

Resource Consent Compliance Report

Ōtaki WWTP 2018/2019

NZ100559



Prepared for
Kāpiti Coast District Council

17 October 2019

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Executive Summary

This report has been compiled in accordance with the reporting requirements of the Resource Consent Permit No. WGN160002 that allows the Ōtaki Wastewater Treatment Plant (WWTP) to discharge treated effluent to land to a Land Discharge and Treatment Area (LDTA) and contaminants to air from the operation of the plant.


















KCDC must provide the compliance report for the previous financial year, and present it to the Manager, Environmental Regulation, Wellington Regional Council by 30 September. The period covered in this report is 1 July 2018 to 30 June 2019.

This report steps through the various consent conditions and reports their status and/or compliance.

As per the monitoring and reporting issues raised in the 2017/2018 Compliance Report, amendments to the monitoring programme have implemented since May 2018. These amendments are described in this compliance report. This demonstrates KCDC's commitment to continuous improvement and their resource consent responsibilities.

A summary of the 2018/2019 performance against the resource consent conditions is provided in Table 1-1 and Table 1-2.

Table 1-1 Monitoring Conditions to Resource Consent

Conditions to Resource Consent		Compliance
General Conditions	1 & 2	
LDTA Optimisation	3, 4 & 5	
Operations and Maintenance	6, 7 & 8	
Maximum Discharge Rate	9 & 10	
Maintaining Wet Weather Storage	11	
Wastewater Volume Measurement	12, 13 & 14	
Monitoring of Pond Effluent Quality	15 & 16*	
	Soluble Carbonaceous BOD	
	Total Suspended Solids	
	Faecal Coliforms	
	Ammoniacal Nitrogen	
	Dissolved Reactive Phosphorus	
Monitoring of Groundwater and Spring Water	18*	
<i>E. coli</i> and Soluble Inorganic Nitrogen in Bores 4 & 5	19 & 20	
Attenuation Equilibrium, Bores 4, 5 and Spring	21	
	Total Nitrogen	
	Dissolved Reactive Phosphorus	
	<i>E. coli</i>	

*Nitrite was not measured

Table 1-2 Other Conditions














Conditions to Resource Consent		Compliance
Inspection Records and Operational Logs	22	
Monitoring Requirements	23	
Performance and Maintenance of the Distribution System	24, 25 & 26	
Reserve Area for Effluent Discharge	27	
Inflow and Infiltration Investigations, Works and Reporting	28	
Odour Management	29, 30, 31 & 32	
Planting within the Land Discharge & Treatment Area	33, 34 & 35	
Perimeter Planting	36	
Fencing and Signage	37	
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1 Ōtaki Wastewater Treatment Plant

The Ōtaki Wastewater Treatment Plant (WWTP) was granted a revised resource consent permit (WGN160002) to discharge treated effluent to land to a Land Discharge and Treatment Area (LDTA) and contaminants to air from the operation of the plant, in October 2016. As part of this consent, the Kāpiti Coast District Council must provide a compliance report on the performance of the plant against the parameters presented in the permit.

KCDC must provide the compliance report for the previous financial year, and present it to the Manager, Environmental Regulation, Wellington Regional Council by 30 September. The period covered in this report is 1 July 2018 to 30 June 2019.

This report outlines the required consent conditions and reports their status and/or compliance.

2 LDTA Optimisation Study & Report

2.1 LDTA Optimisation Report (KCDC & NHoŌ)

Condition 4 requires KCDC to prepare a report in collaboration with Nga Hapu o Ōtaki which discusses and agrees on any proposed changes to the LDTA, as a result of the Optimisation Study, February 2018.

2.1.1 Compliance

1. The Optimisation Study Report (Condition 3) was completed in February 2018.
2. It is worth noting that the Optimisation Study (Condition 3) was prepared by Cardno in collaboration with KCDC and NHoŌ, such that the collaboration required under Condition 4 had already occurred prior to the completion of the Optimisation Study in Condition 3.
3. GWRC has been provided with a copy of the optimisation Report for their consideration and was peer reviewed by Hamish Lowe who agreed in principle with the Report conclusions and recommendations.

2.2 Implementation of Changes to LDTA

Condition 5 requires KCDC to implement changes to the LDTA as per Condition 4.

2.2.1 Compliance

As per the Optimisation Report requirements KCDC has engaged Cardno for the detail design, tender support, construction administration and project management of the automation of the LDTA distribution system to improve distribution uniformity. This is due to be complete during the next reporting cycle.

3 Operations and Maintenance Manual

Conditions 6-8 refer to the Operations and Maintenance O&M Manual for the Ōtaki WWTP. The Operations and Maintenance (O&M) Manual needs to be updated once the LDTA Optimisation Report has been approved, or at least 3-yearly from 2019 onwards.

3.1.1 Compliance

The O&M Manual has had a minor revision during this period to represent current function and was accepted by GWRC on 23 May 2019.

The Operations and Maintenance (O&M) Manual will be updated once the LDTA upgrade is complete (within the 2019/2020 reporting period) in collaboration with NHoŌ. This update will also address the requirements of condition 24.

4 Compliance Monitoring and Analysis

This section covers conditions 9-21 of the resource consent related to flow and treated effluent / bore quality monitoring and compliance.

