Water Quality Assessment Memo	
Date:	29 April 2026
To	Mike Ryan, CEO, Winstone Pulp International Limited
From:	Lobo Coutinho, Environmental Science and Engineering Lead, Babbage Consultants Tiago Teixeira, Senior Environmental Engineer
Re:	**Resource Consent Application: APP-2006012018.02** **(Winstone Pulp International Limited – Discharge to Water)**

1.0 Introduction

Winstone Pulp International Limited (WPI) holds an existing discharge permit authorising treated wastewater and stormwater discharges from the former Karioi Pulp Mill (the Site) to the Whangaehu River. The operations on the site ceased in September 2024.

WPI is amending the resource consent application to enable the use of the site for wood processing using a "torrefaction" process (instead of a "pulp" process). Due to the change in the industrial process used for wood processing, it has resulted in:

- Significant reduction in the volume of wastewater produced and sought to be discharged to the Whangaehu River, being 750m^3/day (compared to the approved consented discharge limit of 5,200m^3/day).
- The wastewater produced is classified as a "condensate", and is of a significantly cleaner quality than the wastewater stream approved under the existing consent for the pulp process.

The purpose of this memo is to undertake an assessment of effects of the discharge of wastewater, produced using a torrefaction process, on the water quality of the receiving waters of the Whangaehu River.

For simplicity and to facilitate a clear comparison between this application (torrefaction process) and previous assessment (pulp process), we have kept a similar structure and methodology to the notified

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Assessment of Environmental Effects Report (hereon referred to as the "Notified AEE")(prepared by Viridis & Mitchell Daysh, dated March 2025)[1].

As requested by Ngāti Rangi, WPI proposes to construct a wetland system, to ensure that the wastewater is discharged into the wetland system prior to the discharge to the Whangaehu River. Although the wetland is expected to reduce key contaminants, these reductions have not been included in the water quality assessment. Instead, the water quality assessment is based on wastewater quality before it enters the wetland, resulting in a precautionary and conservative approach to the water quality assessment.

In brief, the key findings of the wate quality assessment are:

- The Site contains sufficient area to enable the construction of a robust wetland system to polish and discharge wastewater from the WPI site to the Whangaehu River. The results from literature reviews and wetland trials have demonstrated significant reductions in contaminants can be achieved by the proposed wetland concept design.
- The proposed condensate discharge is expected to result in effects that are less than minor on the Whangaehu River, with several aspects of the proposal providing positive outcomes when compared to the former WPI discharge.
- No adverse physical effects are anticipated; the small discharge volume relative to river flow will not affect hydrology, nor will it cause erosion, scouring, or changes to channel form.
- The river's upstream water quality is naturally outside the guidelines and already exceeds guideline values for many parameters due to its volcanic origin. Taking into account the high dilution, the comparatively low contaminant load, the reduced discharge volume relative to the historic activity, and the additional polishing provided by the wetland; the proposed activity will not measurably worsen water quality or ecological conditions. Instead, in several aspects, the proposed discharge represents an improvement over the currently consented discharge.
- Overall, the magnitude and duration of any potential adverse effects on the receiving environment are assessed as low, and the overall effects of the proposed condensate discharge are considered to be less than minor.

[1] Viridis & Mitchell Daysh 2025. Renewal of Discharge Permit 103909 Assessment of Environmental Effects. A report prepared for Winstone Pulp International Limited by Viridis Limited and Mitchell Daysh Limited. March 2025.

2.0 Receiving Environment

The receiving environment is described in Section 2 of the Notified AEE [1]. We are in general agreement with the description of the receiving environment.

In summary, monitoring at the State Highway 49 bridge shows that the Whangaehu River flows were characterised by short-duration high-flow events driven by rainfall, and higher flows in late summer are associated with snowmelt from the upper catchment. In 2024, the long-term mean daily flow was 4,084 L/s, and the 7-day mean annual low flow (MALF) was 2,313 L/s.

The Whangaehu River exhibits unique water quality conditions influenced by volcanic inputs from Mt Ruapehu, resulting in naturally low pH, high phosphorus concentration, variable clarity and colour.

Based on WPI water quality monitoring at the Whangaehu River, key features of the water quality are summarised as follows:

- Temperatures stayed below the upper thermal threshold of 24°C for New Zealand aquatic species (Davies-Colley et al. 2013) while DO concentrations met the minimum 1-day threshold of ≥7.5 g/m³.
- pH levels were consistently low (≈3), reflecting inflows from Crater Lake, with fluctuations linked to Crater Lake inflows, as well as rainfall events and surface runoff. This low pH is well below the environmental guidelines (ANZG2018) and also outside levels considered suitable for recreational use (ANZEC2000).
- Dissolved reactive phosphorus (DRP) was showing potential significant impacts on macroinvertebrate and fish species, though variable. Also, based on total phosphorous and DRP results indicate high proportions of bioavailable phosphorus is dissolved in the river.
- Ammoniacal nitrogen occasionally exceeded the NPS-FM national bottom line of 0.24 g/m³ (as an annual median), expecting toxic effects on sensitive species (MfE 2024).
- Total nitrogen reflected high soluble inorganic nitrogen loads, indicating that nitrogen is predominantly present in dissolved, easily mobilised forms.
- Nitrate concentrations exceeded 0.024 g/m³, ANZG default guideline value (DGV) intended to limit eutrophication, but remained within NPS-FM Band A for toxicity (≤1 g/m3).
- E. coli levels were low and often below detection limits, consistent y within the 'excellent' NPS-FM Attribute Band as a primary contact site (based on risk of infection).
- Dissolved metals and metalloids (except manganese) exceeded ANZG DGVs for 99% species protection criteria due to volcanic and geothermal influences.

- Clarity and colour varied markedly, with visibility between 0–0.76 m and water colour ranging from glacial blue (e.g., a hue of 65) to murky yellow brown (hue lower than 30).

Water quality data for the Whangaehu River, as outlined in the Notified AEE are presented in Appendix A. Furthermore, the findings of Deely and Sheppard (1996)[2] provide important context on natural contaminant patterns in the Whangaehu River. Their 1992 study involved water and sediment sampling along the river and upstream of major tributary confluences, demonstrating the influence of Mt Ruapehu's crater lake on river chemistry through analyses of major cations and anions, metals, pH, conductivity, temperature, and selected metals. The results show a strong natural control of pH on dissolved metal concentrations, which were generally higher near the volcanic source. As pH increased downstream due to tributary inflows and lower overflow from the crater lake, the difference between dissolved and total metal concentrations increased, reflecting enhanced metal partitioning to sediments.

3.0 Proposed Wastewater Discharge Composition

The proposed wastewater discharge is described in Project Summary and Torrefaction Technical Memo (Technical Memo 1) in the Planning Report.

In summary, the proposed development will generate two condensate streams from the torrefaction process:

- One produced from the combustion of the torrefaction flue gas ("Torr Gas");
- Second produced from the hot water boiler.

A detailed compositional analysis of the proposed wastewater stream is contained in Technical Memo 1. The full laboratory analysis is included in Appendix B and in the Technical Memo 1. A summary of the condensate discharge quality is set out in Table 1 below.

The condensate data are derived from a Polytechnik facility in Denmark, supplied by Polytechnik and incorporating the same technology, flue gas treatment, and flue gas condenser systems as those proposed for installation as part of this proposal on the WPI site. With a generation capacity of 25.4 MW, the Denmark facility is comparable in scale to the proposed 20 MW plant on the WPI site.

The torrefaction process is expected generate up to 750 m^3/day of wastewater volume, which is a significant reduction from the Notified AEE discharge volume of (4,000 m^3/day).

[2] J. M. Deely and D. S. Sheppard 1996. Whangaehu River, New Zealand: geochemistry of a river discharging from an active crater lake. Published by Elsevier Science Ltd. February 1996.

Table 1. Proposed condensate discharge quality.

Parameter	Condensate Water Quality - Average	Parameter	Condensate Water Quality - Average
pH	7.1	Lead (mg/l)	0.016
Temperature (°C)*	48	Cadmium (mg/l)	0.0018
Suspend solids (mg/l)	3.4	Chromium (mg/l)	0.0177
Ammonium and ammonia as N (mg/l).	4.6	Copper (mg/l)	0.0137
Nitrite and nitrate as N (mg/l)	3.5	Mercury (mg/l)	0.00006
Chloride (mg/l)	15.3	Nickel (mg/l)	0.0021
Sulphate (mg/l)	27	Zinc (mg/l)	0.42
Mineral oil (mg/l)	<1	PAHs, sum of detected compounds (mg/l)	<0.00001

Note: Condensate quality based on average of analytical results of condensate discharge of Polytechnik facility in Denmark (refer analytical results in Appendix 2 of Technical Memo 1). Metal and metalloids measured as total. * Temperature at the sampling point.

