditions requiring the monitoring of the discharge effects to determine compliance with the water quality classification standards. A section 128 review condition has been recommended with the proposed conditions.

49. In summary, the proposal is not in accordance with some objectives and policies, particularly those relating to iwi values and reducing or eliminating discharges to water, but given there have been no signs of significant adverse effects on the environment and given the Havelock STP is recognised as a regionally significant infrastructure that performs a very important function for the community, I believe the proposal is overall not contrary to the objectives and policies of the Plan and the Proposed Plan. The applicant has only requested a short consent term and is investigating alternative disposal options which will eventually satisfy iwi concerns.

Statutory Framework

50. Section 105 of the Resource Management Act 1991 (the Act) states the Council, when considering a discharge permit, must have regard to:
- a) The nature of the discharge and the sensitivity of the receiving environment to adverse effects; and
 - b) The applicant's reasons for the proposed choice; and
 - c) Any possible alternative methods of discharge, including discharge into any other receiving environment.
51. The applicant has provided a thorough assessment of the nature of the discharge and sensitivity of the receiving environment. Monitoring of the water quality and the instream biota over the last consent period has shown there were no signs of significant adverse effects.
52. An assessment of possible alternative methods of disposal of the wastewater is underway and this is the reason why the applicant has only requested a short five year consent term. Investigations into alternative disposal methods will probably take some time given they will likely be expensive and difficult to implement.
53. Section 107 of the Act states Council shall not grant a discharge permit allowing the discharge of contaminants to water if, after reasonable mixing, the contaminant is likely to give rise to any or all of the following:
- a) The production of any conspicuous oil or grease films, scums or foams, or floatable or suspended materials;
 - b) Any conspicuous change in colour or visual clarity;
 - c) Any emission of objectionable odour;
 - d) The rendering of fresh water unsuitable for consumption by farm animals;
 - e) Any significant adverse effects on aquatic life.

The applicant has undertaken ecological surveys downstream of the discharge site and has found none of these effects, apart from some discolouration found only at the discharge site.

54. Section 8 of the Act requires Council to take into account the principles of the Treaty of Waitangi when considering this application. Of particular relevance to this application is the principle of active protection which obliges the Crown to actively protect Māori interests. This principle may also require applicants to investigate alternative options which do not affect Māori relationships with resources. In this particular situation, discharging human effluent (regardless of the level of treatment) to the waterways is abhorrent to Māori who regard the water as very important spiritually and as a food resource. The applicant is investigating alternative options, but requests a further five years for this discharge as the investigations and implementation will take a long time.
55. Section 7 requires Council to have particular regard to certain matters when considering an application. Of relevance to this application is Kaitiakitanga (intergenerational responsibility inherited through whakapapa at birth to care for the environment). Ngāti Kuia hold Rangatiratanga over the lands and water affected by this proposal and have requested they be part of the process identifying the wastewater treatment method.
56. Section 5 states the purpose of the Act is to promote the sustainable management of natural and physical resources. In this particular situation, sustainable management means allowing the applicant to discharge treated municipal wastewater to the Kaituna River, while ensuring the life supporting capacity of the coastal marine area and its ecosystem is safeguarded, and any adverse effects on the environment are avoided, remedied or mitigated. The applicant states there have been no signs of any adverse effects on the instream flora and fauna of the Kaituna River and there is little risk of contamination to humans given the difficult access to the waterway.
57. After weighing the benefits and costs of alternatives of this proposal against the cultural concerns of Māori, I believe this proposal is sustainable in terms of Part 2 of the Act and that the purpose of the Act will be achieved by a grant of consent.

Consent Duration and Lapse Date

- 58. A consent duration of five years has been imposed as this term was requested by the applicant.
- 59. I have given a lapse date of 1 February 2021 for this consent. A lapse date is largely irrelevant given the STP is in continual operation.