4.1 Maximum Discharge Rate

Condition 9 and 10 permits the discharge of treated wastewater from the Ōtaki wastewater treatment plant into the Land Discharge Treatment Area (LDTA), at a maximum rate of 2,820m³/day and 155mm/day application depth.

4.1.1 Compliance

Figure 4-1 shows the flow volume discharged to the LDTA.

Figure 4-1 Treated Effluent Discharged to LDTA

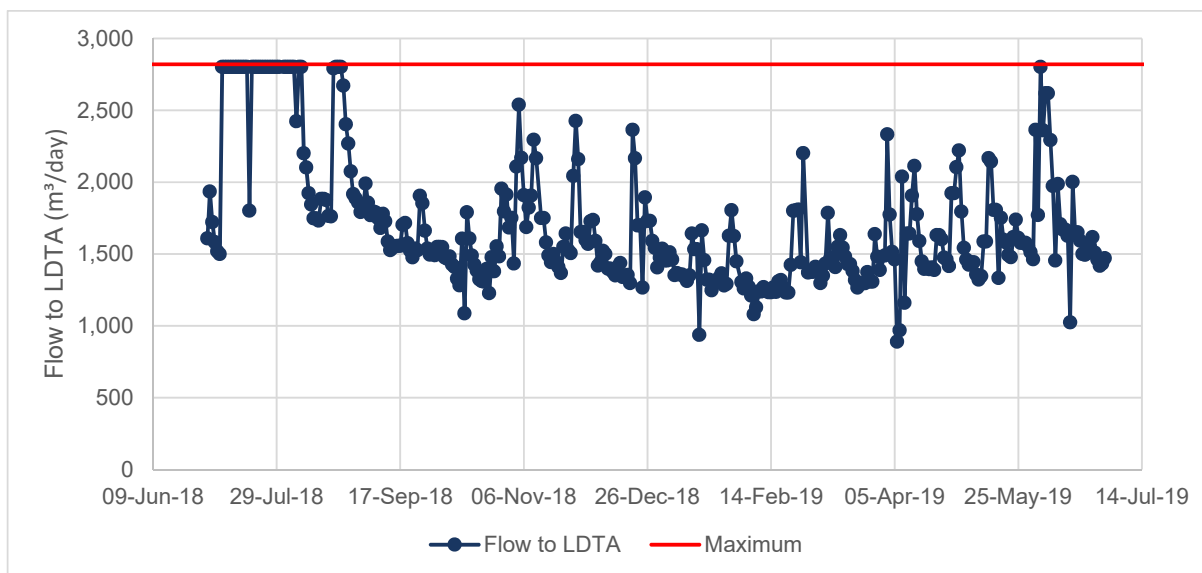


Figure 4-1 demonstrates full compliance with conditions 9 and 10. As demonstrated the control system successfully limits the flow at 2,800 m³/day.

4.2 Wet Weather Storage

Condition 11 requires 5000m³ of wet weather storage capacity at the site.

4.2.1 Compliance

The storm flow buffering pond was maintained for use during the compliance period. The pond was kept empty throughout the year (apart from a small volume to manage liner uplift).

4.3 Monitoring of Wastewater Flows

Condition 14 requires daily records of influent wastewater flow, the treated effluent volume discharged to the LDTA and which zones were irrigated.

4.3.1 Compliance

Refer to Appendix A for flow records. Refer to Section 4.1.1 for discussion on the application volume and rate.

4.4 Pond Effluent Quality

According to condition 15, weekly records of dissolved oxygen, weather conditions (Temperature), pond appearance and odour, are presented in Appendix A.

Condition 16 of the resource consent require the consent holder to monitor the following parameters:

- > BOD₅ (g/m³)
- > Non-filterable residue (suspended solids) (g/m³)
- > *E. coli* (MPN/100mL)
- > Faecal coliforms (MPN/100mL)
- > Ammonia (g/m³)
- > Nitrate (g/m³)
- > Nitrite (g/m³)
- > Total Nitrogen (g/m³)
- > Total Phosphorus (g/m³)
- > Dissolved Reactive Phosphorus (DRP) (g/m³)
- > pH

From the conditions required in condition 16, the following parameters were not monitored during the whole period:

- > Nitrite (g/m³)

KCDC do not currently measure nitrite concentrations in the pond effluent, ground water and spring water for the following reasons:

1. Since nitrite (NO₂) is an intermediate oxidation state of nitrogen both in the oxidation of ammonia to nitrate and in the reduction of nitrate, and it is a relatively unstable form of nitrogen, monitoring nitrite concentrations could lead to unreliable measurements.
2. Due to its instability, concentrations of nitrite in the environment and in treated effluent are usually, less than 0.1g/m³.

It is recommended that KCDC discuss the nitrite monitoring requirement with GWRC separately, which will investigate the requirement to measure nitrite concentrations in the pond effluent, ground water and spring water as per the reasons listed above.

4.4.1 Compliance

The following sub-sections graphically demonstrate compliance with the treated effluent standards for ScBOD, TSS, faecal coliforms, ammoniacal nitrogen and DRP, prior to discharge to the Land Discharge and Treatment Area, as specified in Condition 17.