The analytical results presented in Table 1 characterise the constituents typically present in the condensate generated by the torrefaction process. The results reflect the physical and chemical processes inherent to biomass thermal treatment and subsequent flue-gas condensation. The key information relating to the parameters present in the condensate are summarized below:

- Physical chemical parameters: As is characteristic of process condensate, the discharge temperature is elevated relative to ambient environmental conditions, reflecting the condensation of hot flue gases and boiler steam produced during torrefaction and energy recovery processes. The pH of the condensate is circumneutral, indicating that the condensed water does not retain acidic or alkaline characteristics from the combustion process. Total suspended solids (TSS) concentrations are low, indicating a low particulate load and correspondingly low turbidity .
- Nutrients: The presence of nitrogen species, including ammoniacal nitrogen and combined nitrite and nitrate, reflects the thermal breakdown of nitrogen-containing organic compounds naturally present in the biomass feedstock. During torrefaction and combustion, organically bound nitrogen is converted to gaseous nitrogen species, which subsequently dissolve into the condensate as it cools. These nitrogen compounds are therefore intrinsic to the processing of biomass rather than indicative of external contamination.
- Chloride and sulphate: Chloride and sulphate detected in the condensate are associated with inorganic salts and sulphur compounds that are naturally present in biomass. Chloride salts such as potassium chloride and sodium chloride are common constituents of herbaceous and woody biomass

and can volatilise during heating before partitioning into condensed water. Similarly, sulphur present in the biomass may be oxidised during combustion and reappear in the condensate in inorganic sulphate form.

- Hydrocarbons: Hydrocarbons and mineral oils were not detected in the condensate. While volatile organic compounds can be generated during the thermal degradation of biomass, the absence of detectable hydrocarbons indicates that organic compounds associated with incomplete combustion are not retained in the final condensate. This observation is consistent with high-temperature combustion conditions, which promote effective oxidation of organic vapours prior to condensation.
- Metals: Trace concentrations of several metals, including lead, cadmium, chromium, copper, mercury, nickel and zinc, were identified in the condensate. These metals are commonly associated with biomass due to natural uptake from soils during plant growth. Additional contributions may arise from minor abrasion or wear of processing equipment during material handling and size reduction. Zinc was the predominant metal detected, which is consistent with its relatively high abundance in biomass and its tendency to volatilise and subsequently condense during thermal processing. The presence of these metals reflects their mobilisation during heating and redistribution into the condensate rather than the introduction of new contaminants.

Overall, the information in Table 1 indicates that the condensate composition is primarily governed by the intrinsic properties of the biomass feedstock and the thermochemical processes involved in torrefaction and flue-gas condensation, without evidence of atypical or extraneous contaminant sources.

4.0 Concept Wetland Design

Submission 47 is from Ngā Waihua o Paerangi on behalf of Ngāti Rangi. The submission states that Ngāti Rangi would prefer an option of filtering wastewater through a wetland system before allowing it to seep into the Whangaehu River, as “passing wastewater through Papa-tū-ā-nuku can be a culturally acceptable means to cleanse discharges”.

As requested by Ngāti Rangi, WPI proposes to construct a wetland system, to ensure that the wastewater is discharged into the wetland system prior to the discharge to the Whangaehu River.

Given the composition of the wastewater (i.e. being a condensate), the purpose of the wetland can be described as providing “polishing” of the discharge. The term “polishing” in this context means that the wetland is likely to achieve reduction in key contaminants present in the wastewater.

Although the wetland is expected to reduce key contaminants, these reductions have not been included in the water quality assessment. Instead, the water quality assessment is based on wastewater quality before it enters the wetland, resulting in a precautionary and conservative approach to the water quality assessment.

The concept wetland design includes the following (Refer to Figure 1):

- The wetland design involves a vertical subsurface flow (VSSF) wetland followed by a free water surface flow (FWSF) wetland as illustrated in the diagram below.

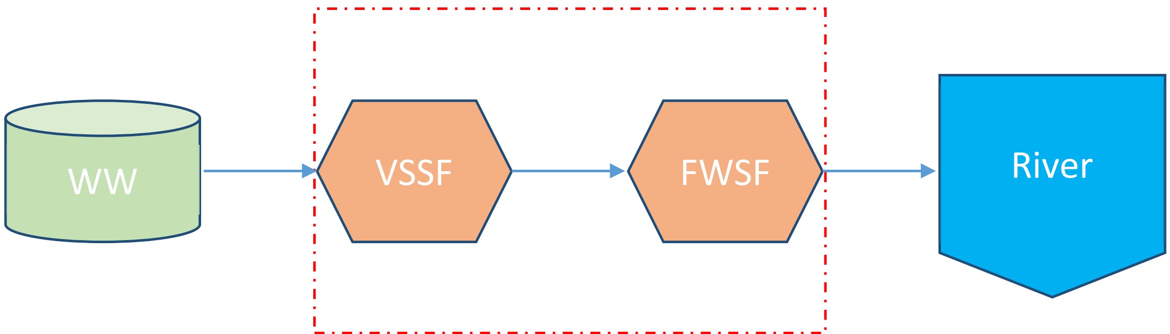

Figure 1. Wetland conceptual design.

- The VSSF stage provides high-rate filtration and polishing for TSS, BOD and nutrients. The use of the term "polishing" in this context means that the wetland will achieve additional reductions in key potential contaminants if properly maintained (e.g: preventing short circuiting, blockage of flow paths, no erosion, etc).
- The use of intermittent wastewater inputs will support oxygenation and biofilm activity. The FWSF stage provides further polishing and hydraulic buffering prior to final discharge.
- The proposed wetland is to be located in the south-eastern corner of the Site (south of the existing wastewater treatment plant facility). Discharges from the wetland will be directed to the existing discharge pipeline that currently conveys treated wastewater to Whangaehu River.
- The system is proposed to be divided into independent cells allowing for maintenance without disrupting discharge. Proposed wetland sizing, based on the given maximum inflow, is provided in Table 2.
- The proposed wetland will be approximately 1 ha in size. Based on available literature and pilot trial results, a wetland area of 1 ha is deemed to achieve the polishing levels indicated in Table 3 .
- The concept cross-sections for the wetland are shown in Figure 2 below.
- As noted above, although the wetland is expected to reduce key contaminants, these reductions have not been included in the water quality assessment. However, for completeness, we have undertaken a literature review of the potential contaminant removal efficiencies for constructed wetlands. The results are summarized in Table 3.

Table 2. Summary of proposed wetland design parameters.

Design parameter	**VSSF section**	**FWSF section**
Maximum flow (m^3/day)	750	
Maximum hydraulic loading rate (m/day)	0.25	0.107
Minimum retention time (days)	-	2.8
Water depth (m)	0.2 (flooded) 0.4 (infiltration media)	0.3 (average) 0.1 (shallow) - 0.5 (deep)
Total area (m^2)	3,000	7,000

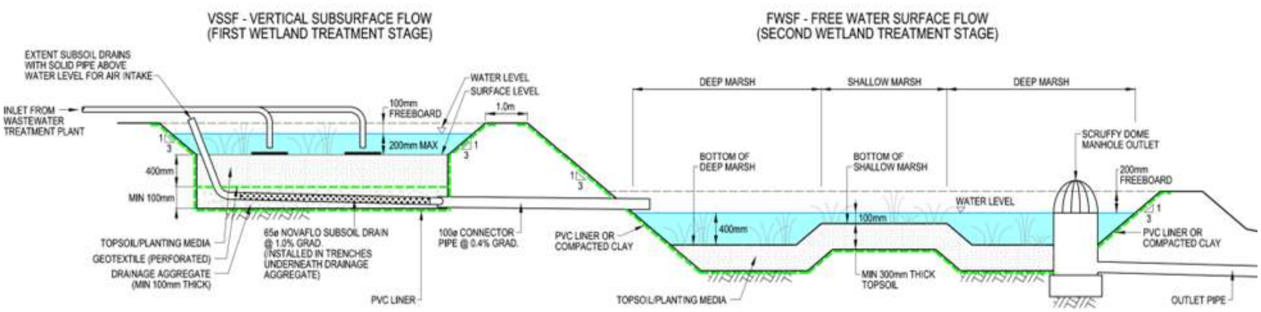

Figure 2. Concept cross-section for the proposed constructed wetland system (not to scale).

Table 3. Removal efficiencies (%) for all types of constructed wetlands – Literature review.