Recommended for approval:



.....
Glen Parker
Resource Management Officer

Approved:

.....
Anna Eatherley
Anna Eatherley
Marlborough District Council Manager Resource Consents

30th January 2019
Date

Approved:

.....
Gina Ferguson
Gina Ferguson
Marlborough District Council Group Leader Consents and Compliance

30th January 2019
Date

Additional Important Information for Resource Consent Holders

The following information provided in this information sheet is a guide to the legal rights of applicants and submitters.

If you want to discuss matters raised in this information sheet you are welcome to contact Council. However, if you require specific advice you should contact an independent professional and refer to the relevant sections of the Resource Management Act 1991.

Commencement of a Resource Consent

Refer to section 116 of the Resource Management Act 1991

- Where no submissions were lodged or any submissions were withdrawn, a resource consent commences, (and may be actioned) on the date of the receipt of the decision.
- Where submissions were lodged to the application, and not withdrawn, the resource consent commences once the time for lodging an appeal has passed, provided no appeals have been received, or when all appeals have been resolved or withdrawn.
- If the resource consent was for activities controlled by the district plan on reclaimed land or land in the coastal marine area, or a restricted activity; then there are specific provisions regarding the commencement of resource consent. These provisions are outlined in section 116 of the Resource Management Act 1991.

Lapsing

Refer to section 125 of the Resource Management Act 1991

- If no lapse date is specified in the conditions of this consent, the consent will lapse 5 years after the decision date, unless the consent has been actioned (given effect to).

Conditions of Resource Consent

Refer to section 108 of the Resource Management Act 1991

- If conditions are imposed these will be set out in the decision document.
- Please read your consent and ensure that you fully understand any conditions.
- If you have concerns with any condition(s), in the first instance you should discuss your concerns with Council, although an option may be to lodge an appeal or objection.
- It is a legal requirement that there be **compliance with** all conditions.
- If any conditions are contravened it may be that the Council or members of the public will initiate enforcement action (outlined in Part XII of the Resource Management Act 1991).

Change or Cancellation of Conditions of Resource Consent

Refer to section 127 of the Resource Management Act 1991

- The consent holder may apply to the Council to change or cancel conditions of the consent, except a condition specifying duration.

Monitoring Fees

Refer to section 36 of the Resource Management Act 1991 and the Council's Schedule of Fees

- The consent holder will be charged for actual and reasonable costs associated with the monitoring of this consent.

Objections

Refer to section 357 of the Resource Management Act 1991

- In certain circumstances the applicant has the right to object to the Council's decision.
- Any objection shall be made in **writing** and will need to outline the reasons for the objection.
- An objection needs to be lodged with the Council within **15 working days** of the Council's decision being received by you or your agent.