The graphs show the combined average of the Pond A and Pond B treated effluent quality. Compliance is measured at the outlet to the land discharge and treatment area. Since Pond A and Pond B flow by gravity on a combined line to the LDTA and both effluents are monitored individually, each point in the graph represents the average of the two pond effluents to allow compliance assessment against the consent criteria.

Compliance limits are drawn on the graph, with the key identifying the number of samples not to exceed that specified concentration (i.e. 2 out of 12, or 8 out of 12).

4.4.2 Non Compliance – Faecal Coliforms

An increase in the counts of faecal coliform colonies was registered in the pond effluent during the 2018/2019 monitoring period. This increase was attributed to operator errors during sludge wasting and clarifier operational issues.

In November 2018 the clarifier was drained and a section of rubber from the scraper found in the bottom central cone. The debris was removed and the sludge flowmeter and pneumatic valve were replaced.

This has improved operation of the clarifier, but there were still incidents of non-conformance following the clarifier maintenance. These non-conformance are now believed to be attributed to the operation of the oxidation ponds.

Some of the possible causes are listed below:

- > Sludge build-up creating less operating volume, thus reducing retention time in the pond for disinfection.
- > Hydraulic short-circuiting, reducing retention time in the pond for disinfection.
- > Excessive algae growth, excessive algae growth could be blocking the light intensity into the pond, slowing the disinfection process. The summer 2018/2019 had extremely high sunlight hours which is favourable to algae bloom.
- > Increasing waterfowl population

The two oxidation ponds at the Ōtaki WWTP attract a large amount of waterfowl that can increase the number of pathogens in the effluent. Waterfowl are important reservoirs of faecal contamination, as demonstrated the 2010 survey carried out by the Christchurch Science Centre (Faecal indicators and pathogens in selected New Zealand waterfowl). The study estimated a daily microbial output per duck of 3.18×10^{10} for *E. coli* (95% prevalence), 3.39×10^{10} for Enterococci (100% prevalence), 1.99×10^{10} for *Campylobacter* spp. (29% prevalence), and presence of *Cryptosporidium* spp.

- > Low Dissolved Oxygen Concentrations

Although sunlight is known to be the single most important factor causing disinfection, the interaction between dissolved oxygen and sunlight features as one of the three main mechanisms of sunlight inactivation causing disinfection.

In an effort to improve disinfection in the ponds, recirculating pumps were used intermittently to increase the dissolved oxygen concentration during the 2018/2019 reporting period.

KCDC has engaged Cardno to carry out a survey of the sludge levels across the ponds, as well as a git survey in the aeration pond. This investigation will provide the actual operating volumes of the ponds and hence current retention times.

It is recommended that KCDC engage Cardno to carry out further investigation to identify the cause of this increasing number of faecal coliforms, and to implement the most suitable solution.

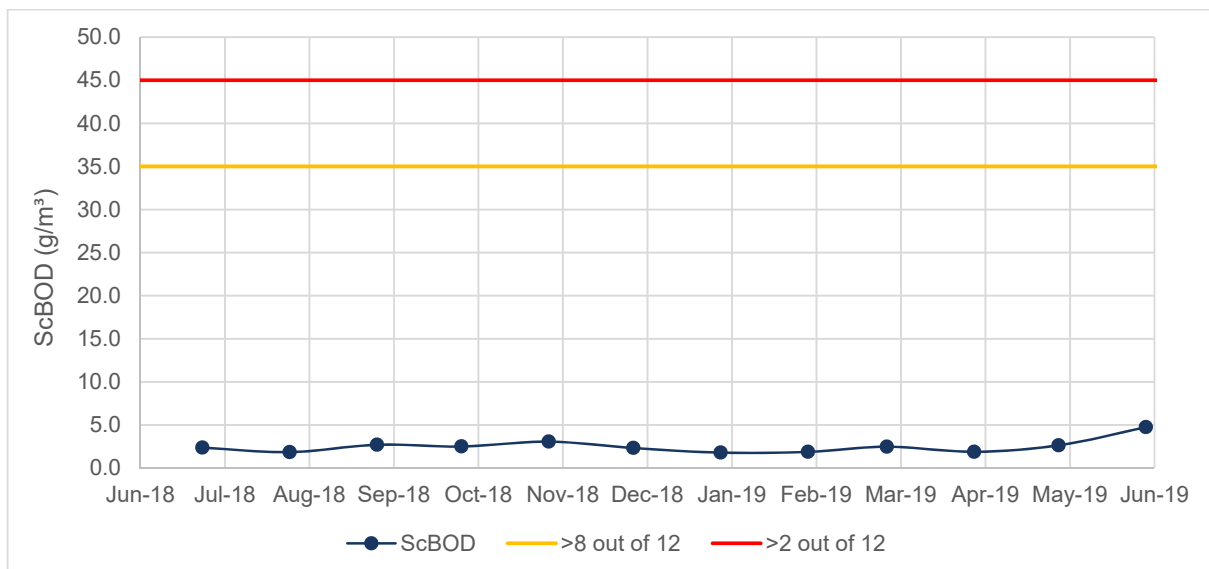
The investigation will also look into the possible solutions to optimise disinfection, including:

- > Increasing operating pond levels
- > Install baffles to avoid hydraulic short-circuiting
- > Pond aeration

4.4.2.1 Soluble Carbonaceous Biochemical Oxygen Demand (ScBOD)

Figure 4-2 demonstrates full compliance in terms of ScBOD₅ against permit limits.