Parameter	**Median**	**95th percentile**	**Maximum**	**Minimum**
Total suspended solids	84	96	99	37
Total biochemical oxygen demand	85	97	99	23
Chemical oxygen demand	85	96	98	17
Ammoniacal nitrogen	67	93	99	-463 [1]
Nitrate nitrogen	57	98	99	-11,215 [1]
Total Kjeldahl nitrogen	50	70	72	17
Organic nitrogen	89	97	99	-10 [1]
Total nitrogen	44	89	93	-6 [1]
Total phosphorus	47	83	99	-104 [2]
Faecal coliforms	95	98	98	66

Notes: 1- Nitrogen increase observed in constructed wetlands where a source of carbon (such as wood chips or biochar) was unavailable or low, and where poor aeration happened due to waterlogging or stagnation; 2- Phosphorus increased in wetlands where plants where not removed in maintenance, creating an increase in phosphorus due to the decomposition of plant matter.

5.0 Assessment of Effects on the Environment

The effects of the wastewater discharge were assessed based on the resulting water quality of the discharge after reasonable mixing. Following the same approach presented by Viridis & Mitchell Daysh 2025 AEE, where the worst-case scenario incorporated median upstream water quality (serving as a baseline) and low-flow conditions (i.e., a 7-day MALF of 2.313 m³/s, as reported in Horizons 2024a).

For this assessment of effects, the maximum condensate flow rate of 0.00868 m³/s (750 m³/day) is used. . Based on this se flow rate, a dilution factor of 266 times is expected between the Whangaehu River MALF and maximum condensate flow rate.

5.1 Effects on Flow, Erosion and Scouring

The proposal would allow the discharge of up to 0.00868 m³/s of wastewater into the Whangaehu River. Even at maximum rates, this represents less than 0.4% of the 7-day MALF flow (2,313 L/s, as reported in Section 2.2.2 of the Notified AEE), and is therefore unlikely to have any measurable effect on the Whangaehu River's hydrology.

Water quality and biological long-term monitoring undertaken by WPI (under treated pulpmill wastewater discharge permit APP-2006012018.01), as well as additional assessments completed for this application (Notified AEE), found no evidence of bank erosion, major channel change, or substrate disturbance attributable to existing discharges.

The proposed discharge of condensate through a wetland treatment system will help naturalise the flow. Given the condensate's composition and the absence of surfactants, no scouring or foaming effects are expected. Downstream of the wetland, the existing WPI pipeline is proposed to continue to convey the polished condensate to the river. Considering that the former discharge volume (5,200 m³/day) did not result in measurable erosion effects, the proposed substantially lower volume (750 m³/day, an 85% reduction) is not expected to generate erosion or channel instability.
Based on these factors, the proposed discharge is not expected to adversely affect river flows or cause erosion or scouring.

5.2 Effects on Water Quality

Following the methodology applied in the Notified AEE , the potential effects of the proposed condensate discharge on river water quality were assessed by modelling downstream concentrations for parameters subject to load limits. The modelled results are presented in Table 4 and have been compared against the following relevant guidance:

- One Plan Schedule 5 (RP-SCHED5) surface water quality targets for Whau_1a.

- ANZG (2018) DGVs for toxicants (at 99% protection) or physicochemical stressors (based on 80th percentile of minimally impacted reference site data)[3].
- NPS-FM Attribute Bands A though D (MfE 2024).

For the condensate, wastewater quality is represented by the laboratory analytical results provided in Appendix B. Table 4 presents condensate concentrations as the average of three laboratory results obtained from composite samples collected at a comparable facility in Denmark that employs technology similar to that currently proposed.

For the Whangaehu River, median water-quality data from Upstream sampling location were used for the monitoring period between 2013 and 2025 to characterise physico-chemical and nutrient parameters. Available chloride and sulphate data from the period 2020–2021 were used, while total metal concentrations were adopted based on a single sample collected in October 2020, consistent with the use of total metals data for the condensate input. Although only one total metals dataset is available, comparison with median dissolved metal concentrations shows that total metal concentrations exceeded dissolved concentrations by approximately 17–53%, representing a conservative approach. In addition, the use of total metals for comparison with ANZG guideline values further reflects a conservative methodology.

Table 5 presents the natural variability of dissolved metals and relevant nitrogen compound concentrations in the river at the upstream sampling location. Variability is expressed as the ratio between the upstream 10th- and 95th-percentile concentrations.

For metals, these statistical parameters are based on monthly samples collected between November 2020 and October 2021. For nitrate and ammoniacal nitrogen, monthly sampling was undertaken between April 2013 and July 2025.

Modelled variation is expressed as the ratio between the modelled downstream concentrations and the upstream median concentration.

[3] Based on the river environmental classification – REC of 'Cool Wet Mountain', as per MfE (2010)

Table 4. Summary of mass balance.

Parameters	Upstream (7-day MALF)	Condensate Water Quality	Modelled Downstream	Guidelines (ANZG2018 - 99% protection, mg/L)	One Plan	NPS-FM Attribute Bands [C]			
						A	B	C	D
pH (unitless)*	2.8	7.1	2.8	**7.8**	7-8.2 and Δ 0.5				
TSS*	18	3.4	18	**11.8**					
Ammoniacal nitrogen	0.072	4.6	0.088	**0.005**	0.32	≤0.03	>0.03 & ≤0.24	>0.24 & ≤1.3	>1.3
Nitrate[A]	0.044	3.5	0.057	**0.024**		≤1	>1 & ≤2.4	>2.4 & ≤6.9	>6.9
Chloride*	150	15.3	149.5	**400** [B]					
Sulphate*	330	27	328.9	**400** [B]					
Cadmium	0.0008	0.0018	0.0008	**0.000006**					
Chromium*	0.033	0.018	0.033	**0.00001**					
Copper*	0.028	0.014	0.028	**0.001**					
Lead	0.0067	0.016	0.0067	**0.001**					
Nickel*	0.0187	0.0021	0.0186	**0.008**					
Zinc	0.068	0.417	0.069	**0.0024**					

Note: Units in mg/L, except for pH. Metals are expressed as total. Exceedances of a One Plan limits and ANZG DGV are shown in red. *Upstream river values already exceed the condensate concentrations. A- Condensate nitrate and nitrite results were conservatively assumed to be entirely nitrate for the purposes of the mass balance calculation and assessment of result. B- ANZEC 2000 Table 5.2.3 - Water quality guidelines for recreational purpose. C – Limits expressed as annual median. NPS-FM exceedances are color shaded in accordance with the applicable attributed bands.

Table 5. Comparison of modelled results with Whangaehu River Upstream natural variation.

Parameters	**Modelled variation***	**River 10%ile concentration**	**River 95%ile concentration**	**Likely river natural variation****
Ammoniacal nitrogen	23%	0.015	0.364	2,427%
Nitrate	29%	0.036	0.056	153%
Lead	0.5%	0.00005	0.008	16,450%
Cadmium	0.5%	0.0001	0.001	885%
Zinc	2%	0.0166	0.122	734%

Note: Concentrations in mg/L. *Modelled variation is the ratio between Modelled Downstream and Upstream results. **Likely natural variation is the ratio between 10% percentile and 95% percentile concentrations.

Based on results set out in Table 4 and Table 5, the key findings relating to the effects of the discharge on the water quality of the Whangaehu River are:

- pH and total suspended solids (TSS) concentrations in the river are outside the recommended guideline limits (ANZG and One Plan for pH). Although the condensate has a near-neutral pH and lower TSS concentrations (likely high clarity and lower turbidity), the relatively low discharge flow rate is not expected to materially alter the existing river pH and TSS conditions.
- Nitrogen-related compounds (ammoniacal nitrogen, nitrate, and nitrite) in the condensate discharge are higher than naturally-occurring concentrations in the river, resulting in modelled increases of approximately 23% for ammoniacal nitrogen and 29% for nitrate (for the worst case scenario modelled). Although these increases remain as exceedances of ANZG guideline values, the modelled concentrations do not result in a change to the existing river attribute bands, which remain at Band B for ammoniacal nitrogen and Band A for nitrate. Furthermore, the potential increases are small relative to the natural variability observed in the river, as shown in Table 5, where concentrations vary by up to 2,427% for ammoniacal nitrogen and 153% for nitrate. In addition, the modelling does not account for the proposed constructed wetland polishing, which is expected to further reduce nitrogen concentrations prior to discharge.
- Water quality at the Whangaehu River upstream sampling location is naturally influenced by overflow from the Crater Lake, particularly with respect to metal concentrations. As shown in Table 4, median concentrations of chromium, copper, nickel, lead, cadmium, and zinc exceed the 99% freshwater protection level guidelines. The condensate discharge exhibits average metal concentrations that are generally lower than upstream river concentrations, with the exception of cadmium, lead and zinc. For these metals, modelled downstream concentrations indicate marginal increases of approximately 0.5%, 0.5% and 2%, respectively, relative to upstream conditions. Based on historical data characterising natural river variability (see Table 5), these increases are minor and well within the range of natural variation observed in the river.