Appeals

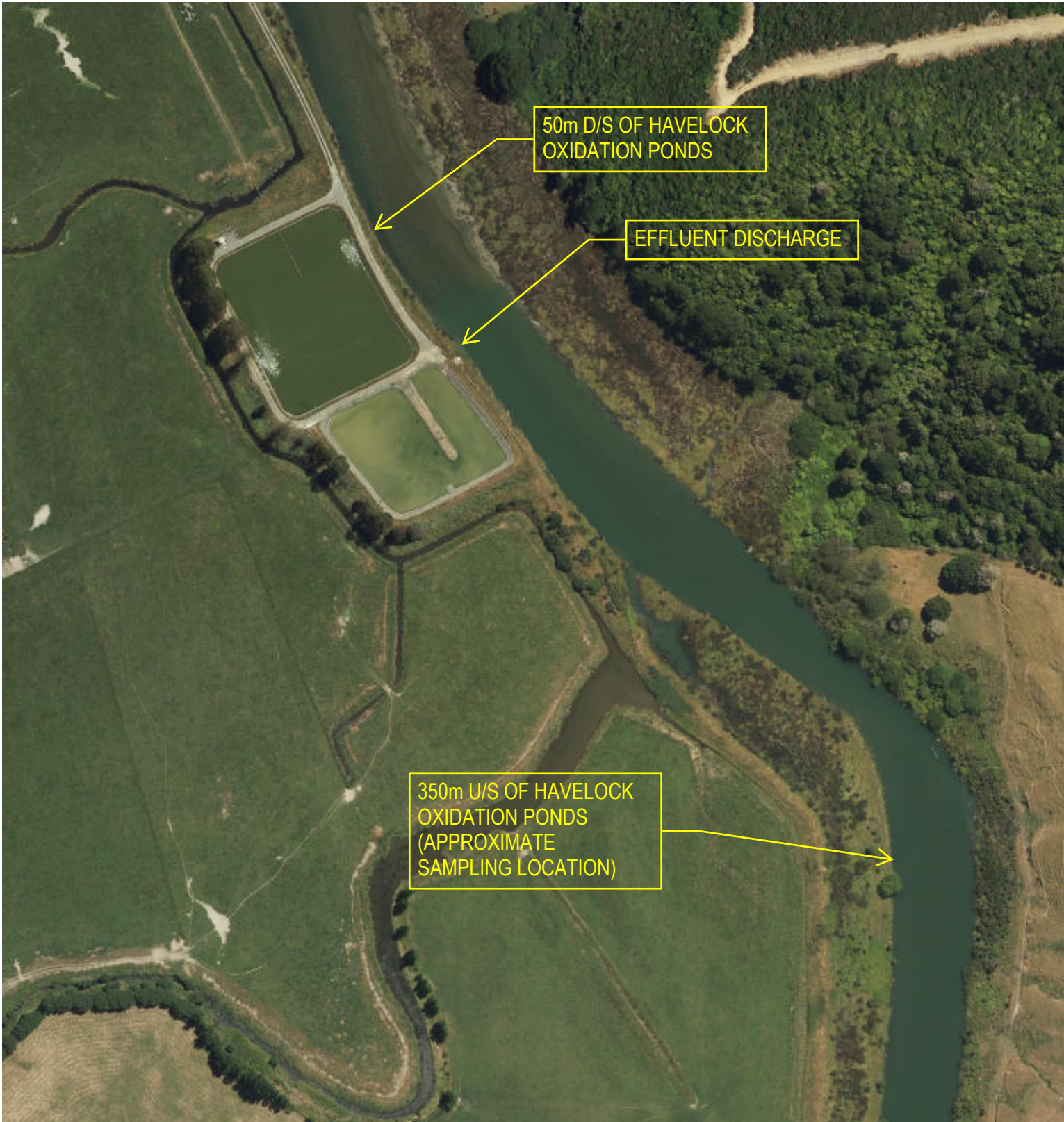
Refer to Form 16 and sections 120 and 121 of the Resource Management Act 1991

- The applicant and any submitters have the right to appeal the whole or any part of the Council's decision, however there is no right of appeal against the whole or any part of the decision to the extent that the decision relates to one or more of the following, but no other, activities:
 - a) a boundary activity, unless the boundary activity is a non-complying activity;
 - b) a subdivision, unless the subdivision is a non-complying activity;
 - c) a residential activity as defined in section 95A(6), unless the residential activity is a non-complying activity.
- A submitter can only appeal to the Environment Court if their appeal is related to a matter raised in their submission and their submission, or the part of their submission to which the appeal relates, has not been struck out under section 41D of the Resource Management Act 1991.
- A notice of appeal must be lodged with the Environment Court and the Council, within **15 working days** of the Council's decision being received (or received by your agent on your behalf). A copy also needs to be served on the applicant and submitters to the application within 5 working days of the notice being lodged with the Environment Court.

Before lodging an objection or an appeal it is recommended that you seek professional advice.

B

Appendix B – Havelock Sewage Treatment Ponds & Sampling Locations



50m D/S OF HAVELOCK
OXIDATION PONDS

EFFLUENT DISCHARGE

350m U/S OF HAVELOCK
OXIDATION PONDS
(APPROXIMATE
SAMPLING LOCATION)

A large, white, sans-serif capital letter 'C' is centered on a teal background. The letter is thick and has a slight shadow effect, giving it a three-dimensional appearance.