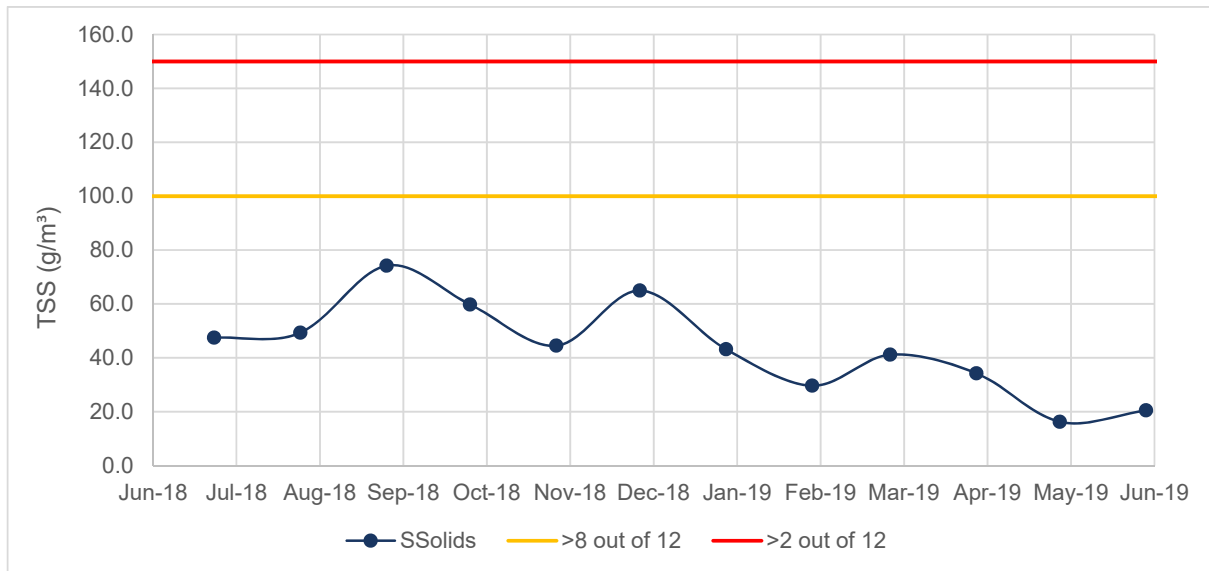
Figure 4-2 ScBOD Concentration in Pond Effluent



4.4.2.2 Total Suspended Solids (TSS)

Figure 4-3 demonstrates full compliance with the TSS conditions.

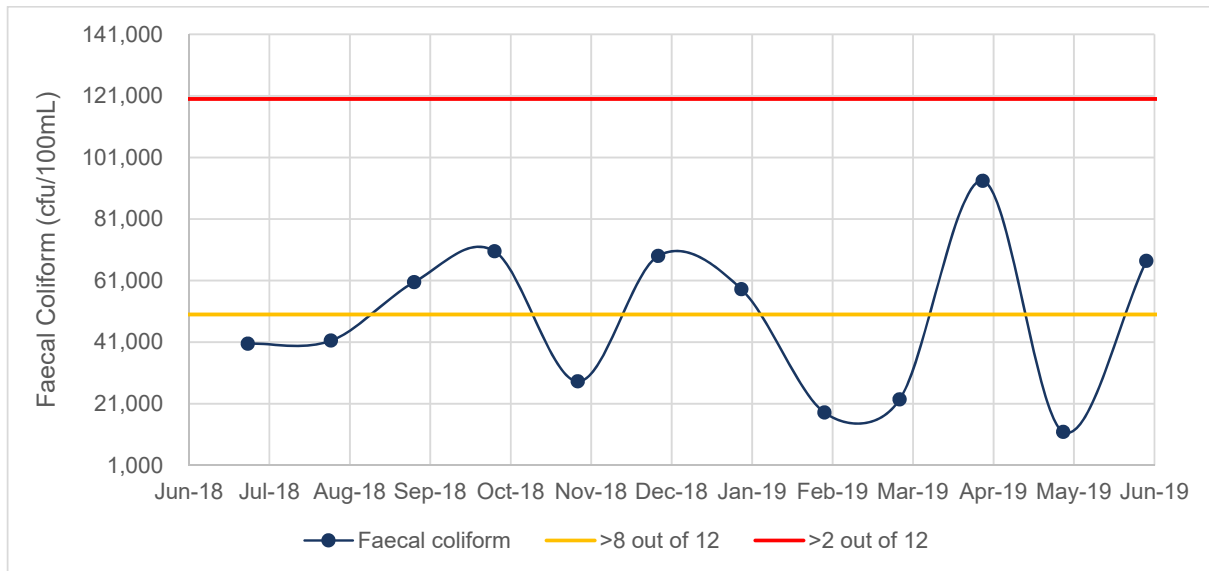
Figure 4-3 TSS Concentration in Pond Effluent



4.4.2.3 Faecal coliforms

Figure 4-4 shows overall compliance with the faecal coliform limits. However, the faecal coliform concentrations in the pond effluent breached the lower limit of 50000cfu/100mL on six occasions during this period.