Overall, the most notable upstream-modelled differences relate to nitrogen compounds; however, these changes do not result in a shift in NPS-FM attribute bands. Although the modelled increase in nitrate and ammoniacal nitrogen following condensate addition is greater than changes observed for other parameters, it remains well below the documented range of natural variability for the river. With respect to metals, while the proposed discharge may result in marginal increases in concentrations of cadmium, lead and zinc, the effects are expected to be limited, given the naturally elevated upstream baseline conditions driven by Crater Lake inputs. For most parameters, the modelled percentage changes are small relative to the natural variability observed in the river.

6.0 Estimated Changes from Previous Consent

Results from the proposed condensate discharge and the median water quality results for the Whangaehu River at Downstream site are presented in Table 6 for the parameters available in both datasets. The table indicates that the measured downstream results are generally equal or higher than the modelled downstream results with the proposed condensate discharge, with the exception of ammoniacal nitrogen, nitrate, chloride and sulphate.

Based on Table 4 results, modelled ammoniacal nitrogen concentrations are slightly higher (approximately 2%) than the median downstream concentrations, indicating no significant change relative to historical Downstream results. Modelled nitrate concentrations maintain the increase of approximately 21% compared with Downstream median results. Important to note, that neither of these modelled outcomes accounts for the proposed constructed wetland polishing capacity. According to NIWA guidance[4], total nitrogen compounds can be reduced by up to 50% through wetland treatment. If this polishing capacity is considered, ammoniacal nitrogen concentrations would be reduced to approximately 7% below current Downstream median concentrations, while nitrate concentrations would be reduced to an increase of approximately 6% relative to Downstream median values.

It must be noted that, in environmental contexts, the term "ammonia" — as reported by laboratories (typically as total ammoniacal nitrogen) — refers to two chemical species in equilibrium in water: un-ionized ammonia (NH_3) and ionized ammonium (NH_4^+). Of these, NH_3 is the toxic form.

At a given water temperature, the proportion of ammonia (NH_3) and ammonium (NH_4^+) is strongly dependent on pH (see Figure 3). The Whangaehu River typically exhibits low pH conditions, with values of approximately 3 near the discharge point and increasing to around 6 at the river mouth before discharge to the Tasman Sea (J. M. Deely and D. S. Sheppard, 1996). Under these naturally acidic conditions, ammoniacal nitrogen is predominantly present in the less toxic ammonium (NH_4^+) form. Accordingly, as illustrated in Figure 3, the formation of toxic un-ionised ammonia (NH_3) at the discharge point is not expected, and throughout the river its proportion is anticipated to remain below approximately 1% of the total ammoniacal nitrogen concentration.

[4] Tanner, C.C.; Depree, C.V.; Sukias, J.P.S.; Wright-Stow, A. E.; Burger, D.F.; Goeller, B.C. (2022). Constructed Wetland Practitioners Guide: Design and Performance Estimates. DairyNZ/NIWA, Hamilton, New Zealand.

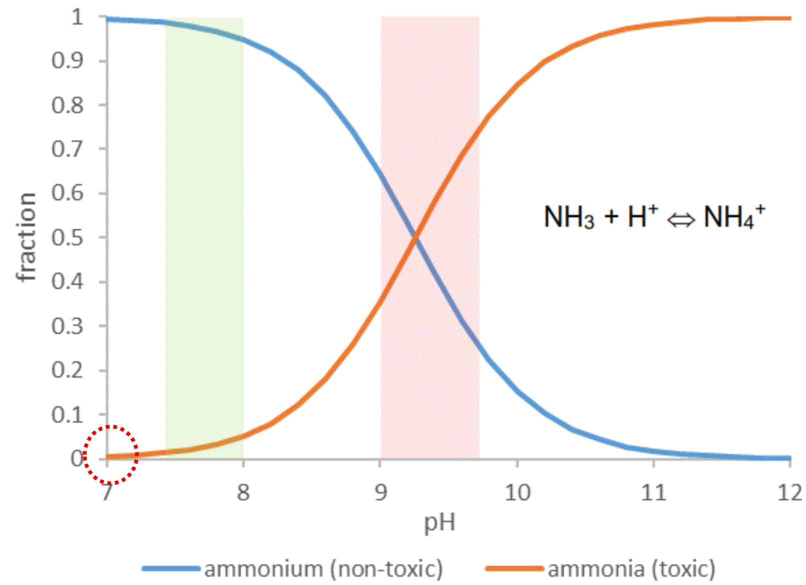

Figure 3. Fraction of ammonium and ammonia at different pH values[5] (Whangaehu pH range highlighted in dashed red circle).

Table 6 indicates that although the condensate discharge is likely to reduce chloride and sulphate concentrations relative to upstream conditions, median Downstream concentrations are typically lower than Upstream concentrations (See Table 4 Upstream results). This suggests that routine discharges from the WPI plant, generally contributed to dilution and attenuation of sulphate and chloride concentrations at Downstream location.

For metals, the modelled results show a decrease of concentrations with copper and lead remain stable in comparison to Downstream results.

Overall, modelled downstream water-quality concentrations are generally comparable to or lower than existing downstream conditions. Metal concentrations generally decrease downstream, with copper and lead remaining stable. Ammoniacal nitrogen shows only a marginal increase, while nitrate remains moderately elevated; however, as previously discussed, un-ionised ammonia (NH_3) is not expected to pose a risk of concern under the prevailing river pH conditions. In addition, both ammonium and nitrate concentrations are expected to be substantially reduced with the inclusion of the proposed wetland polishing. Chloride and sulphate concentrations are predicted to decrease with the proposed discharge,

[5] Niwa 2019. Seasonal and temporal variation in water quality in New Zealand rivers and lakes. Prepared for The Ministry for the Environment. February 2019.

notwithstanding the existing downstream attenuation relative to upstream conditions associated with previous WPI discharges.

Table 6. Comparison of condensate modelled results with River downstream results.

Parameters	Proposed Modelled Results Downstream - Condensate Discharge	Notified AEE – Measured at Downstream	% variation Condensate modelled X Measured
pH	2.8	2.9	-3%
Total Suspended Solids (TSS)	18	37	-51%
Ammoniacal N	0.088	0.086	2%
Nitrate	0.057	0.047	21%
Chloride	149.5	138.5	8%
Sulphate	328.9	310	6%
Cadmium	0.0008	0.00098	-18%
Chromium	0.033	0.034	-3%
Copper	0.028	0.028	0%
Lead	0.0067	0.0067	0%
Nickel	0.0186	0.0191	-3%
Zinc	0.069	0.09	-23%

Note: Concentrations in mg/L, except pH.

7.0 Conclusion

The proposed condensate discharge is expected to result in effects that are less than minor on the Whangaehu River, with several aspects of the proposal providing positive outcomes when compared to the former WPI discharge.

The overall discharge volume will be substantially reduced, with the proposed 750 m^3/day representing an 85 percent decrease from the historic flow of 5,200 m^3/day. This reduction alone meaningfully lowers the potential for adverse environmental effects, particularly given that the previous, significantly larger discharge did not generate measurable impacts on river hydrology, erosion, or morphology.

The high level of dilution in the river further mitigates potential adverse effects. At 7-day MALF conditions, the condensate will be diluted by approximately 266 times, resulting in only minimal changes to downstream concentrations. Where slight increases occur, such as for ammoniacal nitrogen, nitrate, lead, cadmium and zinc, these changes remain small and fall within the natural variability of the

Whangaehu River, an environment already characterised by naturally elevated metals, low pH, and fluctuating water quality due to volcanic inputs.

For many parameters, modelled downstream concentrations with the condensate discharge are comparable to, or lower than, existing downstream measurements and remain within the natural variability of the river.

The quality of the condensate shows no detected concentrations of hydrocarbons or mineral oils, with metal concentrations often below river background levels. The proposed wetland, although not relied upon for compliance modelling, will provide additional polishing with temperature reduction, and passive treatment which can achieve median efficiencies of 67% for ammoniacal nitrogen and 57% for nitrate according to literature review[6], further improving discharge quality prior to entering the river.

No adverse physical effects are anticipated; the small discharge volume relative to river flow will not affect hydrology, nor will it cause erosion, scouring, or changes to channel form. Ecological effects are expected to be negligible.