Appendix C – Daily Flow Records

Daily Average Inflow (m³/d) 354.0
 90th Percentile inflow (m³/d) 482.0
 Max daily inflow (m³/d) 1069.7

Date	Havelock STP Inflow m3/d
1/07/2019	277.4
2/07/2019	256.8
3/07/2019	578.8
4/07/2019	433.6
5/07/2019	396.6
6/07/2019	355.7
7/07/2019	334.3
8/07/2019	336.5
9/07/2019	316.3
10/07/2019	331.4
11/07/2019	324.3
12/07/2019	323.6
13/07/2019	301.6
14/07/2019	587.3
15/07/2019	539.2
16/07/2019	1016.9
17/07/2019	596.9
18/07/2019	481.7
19/07/2019	818.9
20/07/2019	774.1
21/07/2019	638.3
22/07/2019	543.9
23/07/2019	473.0
24/07/2019	443.1
25/07/2019	405.2
26/07/2019	366.0
27/07/2019	325.2
28/07/2019	328.0
29/07/2019	315.5
30/07/2019	321.5
31/07/2019	335.3
1/08/2019	340.5
2/08/2019	334.3
3/08/2019	310.0
4/08/2019	309.7
5/08/2019	299.1
6/08/2019	273.8
7/08/2019	255.0
8/08/2019	252.2
9/08/2019	238.2
10/08/2019	419.2
11/08/2019	433.7
12/08/2019	436.9
13/08/2019	384.1
14/08/2019	331.9
15/08/2019	315.5
16/08/2019	304.6
17/08/2019	330.0
18/08/2019	294.5
19/08/2019	296.2
20/08/2019	341.6
21/08/2019	437.1
22/08/2019	506.3
23/08/2019	454.0
24/08/2019	384.4
25/08/2019	360.0
26/08/2019	349.3
27/08/2019	328.1
28/08/2019	314.3
29/08/2019	306.7
30/08/2019	328.7
31/08/2019	312.9
1/09/2019	326.7
2/09/2019	337.3
3/09/2019	303.0
4/09/2019	374.3
5/09/2019	406.4
6/09/2019	434.5
7/09/2019	346.6
8/09/2019	329.6
9/09/2019	320.8
10/09/2019	327.3
11/09/2019	331.7
12/09/2019	324.7
13/09/2019	310.7
14/09/2019	461.6
15/09/2019	510.2
16/09/2019	415.7
17/09/2019	417.4
18/09/2019	373.0
19/09/2019	369.8
20/09/2019	346.5
21/09/2019	310.9
22/09/2019	316.2
23/09/2019	315.2
24/09/2019	358.8
25/09/2019	311.0
26/09/2019	292.9
27/09/2019	293.3
28/09/2019	313.4
29/09/2019	283.6