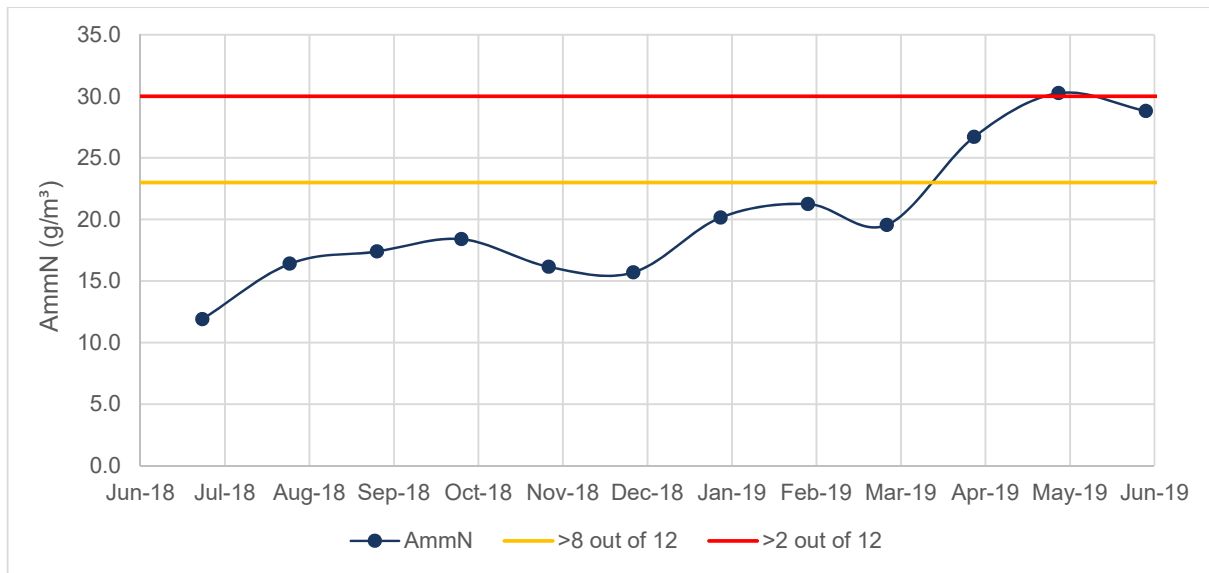
Figure 4-4 Faecal coliform Concentration in Pond Effluent



4.4.2.4 Ammoniacal Nitrogen

Figure 4-5 demonstrates full compliance with the Ammoniacal Nitrogen conditions.

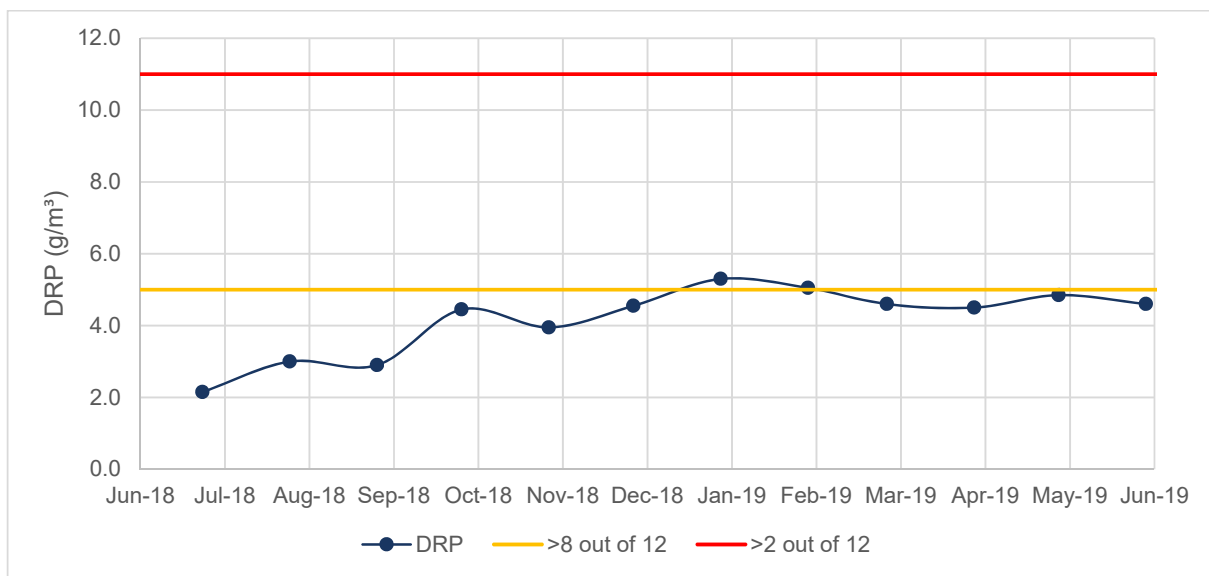
Figure 4-5 Ammoniacal Nitrogen Concentration in Pond Effluent



4.4.2.5 Dissolved Reactive Phosphorus (DRP)

Figure 4-6 demonstrates compliance with the DRP conditions. Since December 2018, the DRP concentration has exceeded the lower limit on two occasions and was consistently close to the lower limit of 5g/m³.