The river's upstream water quality is naturally outside the guidelines and already exceeds guideline values for many parameters due to its volcanic origin. Taking into account the high dilution, the comparatively low contaminant load, the reduced discharge volume relative to the historic activity, and the additional polishing provided by the wetland, the proposed activity will not measurably worsen water quality or ecological conditions. Instead, in several aspects, it represents an improvement over the previous consented discharge. For these reasons, the magnitude and duration of any potential adverse effects on the receiving environment are assessed as low, and the overall effects of the proposed condensate discharge are considered to be less than minor.

Appendix A

- Viridis & Mitchell Daysh (2025) – Whangaehu River Water Quality Data.

Appendix B

- Project Summary and Torrefaction Technical Memo (TecnLaboratory results of condensate discharge - Polytechnik facility Denmark.

[6] Babbage Consultants 2026. Concept wetland design for wastewater polishing – WPI. eTrack 200051008. 05 February 2026.

Appendix A

Background

Values below their respective detection limits have been assigned the value of half the detection limit, as is accepted practice. Where relevant, river water quality has been compared with consent limits. Raw data is available upon request.

In-situ Measurements

Table C1. Summary of in-situ water quality measured between 2020 and 2024.

Site	Temperature (°C)	pH (unitless)	SPC (µS/cm)	DO (g/m³)	DO (%)
US	14.1 (7.7-16.9)	2.5 (2.1-2.9)	2,913 (1,060-4,980)	9.3 (8-11.2)	90 (84-94)
DS	16.4 (15.1-18.3)	2.8 (2.2-3.2)	2,557 (730-4,520)	8.9 (7.9-9.5)	91 (84-95)

Notes: Data shown as a mean, with min-max range shown in brackets; DO = dissolved oxygen; SPC = specific conductance, which is equivalent to the conductivity at 25°C. Reproduced from Viridis (2025).

Monthly Monitoring Data

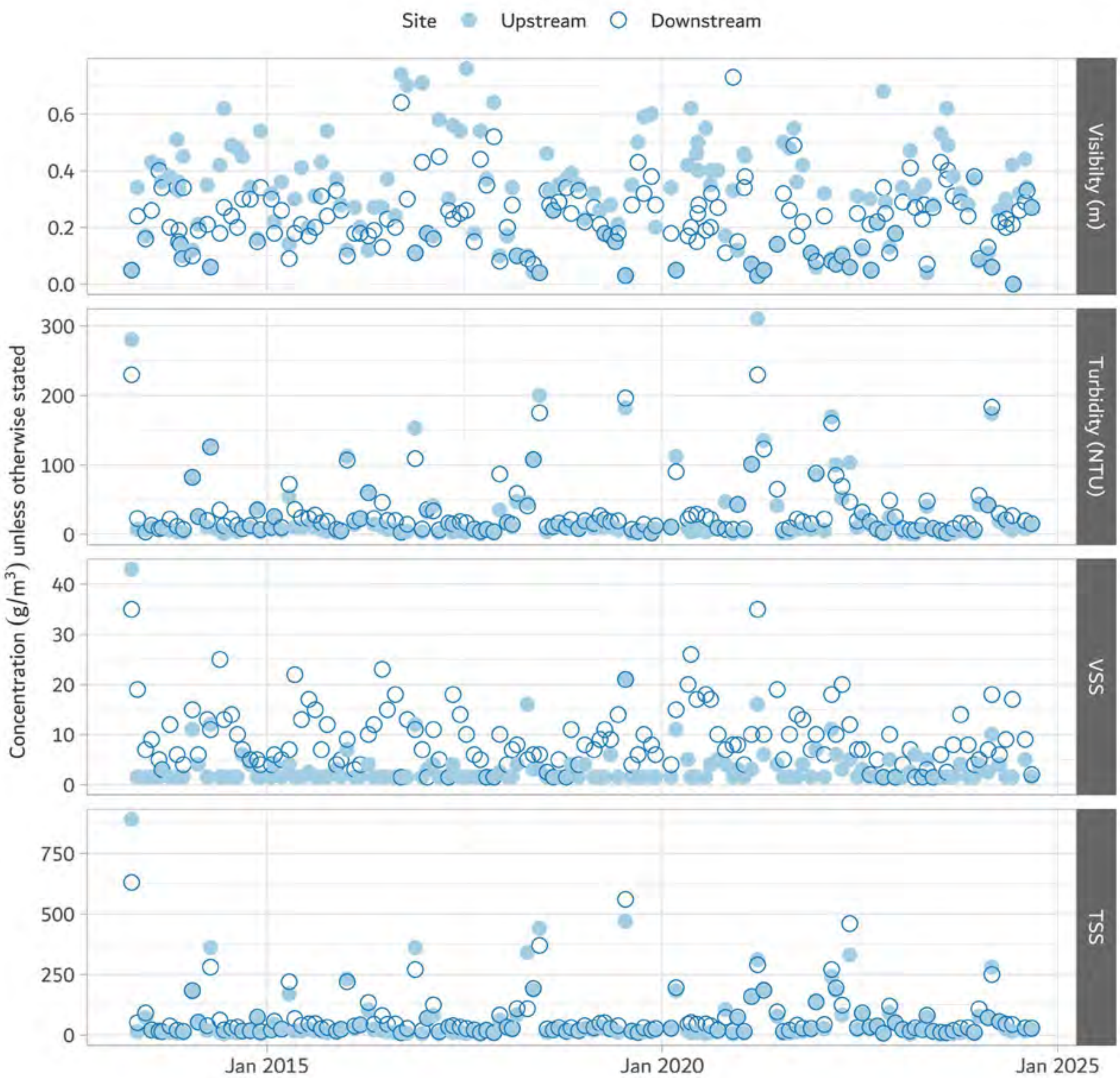

Figure C1. Whangaehu River clarity from April 2013 to September 2024.Note: graph excludes outlier measurements at both the upstream and downstream site on 12 May 2021.

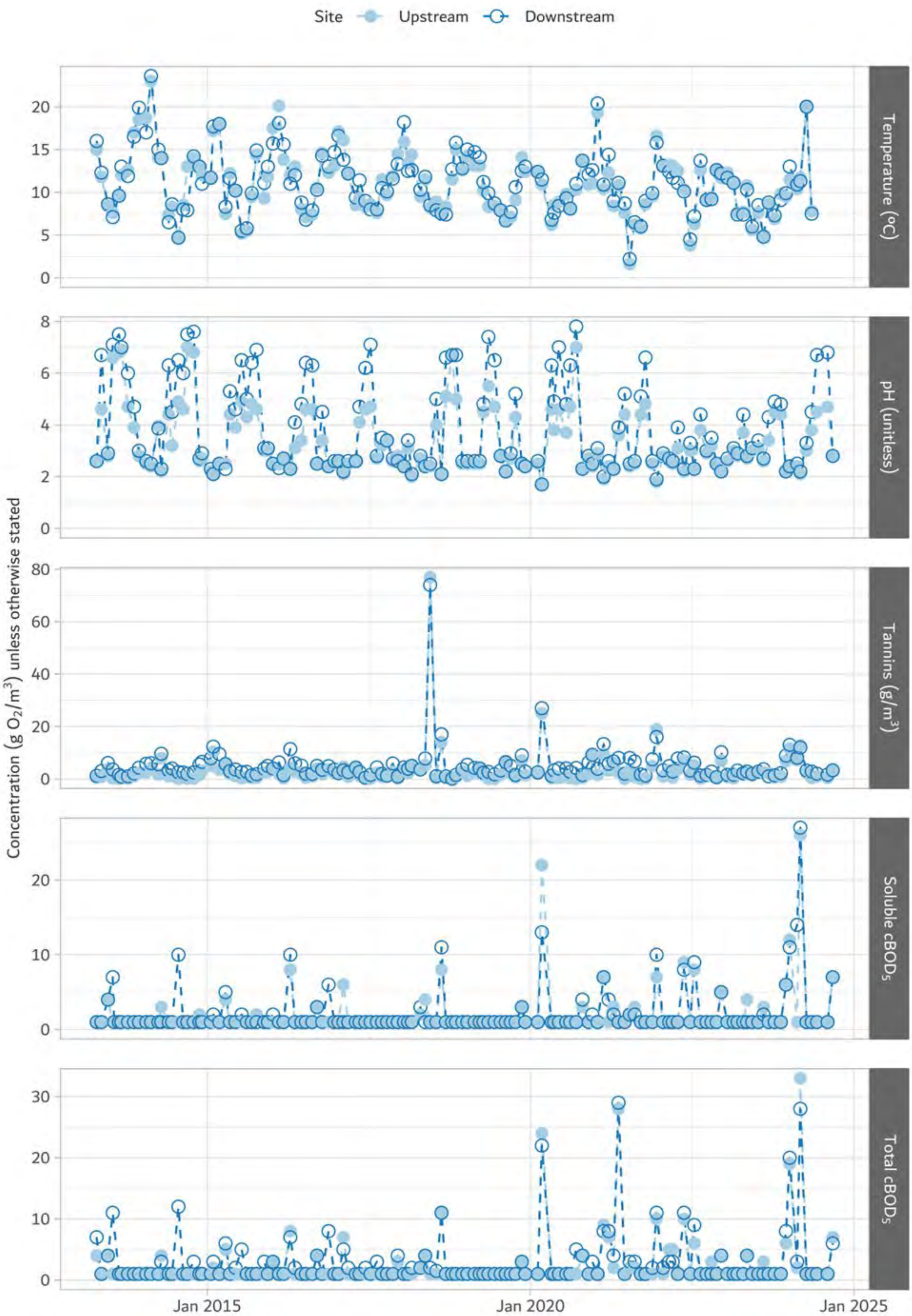

Figure C2. Whangaehu River water quality from April 2013 to September 2024.