Date	Havelock STP Inflow m3/d
30/09/2019	409.5
1/10/2019	380.6
2/10/2019	353.0
3/10/2019	339.2
4/10/2019	316.1
5/10/2019	283.1
6/10/2019	272.8
7/10/2019	278.9
8/10/2019	276.9
9/10/2019	252.9
10/10/2019	361.4
11/10/2019	326.0
12/10/2019	303.4
13/10/2019	282.5
14/10/2019	297.4
15/10/2019	271.0
16/10/2019	312.9
17/10/2019	290.3
18/10/2019	563.5
19/10/2019	764.2
20/10/2019	486.0
21/10/2019	408.0
22/10/2019	412.8
23/10/2019	378.3
24/10/2019	373.2
25/10/2019	315.8
26/10/2019	304.4
27/10/2019	312.9
28/10/2019	327.8
29/10/2019	319.1
30/10/2019	327.5
31/10/2019	334.9
1/11/2019	298.5
2/11/2019	258.1
3/11/2019	260.8
4/11/2019	269.0
5/11/2019	259.0
6/11/2019	280.2
7/11/2019	288.2
8/11/2019	286.6
9/11/2019	316.0
10/11/2019	689.0
11/11/2019	666.0
12/11/2019	496.3
13/11/2019	440.0
14/11/2019	555.7
15/11/2019	458.0
16/11/2019	439.3
17/11/2019	415.0
18/11/2019	417.8
19/11/2019	389.8
20/11/2019	409.5
21/11/2019	365.8
22/11/2019	361.0
23/11/2019	315.5
24/11/2019	325.8
25/11/2019	320.5
26/11/2019	323.4
27/11/2019	343.7
28/11/2019	354.4
29/11/2019	333.0
30/11/2019	310.5
1/12/2019	311.5
2/12/2019	497.1
3/12/2019	976.0
4/12/2019	601.3
5/12/2019	495.0
6/12/2019	431.0
7/12/2019	402.3
8/12/2019	726.1
9/12/2019	551.7
10/12/2019	457.0
11/12/2019	414.2
12/12/2019	416.0
13/12/2019	391.9
14/12/2019	386.1
15/12/2019	370.9
16/12/2019	400.2
17/12/2019	1069.7
18/12/2019	929.3
19/12/2019	603.6
20/12/2019	640.3
21/12/2019	482.3
22/12/2019	445.2
23/12/2019	427.0
24/12/2019	386.2
25/12/2019	352.2
26/12/2019	356.9
27/12/2019	361.5
28/12/2019	355.9
29/12/2019	353.5

Date	Havelock STP Inflow m3/d
30/12/2019	368.9
31/12/2019	328.4
1/01/2020	330.1
2/01/2020	337.4
3/01/2020	327.2
4/01/2020	350.2
5/01/2020	338.1
6/01/2020	381.1
7/01/2020	336.2
8/01/2020	340.2
9/01/2020	344.1
10/01/2020	324.9
11/01/2020	312.7
12/01/2020	319.7
13/01/2020	355.4
14/01/2020	329.4
15/01/2020	329.9
16/01/2020	324.9
17/01/2020	320.6
18/01/2020	296.8
19/01/2020	284.8
20/01/2020	322.7
21/01/2020	309.5
22/01/2020	290.4
23/01/2020	286.1
24/01/2020	275.7
25/01/2020	268.6
26/01/2020	258.4
27/01/2020	286.9
28/01/2020	289.2
29/01/2020	301.8
30/01/2020	299.6
31/01/2020	276.3
1/02/2020	236.6
2/02/2020	244.8
3/02/2020	284.3
4/02/2020	341.2
5/02/2020	314.6
6/02/2020	270.4
7/02/2020	308.8
8/02/2020	305.9
9/02/2020	316.4
10/02/2020	301.1
11/02/2020	312.8
12/02/2020	350.5
13/02/2020	343.4
14/02/2020	327.1
15/02/2020	278.0
16/02/2020	262.9
17/02/2020	334.5
18/02/2020	314.3
19/02/2020	308.9
20/02/2020	320.4
21/02/2020	314.3
22/02/2020	303.1
23/02/2020	298.6
24/02/2020	305.9
25/02/2020	308.5
26/02/2020	298.9
27/02/2020	283.2
28/02/2020	280.5
29/02/2020	299.9
1/03/2020	255.8
2/03/2020	290.6
3/03/2020	269.9
4/03/2020	294.4
5/03/2020	306.3
6/03/2020	284.7
7/03/2020	244.6
8/03/2020	272.9
9/03/2020	298.4
10/03/2020	338.4
11/03/2020	339.8
12/03/2020	362.7
13/03/2020	333.5
14/03/2020	306.4
15/03/2020	311.1
16/03/2020	297.6
17/03/2020	292.5
18/03/2020	261.2
19/03/2020	281.8
20/03/2020	273.4
21/03/2020	273.3
22/03/2020	365.8
23/03/2020	280.8
24/03/2020	287.3
25/03/2020	241.2
26/03/2020	247.4
27/03/2020	322.0
28/03/2020	266.7
29/03/2020	244.6