Figure 4-6 DRP Concentration in Pond Effluent



4.5 Ground Water and Spring Water Quality

Condition 18 specifies monitoring of ground water levels and water quality at bores 1, 2, 3, 4, 5, 6, 7 and water quality in the spring, for the following parameters:

- > BOD₅ (g/m³)
- > Chloride (g/m³)
- > *E. coli* (cfu/100mL)
- > Ammonia (g/m³)
- > Nitrate (g/m³)

- > Nitrite (g/m³)
- > Dissolved Reactive Phosphorus (g/m³)
- > Total Phosphorus (g/m³)
- > Temperature (°C)
- > pH
- > Conductivity (µs/cm at 25°C)

4.5.1 Compliance

Full bore monitoring records are provided in Appendix B.

4.5.2 Compliance - *E. coli* and Soluble Inorganic Nitrogen (Condition 19)

Condition 19 specifies the following limits for water quality monitoring in bores 4 and 5 (from Condition 18):

- > *E. coli* (100 mpn/100ml (100cfu/100mL))
- > Soluble Inorganic Nitrogen (11.3g/m³ as N)

Table 4-1 demonstrates that sampling of bores 4 and 5 were in full compliance with the limits stated by condition 19.

KCDC laboratory monitors *E. coli* levels using the Standard Method 9222D membrane filtration for faecal coliforms. If faecal coliforms are present, the filter is then transferred onto a media to determine if the faecal colonies are *E. coli* (Standard Methods 9222I). Where there is a dash (-) in the data, there were not faecal coliforms present, thus there was not transfer to the media to determine *E. coli* as no colonies were present.

Table 4-1 Water Quality – Bores 4 and 5

Date	Bore OT4		Bore OT5	
	<i>E.coli</i> (cfu/100ml)	Soluble Inorganic Nitrogen (g/m ³)	<i>E.coli</i> (cfu/100ml)	Soluble Inorganic Nitrogen (g/m ³)
16/07/2018	-	7	9	4
28/08/2018	-	<1	-	<1
19/09/2018	-	3	-	4
25/10/2018	-	1	-	2
19/11/2018	-	4	-	3
11/12/2018	-	<1	-	<1
25/01/2019	-	4	1	<1
18/02/2019	-	<1	-	<1
20/03/2019	-	<1	13	<1
9/04/2019	-	<1	10	<1
31/05/2019	-	3	1	7
13/06/2019	2	<1	2	8

4.5.3 Compliance – Reporting Non-Compliance (Condition 20)

Condition 20 requires KCDC to notify GWRC of a breach of Condition 19, within 24 hours, and provide an investigation report within 10 working days.

There was no breach during this compliance period, so no notification or report was required.

4.5.4 Compliance – Attenuation Equilibrium (Condition 21)

Condition 21 requires KCDC to monitor, and report on water quality data from bores 4, 5 and surface water spring, against contaminant trigger levels. The specified data is summarised in Table 4-2.

The consent holder has to undertake an investigation into whether the attenuation equilibrium of the soil has been breached if three consecutive monitoring rounds reach the following limits:

- > Total Nitrogen (11.3 g/m³)
- > Dissolved Reactive Phosphorus (0.1 g/m³)
- > *E. coli* (100 cfu/100mL)

Table 4-2 Bore 4, 5 and Spring Water Quality

Date	Bore OT4			Bore OT5			Spring		
	TN (g/m ³)	DRP (g/m ³)	<i>E.coli</i> cfu/100ml	TN (g/m ³)	DRP (g/m ³)	<i>E.coli</i> cfu/100ml	TN (g/m ³)	DRP (g/m ³)	<i>E.coli</i> cfu/100ml
16/07/2018	2	0.26	-	<1	0.12	9	<1	0.03	200
28/08/2018	<1	0.25	-	<1	0.14	-	<1	0.02	-
19/09/2018	3	0.26	-	1	0.14	-	7	0.01	780
25/10/2018	7	0.24	-	3	0.14	-	<1	0.02	450
19/11/2018	3	0.26	-	2	0.13	-	8	0.02	34
11/12/2018	<1	0.25	-	<1	0.14	-	<1	0.02	440
25/01/2019	<1	0.25	-	1	0.05	1	2	0.03	190
18/02/2019	<1	0.23	-	<1	0.17	-	<1	0.03	50
20/03/2019	<1	0.26	-	<1	0.18	13	<1	0.02	2300
9/04/2019	<1	0.23	-	<1	0.22	10	<1	0.02	-
31/05/2019	4	0.22	-	3	0.25	1	1	<0.01	-
13/06/2019	3	0.22	2	14	0.3	2	<1	0.03	<2

The total nitrogen trigger level was not reached in any of the bores or spring.

Although the *E. coli* limits were not breached, the spring concentrations have increased during the last two reporting periods. Investigation showed no direct connection between the *E. coli* concentrations in the spring and those in the effluent discharged to the LDTA. Two factors considered to affect these measurements are:

- > The difficulty to get a “clean” sample from the spring as it is often overgrown with weed and the samplers have to move this weed to obtain a sample. This stirs the sediment on the bottom and hence a high bacteria count is measured.
- > The run off from the surrounding grazing land flows into this stream possibly causing high counts.

It is recommended that information on weather conditions and the state of the stream (if it is free flowing or is overgrown with vegetation) at the time of sampling are recorded and included in the report in the future.