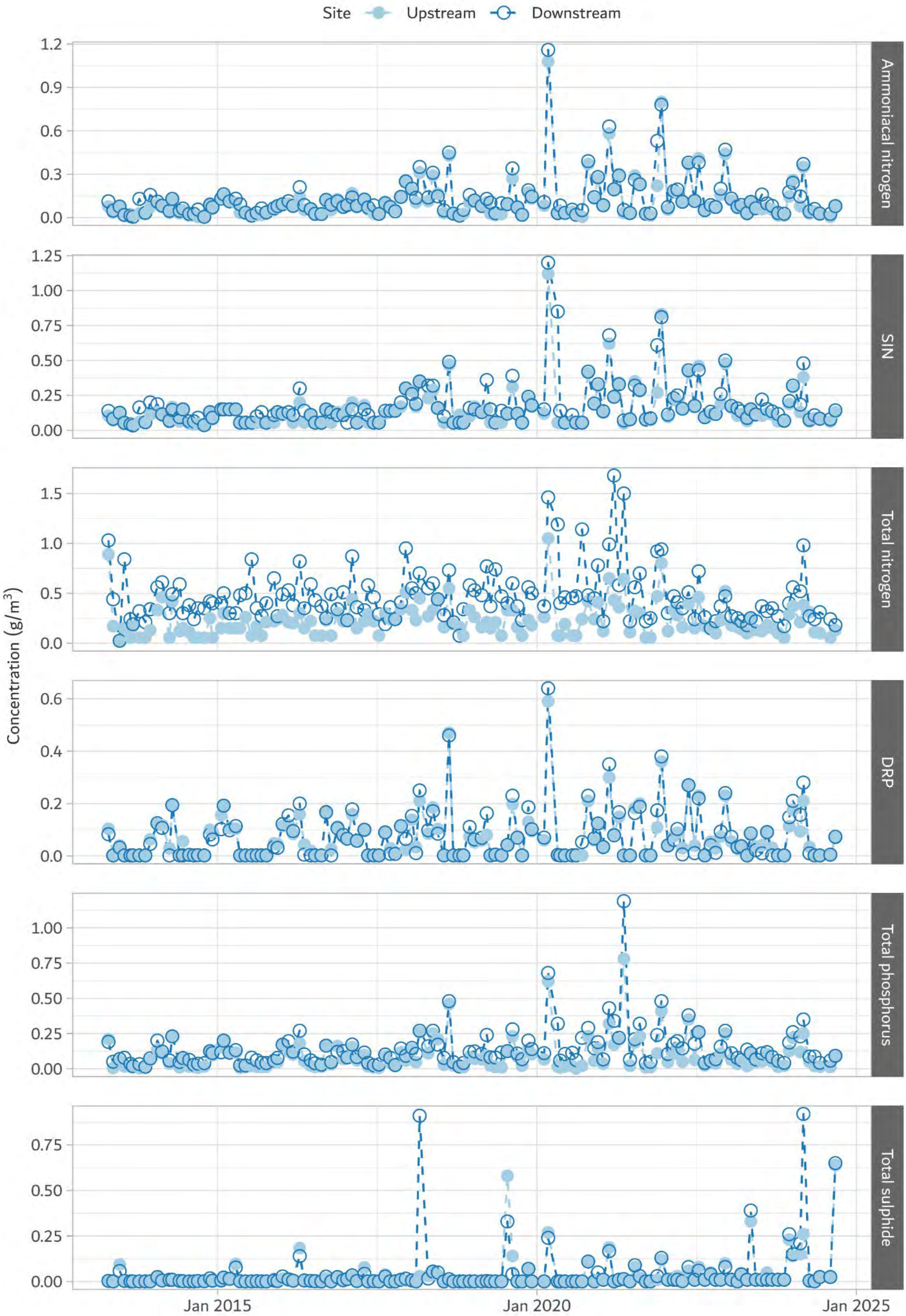

Figure C3. Whangaehu River nutrient concentrations from April 2013 to September 2024.

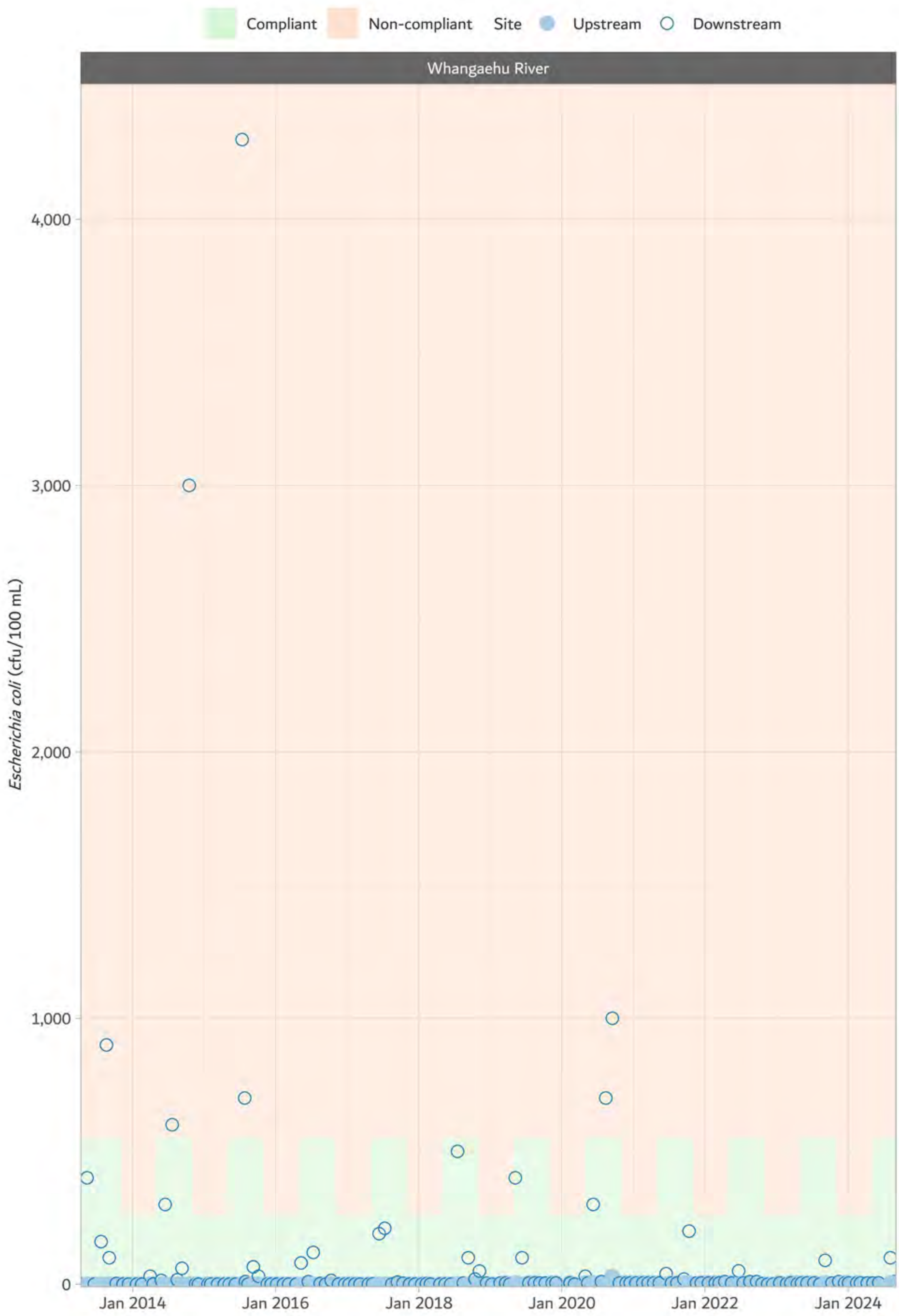

Figure C4. Whangaehu River E.coli concentrations from April 2013 to September 2024.