Date	Havelock STP Inflow m3/d
30/03/2020	249.0
31/03/2020	257.1
1/04/2020	249.0
2/04/2020	238.0
3/04/2020	216.2
4/04/2020	206.9
5/04/2020	203.5
6/04/2020	216.5
7/04/2020	240.3
8/04/2020	275.2
9/04/2020	259.4
10/04/2020	241.7
11/04/2020	239.6
12/04/2020	367.6
13/04/2020	441.2
14/04/2020	292.9
15/04/2020	275.1
16/04/2020	261.1
17/04/2020	249.9
18/04/2020	236.6
19/04/2020	253.6
20/04/2020	231.7
21/04/2020	256.1
22/04/2020	259.0
23/04/2020	257.8
24/04/2020	239.4
25/04/2020	206.0
26/04/2020	215.8
27/04/2020	213.9
28/04/2020	234.5
29/04/2020	232.8
30/04/2020	239.2
1/05/2020	226.0
2/05/2020	225.0
3/05/2020	721.0
4/05/2020	501.5
5/05/2020	604.1
6/05/2020	468.8
7/05/2020	416.3
8/05/2020	380.1
9/05/2020	331.3
10/05/2020	290.1
11/05/2020	291.3
12/05/2020	305.8
13/05/2020	268.5
14/05/2020	286.8
15/05/2020	271.9
16/05/2020	251.6
17/05/2020	222.1
18/05/2020	243.7
19/05/2020	246.9
20/05/2020	236.9
21/05/2020	264.7
22/05/2020	250.1
23/05/2020	226.6
24/05/2020	295.8
25/05/2020	671.8
26/05/2020	417.6
27/05/2020	388.5
28/05/2020	318.9
29/05/2020	310.6
30/05/2020	292.1
31/05/2020	299.7
1/06/2020	257.5
2/06/2020	280.1
3/06/2020	299.1
4/06/2020	443.8
5/06/2020	427.7
6/06/2020	394.2
7/06/2020	343.7
8/06/2020	345.9
9/06/2020	325.4
10/06/2020	313.1
11/06/2020	329.1
12/06/2020	298.1
13/06/2020	270.5
14/06/2020	248.1
15/06/2020	298.9
16/06/2020	385.6
17/06/2020	574.7
18/06/2020	738.0
19/06/2020	601.2
20/06/2020	494.2
21/06/2020	443.3
22/06/2020	432.3
23/06/2020	459.3
24/06/2020	424.6
25/06/2020	394.3
26/06/2020	379.5
27/06/2020	330.4
28/06/2020	347.2
29/06/2020	366.0
30/06/2020	372.7