The DRP limit has continuously breached in bores 4 and 5 and has been a recurring issue since the new monitoring programme was implemented, as outlined in the previous 2016/2017 and 2017/2018 compliance reports. Since there are no previous records to allow for a reliable conclusion it was recommended that a 5-year baseline trend is established with which to make a better informed decision about this parameter. There is no historical DRP sampling data available, prior to the new consent being granted. This 5 year baseline trend and associated investigation is only due to be complete in 2021

5 Various Items

5.1 Performance and Maintenance of the Distribution System

Condition 24 lists a number of parameters against which the 'performance' of the LDTA shall be assessed:

- > Distribution uniformity
- > Effluent applied
- > No ponding
- > Ponding lasts for less than 24 hours under dry weather conditions

5.1.1 Compliance

As per the Optimisation Report requirements KCDC has engaged Cardno for the detail design, tender support, construction administration and project management of the automation of the LDTA distribution system to improve distribution uniformity.

Currently the LDTA (10.8 hectare) is divided into six zones, each with 3 distribution laterals. Each zone is selected for use by manually opening the lateral valves at the distribution pipe. Effluent is applied to one zone at a time (3 laterals) to allow for the maximum hydraulic application rate 155mm/day (current maximum discharge volume divided by one zone). The zones are manually changed. The fixed speed irrigation pump currently operates intermittently, due to the presence of the pond outlet weirs, which hydraulically separate the ponds from the irrigation wet well.

The changes to the LDTA distribution system includes the replacement of both the effluent pumps (on VSD), removal of the 3 header chambers and replacement of the header pipe. Automated valves on each of the laterals will also be included.

The effluent pumps speeds will be cycled such that the effluent throw range from the laterals will allow for a more even distribution from the laterals and a more uniform distribution along the laterals.

These changes will reduce ponding and allow better control and flexibility of the discharge distribution.

We propose that compliance with this condition will be reported against once LDTA improvements (as per Condition 4 and 5) are implemented. This is due to be complete during the next reporting cycle.

5.2 Reserve Area for Effluent Discharge

Condition 27 requires the maintenance of 5.45ha of land to be maintained in close proximity to the LDTA for future disposal capacity.

5.2.1 Compliance

KCDC continues to own the field adjacent to the LDTA.

5.3 Inflow and Infiltration Investigations, Works and Reporting

Condition 28 requires KCDC to continue to investigate and implement ways and means of minimising stormwater inflow and infiltration (I/I) into the sewerage system.

5.3.1 Compliance

5.3.1.1 *Details of I&I investigations and work for the previous 3 years*

Council has not undertaken any field I/I investigations over the last three years. Currently Council is not in a position to identify areas for investigation and assess the effectiveness of any I/I work undertaken.

Council efforts since 2018/19 has been to begin works developing a wastewater strategy to better inform when and where Council undertakes I/I work, as well as assess the effectiveness of any renewal work undertaken.

However, Council has undertaken a stormwater survey (SWS) of every property in Ōtaki to understand how each property connects to the stormwater system. The SWS identified properties with illegal connections to the wastewater network as well as stormwater systems in poor state of repair. Both sets have an impact on the I/I level in the wastewater catchments.

Council is developing a stormwater strategy and bylaw which will give enforcement powers to require property owners to return the stormwater to compliant systems. This will lessen the inflow during rain events.

5.3.1.2 I&I works scheduled for the next 3 years including specifying the sub-catchments where CCTV inspections/pressure testing and pipe renewal/rehabilitation that shall be carried out

Over 2019/20 Council is working towards developing a containment standard for each network to identify improvement works needed to meet the containment standard. By July 2019, some of the identified projects will involve field investigations to better understand the local issue and works needed to resolve the issue.

Subject to the Long-term Plan consultation with the community, Council will also by 2021/22 have a stormwater bylaw in place to enforce stormwater requirements, including no direct connections to the wastewater network.

The wastewater network management improvement programme will be reviewed each year and the current programmed task have been included in Appendix B.

5.4 Odour Management

Conditions 29 to 32 refer to odour management at the site.

5.4.1 Compliance

There have been no odour complaints related to the Ōtaki LDТА during the compliance period.

The biofilter is currently not working as effectively as it should and although there have been no complaints there is an odour around the site. KCDC has engaged Cardno to investigate options to upgrade the biofilter or replace the media.

5.5 Planting within the LDТА

Conditions 33 to 35 require suitable planting within the LDТА.

5.5.1 Compliance

1. Harakeke has been removed from the LDТА in line with iwi expectations, and replanted along the road boundary.
2. As defined in the LDТА Optimisation Study report, a number of planting programmes were investigated in relation to the distribution changes.
3. The area has been cleared of all growth and regressed as outlined in email correspondence with GWRC.

5.6 Perimeter Planting

Condition 36 requires suitable perimeter planting.

5.6.1 Compliance

A number of perimeter planting options have been investigated in conjunction with NHO. A planting plan has been provided by Cardno including harakeke and manuka planting along the northern and western side as per the Optimisation Study Report.

Further iwi involvement for the supply of plants and possible planting is currently being discussed.

Perimeter Planting will be implemented in the next compliance period.

5.7 Fencing and Signage

Condition 37 requires perimeter fencing and signage.

5.7.1 Compliance

Existing fences have been maintained.