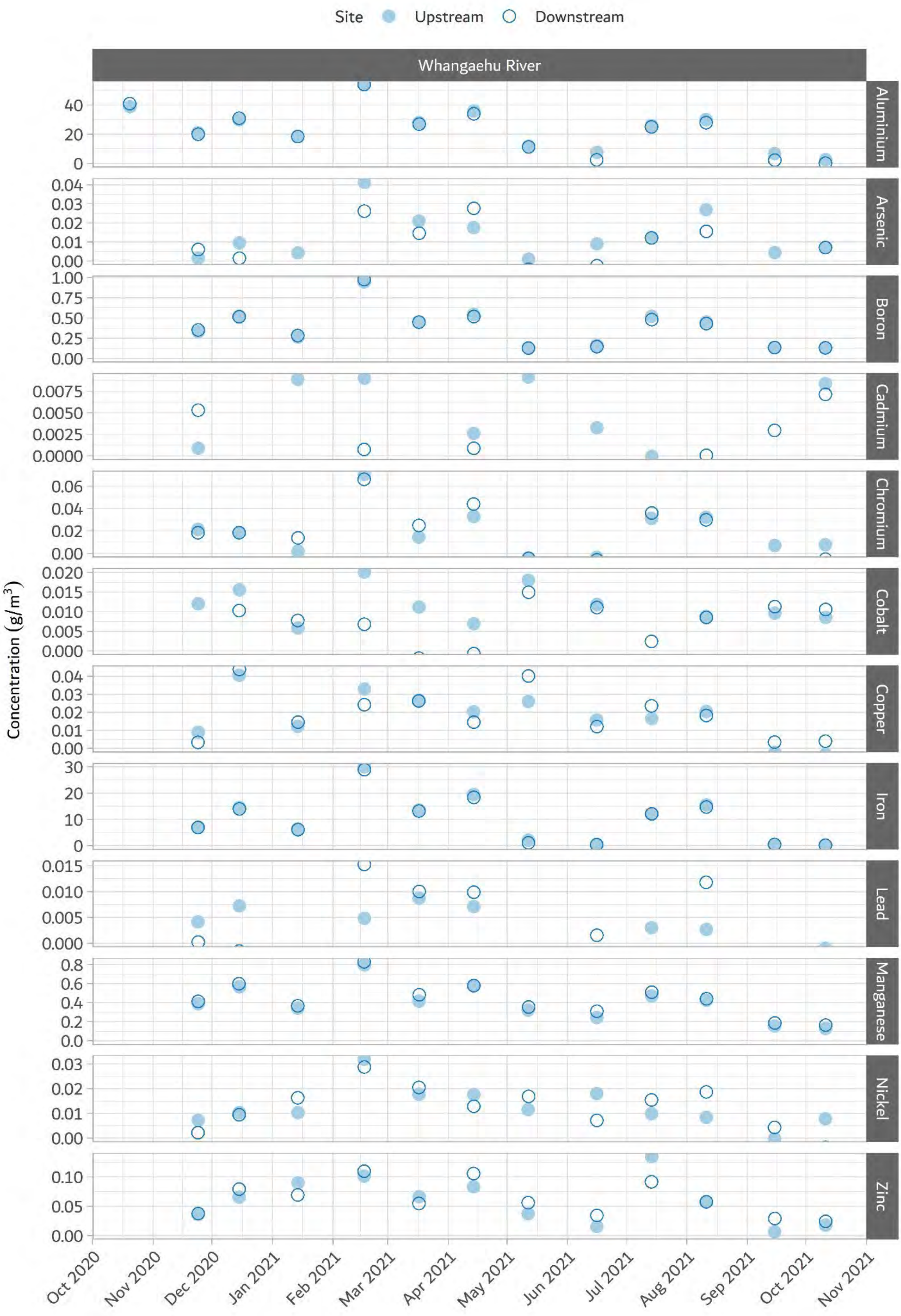

Figure C5. Whangaehu River dissolved metal and metalloid concentrations from October 2020 to October 2021.

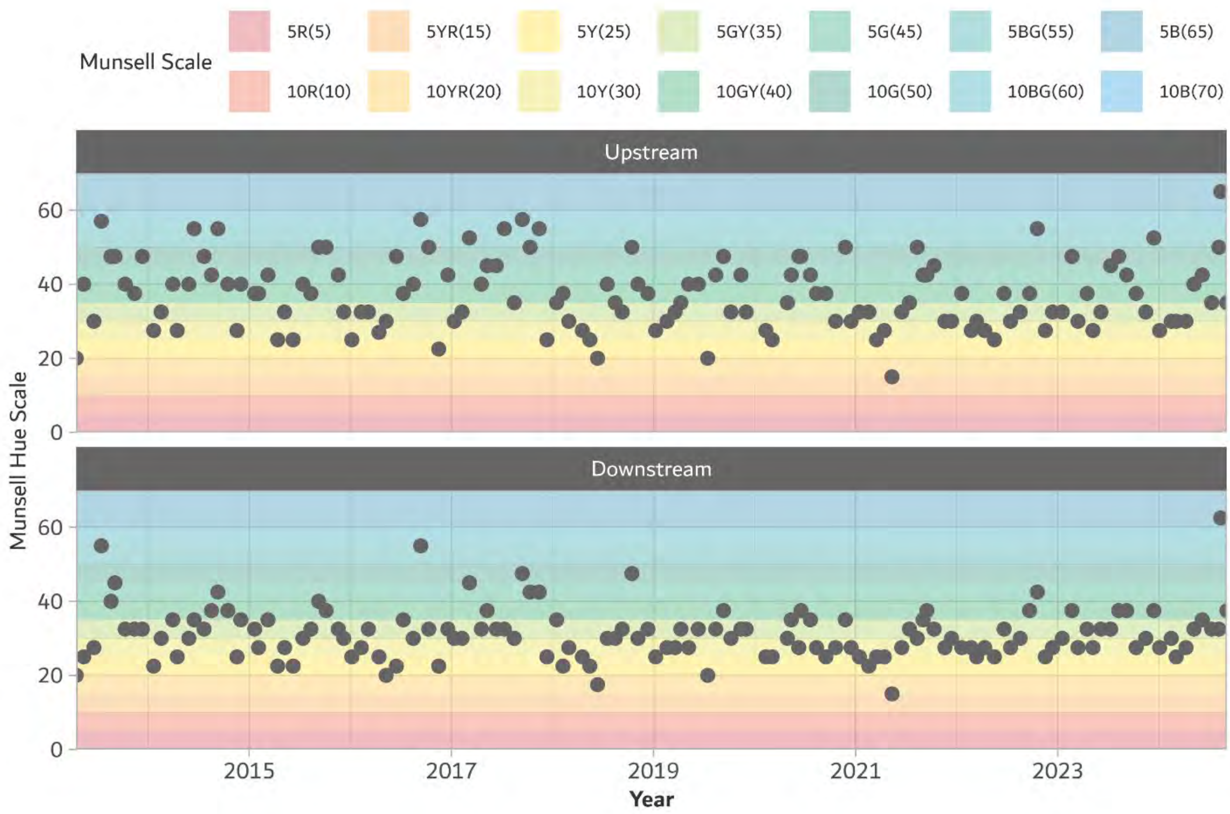

Figure C6. Whangaehu River colour upstream and downstream of the effluent discharge from April 2013 to September 2024.