D

Appendix D – Weekly Kaituna River Monitoring Data

Date	Kaituna River - Upstream Sampling						Kaituna River - Downstream Sampling					
	Faecal Coliforms	Enterococci	Oxygen	pH	Water Temperature (Field)	Conductivity	Faecal Coliforms	Enterococci	Oxygen	pH	Water Temperature (Field)	Conductivity
	cfu/100mL	MPN/100mL	g/m ³		°C	uS/cm	cfu/100mL	MPN/100mL	g/m ³		°C	uS/cm
7/11/2019	100	10	6.97	7.1	16.2	86	100	10	10.28	7.1	16.6	671
14/11/2019	100	340	6.19	7.1	15.9	52	100	213	6	7.1	15.4	61
21/11/2019	70	10	3.94	7	12.2	63	80	10	2.86	7.2	12	84
28/11/2019	1200	387	4.26	7.4	20.6	1436	1100	101	4.16	7.4	19.9	2740
6/12/2019	200	41	10.41	7	14	60	200	62	10.31	7.3	14.2	72
12/12/2019	170	185	9.4	7.1	18.3	65	110	84	10.52	7.1	17.8	72
20/12/2019	8000	1986	8.84	7.2	14.1	61	11000	1553	8.69	7.2	14.1	89
23/12/2019	360	9	8.81	7.3	15.3	62	270	11	8.7	7.2	15.4	72
3/01/2020	180	17	7.56	7.2	16.4	133	150	46	7.38	7.3	16.6	184
9/01/2020	590	35	8.4	7.3	16.3	1278	530	99	7.79	7.5	15.8	6940
17/01/2020	340	54	8.02	7.4	15.2	2330	4300	100	8.56	7.5	16.3	3960
21/01/2020	210	39	9.05	7.4	18.3	247	390	79	8.93	7.4	19.2	5280
27/01/2020	580	649	8.57	7.6	23.7	10960	1500	613	8.66	7.7	23.4	17850
5/02/2020	300	55	6.38	7.3	19.3	358	1500	579	6.32	7.4	18.3	3390
20/02/2020	470	82	7.66	7.3	19.4	870	3000	488	7.57	7.4	21.1	7820
5/03/2020	330	120	9.53	7.4	16.2	346	3800	461	9.46	7.5	15.9	5570
9/03/2020	1300	1414	8.92	7.4	19.8	14200	3300	1733	97.3	7.5	19.4	17690
19/03/2020	240	204	14.44	7.5	16.7	2120	540	260	14.05	7.5	16.1	6750
23/03/2020	760	378	15.94	7.3	16.3	561	2400	921	16.05	7.3	16.4	2220
1/04/2020	300	158	11.71	7.3	14.9	471	470	208	10.89	7.4	15.2	5640
9/04/2020	2300	2420	14.43	7.5	16.4	14800	2300	1120	15.72	7.6	16.5	18740
17/04/2020	260	72	24.6	7.4	13.8	301	550	113	24.9	7.4	13.7	2370
23/04/2020	270	99	23.6	7.3	14.8	3050	320	185	24.1	7.4	14.6	7660
28/04/2020	100	111	24.2	7.5	14.5	5680	100	72	25.3	7.5	14.9	11670

E

Appendix E – Cawthron Report

F

Appendix F – Dissolved Oxygen Data

Date	Dissolved Oxygen Concentration (mg/L)	Date	Dissolved Oxygen Concentration (mg/L)
02-Jul-2019	0.86	17-Jan-2020	1.84
10-Jul-2019	1.12	21-Jan-2020	7.61
18-Jul-2019	3.34	27-Jan-2020	10.11
25-Jul-2019	3.76	04-Feb-2020	2.90
01-Aug-2019	4.20	13-Feb-2020	3.68
08-Aug-2019	3.66	20-Feb-2020	3.52
13-Aug-2019	2.97	26-Feb-2020	6.41
22-Aug-2019	11.63	05-Mar-2020	6.99
29-Aug-2019	11.42	11-Mar-2020	8.09
06-Sep-2019	2.41	19-Mar-2020	6.81
13-Sep-2019	4.21	23-Mar-2020	13.78
19-Sep-2019	3.49	02-Apr-2020	4.46
26-Sep-2019	1.89	08-Apr-2020	20.60
03-Oct-2019	1.42	17-Apr-2020	20.70
10-Oct-2019	0.25	23-Apr-2020	41.20
17-Oct-2019	2.37	28-Apr-2020	44.70
25-Oct-2019	17.23	06-May-2020	29.50
31-Oct-2019	3.04	14-May-2020	17.83
07-Nov-2019	5.24	20-May-2020	15.42
14-Nov-2019	2.21	28-May-2020	12.84
21-Nov-2019	2.05	02-Jun-2020	3.16
28-Nov-2019	6.24	04-Jun-2020	15.52
05-Dec-2019	1.46	10-Jun-2020	13.06
12-Dec-2019	22.80	18-Jun-2020	9.01
18-Dec-2019	3.22	26-Jun-2020	3.49
07-Jan-2020	13.08		