A fencing investigation was carried out in response to the drowning at the Gore WWTP. Recommended additional security fencing around the LDТА and perimeter signage warning people to stay out of the LDТА will be implemented during the next compliance cycle.

5.8 Iwi Consultation

Condition 38 and 39 require KCDC to invite NHoŌ to a yearly briefing and informing NHoŌ of any changes on site.

5.8.1 Compliance

KCDC, Cardno and NHoŌ have been working closely together on the LDTA Optimisation Study during this compliance period, and we consider the requirements of this condition have been met by this ongoing interaction. Cardno, KCDC and NHoŌ recently co-presented on the Ōtaki WWTP journey at the Water New Zealand 2018 Conference.

5.9 Community Liaison Group

Condition 40 requires the establishment of a community liaison group for the Ōtaki WWTP.

5.9.1 Compliance

KCDC is in the process of setting up a community liaison group.

5.10 Complaints

Condition 41 requires KCDC to maintain a permanent record of complaints relating to the Ōtaki WWTP and LDTA.

5.10.1 Compliance

No complaints have been received during the compliance period.

5.11 Incident Notification

Condition 42 requires KCDC to notify GWRC of any incident which results, or could result in, an adverse effect on the environment beyond the boundary of the consent holder's site.

5.11.1 Compliance

No such incident occurred within the compliance period.

5.12 Storage Volume

As per condition 11, KCDC maintained the storm buffer lagoon in a manner whereby it was used only for temporary storm storage events as wet weather conditions and discharge volume dictated.

APPENDIX

A

FLOW & SAMPLING RECORDS

APPENDIX

B

NETWORK MANAGEMENT
IMPROVEMENT PROGRAMME

Appendix B - Wastewater Network Management Improvement Programme

KCDC's Wastewater Network Management Improvement Programme is reviewed each year but currently includes:

	Task	Work Programme
2019/20 financial year	Update the wastewater network models	Update the models with current population forecasts (Ōtaki) and join the Paraparumu and Waikanae networks to the storm basin (WPR).
	Business as usual - existing and future system performance	Use the wastewater models to predict issue areas arising over the next 50 years by adding population growth, pipe degradation and climate change.
	Develop a draft wet weather containment performance standard for 2021 Long Term Plan consultation	Undertake a Cost/Benefit analysis to consider the costs related to achieve a range of containment standards (in the future) to ensure the containment standard is justified and affordable. Council will seek to optimise the costs by considering a range of options for every containment standard.
	Draft wastewater network improvement programme for 2021 Long Term Plan consultation	Develop a proposed works program that will meet the draft containment performance target. Program (timing) of the works based on milestone models. Provide detailed scoping required for all urgent projects (first 5 years) Identify areas which require flow gauging or other investigations before project are implements to confirm (detailed) scope and when.
	Integrated private property inspection policy for wastewater and stormwater	As part of the Stormwater Strategy, Council will be developing a Bylaw to provide guidance and responsibilities for property owners to maintain their stormwater systems. The Bylaw will provide ability to require property owners to correct any illegal stormwater to wastewater systems
2020/21 financial year	Renewal Strategy	Develop a renewal strategy and processes to identify, justify, scope and programme future network renewals including condition based renewal as well as performance based (I/I) renewals.
	Monitoring Strategy	Including the use of pump station data, temporary flow gauging, etc.)
	Emergency Response Strategy	Undertake a comprehensive risk assessment to
	Waste Water Strategy	Include and consolidate all wastewater objectives, target, and processes into a single strategy. Including:
	Pump station performance monitoring tool	Using critical pump stations, undertake a review of their performance to enable a high level review of Inflow and Infiltration rates and other performance attributes. Once data proven, develop flow analysis tool to monitor the I/I rates in each wastewater pump station catchment.
	Comprehensive I&I assessment	Undertake a detailed I&I assessment for dry and wet weather. Needs a model that has reliable dry and wet weather calibration which need to be confirmed first recalibration might be possible based on outcomes of Pump Station performance assessments.

	Task	Work Programme
2021/22 financial year	Pilot I&I programme	Set up and implement a pilot programme for reducing I&I in a target area. This could include detailed investigation to target high priority areas, private property inspections and work on public laterals.
	Pump station failure risk assessment	Review pump stations against risks on the failure against some good industry practices such as (1) power, (2) need for emergency storage and (3) the need for designated overflow locations.
	Wastewater catchment plans (WWCP)	Capture the knowledge of the wastewater network performance, issues and solutions in an accessible report or web based application. This will allow overlay with other asset areas such as flooding The WWCP can get progressively be updated with results from the issues and actions register.
	Overland flow mapping	Map location overland flow paths. Overland flow is a known cause of inflow of stormwater into gully traps and leaky pipes and also reason for deliberate cross connections.
	Develop a network discharge consent	Investigate a network discharge consent application for planned wastewater overflows.
	Planning improvement projects register	Consolidate all 'planning' / 'asset management' recommendations, from reports as they arise, into one register, including the ability to track.
	Issues and actions register	Develop a register that can track issues to solutions. This would include the ability to link issues to solutions, to assign 'case manager', the ability to move issues into planning phase and then implementation. Issues can be raised by planning (e.g. performance assessments), operational staff and community.
	Bench mark	Undertake the next benchmarking projects using another method/provider.