Appendix B

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ANALYSERAPPORT

Hillerød Kraftvarme ApS
Solrødgårds Alle 6
3400 HIllerød
Att.: Henrik Bertelsen

Udskrevet:	13-03-2025
Version:	1
Modtaget:	26-02-2025
Analyseperiode:	26-02-2025 - 13-03-2025
Ordrenr.:	902387

Sagsnavn	Hillerød Kraftvarme aps
Lokalitet:	Hillerød Kraftvarme
Prøvested:	BKV, 3400 Hillerød
Udtaget:	25.02.2025 kl. 07:28 - 26.02.2025 kl. 07:28
Prøvetype:	Spildevand - Nitrifikationshæmning + Enkeltparametre + PAH'er i vand, 16 EPA stoffer +
Prøvetager:	LAB/SKN
Kunde:	Hillerød Kraftvarme ApS, Solrødgårds Alle 6, 3400 HIllerød, Att. Henrik Bertelsen

Prøvenr.: 316/25

Parameter		Resultat	Enhed	LD	LQ	Metode	Urel (%)
Prøvetagning, flow		Flow	-			DS/EN ISO 5667-10:2020	
Vandmængde		141.1	m3/d			Målt i felten	
Prøvevol. og delprøve krav opfyldt		Ja	-			DS/EN ISO 5667-10:2020	
Antal delprøver		72	-			DS/EN ISO 5667-10:2020	
Temperatur ved prøvetagning	#	46.5	°C			Målt i felten	
Nitrifikationshæmning, 200 ml/l		<10	%	10	30	DS/EN ISO 9509:2006 +Reflab metode 3:2004	30
Aktivt slam fra	#	Helsingør	-			-	
Suspenderede stoffer, aktivt slam suspension		24700	mg/l	1	3	DS/EN 872:2005, 1,6µm	15
Nitrifikationshastighed	#	3.05	N/g SS h			DS/EN ISO 9509:2006 +Reflab metode 3:2004	
pH		7.4	pH	0.1	0.3	DS/EN ISO 10523:2012	10
Ammonium+ammoniak-N		3.5	mg/l	0.003	0.009	DS/ISO 15923-1:2013+DS224:1975Mod	15
Nitrit+Nitrat-N		4.6	mg/l	0.005	0.015	DS/ISO 15923-1:2013	15
Chlorid, Cl-		9.3	mg/l	0.5	1.5	DS/ISO 15923-1:2013	15
Sulfat, SO4--		30	mg/l	0.5	1.5	DS/ISO 15923-1:2013	15
Suspenderede stoffer		3.2	mg/l	1	3	DS/EN 872:2005, 1,6µm	15
Mineralolie	*1	<1	mg/l	1		DS/R 209:2006	30
Bly, Pb		14	µg/l	0.30	3	DS 259:2003+DS/EN ISO 17294-2:2023	20
Cadmium, Cd		1.9	µg/l	0.050	0.15	DS 259:2003+DS/EN ISO 17294-2:2023	20
Chrom, Cr		12	µg/l	0.30	3	DS 259:2003+DS/EN ISO 17294-2:2023	20
Kobber, Cu		13	µg/l	0.30	3	DS 259:2003+DS/EN ISO 17294-2:2023	20
Kviksølv, Hg		0.054	µg/l	0.0050	0.015	DS 259:2003 + DS/EN ISO 17852:2008	20
Nikkel, Ni		3.9	µg/l	0.50	3	DS 259:2003+DS/EN ISO 17294-2:2023	20
Zink, Zn		450	µg/l	3	15	DS 259:2003+DS/EN ISO 17294-2:2023	20
PAH'er 16 komp.			-			SM 6440B, 2017	
Naphtalen		<0.010	µg/l	0.010	0.03	SM 6440B, 2017	30
Acenaphtylen		<0.010	µg/l	0.010	0.03	SM 6440B, 2017	30
Acenaphten		<0.010	µg/l	0.010	0.03	SM 6440B, 2017	30
Fluoren		<0.010	µg/l	0.010	0.03	SM 6440B, 2017	30
Phenanthren		<0.010	µg/l	0.010	0.03	SM 6440B, 2017	30
Anthracen		<0.010	µg/l	0.010	0.03	SM 6440B, 2017	30
Fluoranthen		<0.010	µg/l	0.010	0.03	SM 6440B, 2017	30
Pyren		<0.010	µg/l	0.010	0.03	SM 6440B, 2017	30
Benzo(a)anthracen		<0.010	µg/l	0.010	0.03	SM 6440B, 2017	30
Chrysen		<0.010	µg/l	0.010	0.03	SM 6440B, 2017	30
Benzo(b+j+k)fluoranthener		<0.010	µg/l	0.010	0.03	SM 6440B, 2017	30
Benz(a)pyren		<0.0050	µg/l	0.005	0.015	SM 6440B, 2017	30
Indeno(1,2,3-cd)pyren		<0.010	µg/l	0.010	0.03	SM 6440B, 2017	30
Dibenzo(a,h)anthracen		<0.010	µg/l	0.010	0.03	SM 6440B, 2017	30
Benzo(ghi)perylen		<0.010	µg/l	0.010	0.03	SM 6440B, 2017	30
Benz(e)pyren		<0.010	µg/l	0.010	0.03	SM 6440B, 2017	30
PAH, sum påviste (EPA - 16 komp.)	#	<0.010	µg/l	0.01	0.03	SM 6440B, 2017	30
PAH, sum (4 komp. jf. bek. 221, 2025)	#	<0.10	µg/l	0.1	0.3	SM 6440B, 2017	30
PAH, sum af påviste (6 komp. jf. bek. 811, 2024)	#	<0.010	µg/l	0.01	0.03	SM 6440B, 2017	30

Tegnforklaring,Resultat:
i.p.: Ikke påvist, -: analysen er ikke udført
i rapportenbetyder ikke akkrediteret

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ANALYSERAPPORT

Kommentar

Ingen kommentar

Underleverandør

*1 SGS Analytics Denmark A/S, DANAK Akk. nr. 401

May Stattau

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ANALYSERAPPORT

Hillerød Kraftvarme ApS
Solrødgårds Alle 6
3400 HIllerød
Att.: Henrik Bertelsen

Udskrevet:	03-03-2026
Version:	1
Modtaget:	12-02-2026
Analyseperiode:	12-02-2026 - 03-03-2026
Ordrenr.:	975516

Sagsnavn	Hillerød Kraftvarme aps
Lokalitet:	Hillerød Kraftvarme
Prøvested:	BKV, 3400 Hillerød
Udtaget:	11.02.2026 kl. 09:53 - 12.02.2026 kl. 09:53
Prøvetype:	Spildevand
Prøvetager:	LAB/SKN
Kunde:	Hillerød Kraftvarme ApS, Solrødgårds Alle 6, 3400 HIllerød, Att. Henrik Bertelsen

Prøvenr.:		996/26					
Parameter		**Resultat**	**Enhed**	**LD**	**LQ**	**Metode**	**Urel (%)**
Prøvetagning, flow		Flow	-			DS/EN ISO 5667-10:2020	
Vandmængde		128	m3/d			Målt i felten	
Prøvevol. og delprøve krav opfyldt		Ja	-			DS/EN ISO 5667-10:2020	
Antal delprøver		72	-			DS/EN ISO 5667-10:2020	
Temperatur ved prøvetagning	#	49.8	°C			Målt i felten	
Nitrifikationshæmning, 200 ml/l		<10	%	10	30	DS/EN ISO 9509:2006 +Reflab metode 3:2004	30
Aktivt slam fra	#	Sydkysten	-			-	
Suspenderede stoffer, aktivt slam suspension		20300	mg/l	1	3	DS/EN 872:2005, 1,6µm	15
Nitrifikationshastighed	#	2.3	N/g SS h			DS/EN ISO 9509:2006 +Reflab metode 3:2004	
pH		7.1	pH	0.1	0.3	DS/EN ISO 10523:2012	10
Ammonium+ammoniak-N		5.8	mg/l	0.003	0.009	DS/EN ISO 15923-1:2024+DS 224:1975,MOD	15
Nitrit+Nitrat-N		2.6	mg/l	0.005	0.015	DS/EN ISO 15923-1:2024	15
Chlorid, Cl-		31	mg/l	0.5	1.5	DS/EN ISO 15923-1:2024	15
Sulfat, SO4--		22	mg/l	0.5	1.5	DS/EN ISO 15923-1:2024	15
Suspenderede stoffer		3.2	mg/l	1	3	DS/EN 872:2005, 1,6µm	15
Mineralolie	*1	<1	mg/l	1		DS/R 209:2006	30
Bly, Pb		11	µg/l	0.30	3	DS 259:2003+DS/EN ISO 17294-2:2023	20
Cadmium, Cd		1.4	µg/l	0.050	0.15	DS 259:2003+DS/EN ISO 17294-2:2023	20
Chrom, Cr		9.1	µg/l	0.30	3	DS 259:2003+DS/EN ISO 17294-2:2023	20
Kobber, Cu		12	µg/l	0.30	3	DS 259:2003+DS/EN ISO 17294-2:2023	20
Kviksølv, Hg		0.057	µg/l	0.0050	0.015	DS 259:2003 + DS/EN ISO 17852:2008	20
Nikkel, Ni		1.5	µg/l	0.50	3	DS 259:2003+DS/EN ISO 17294-2:2023	20
Zink, Zn		290	µg/l	3	15	DS 259:2003+DS/EN ISO 17294-2:2023	20
PAH'er 16 komp. Spildevand			-			DS/ISO 28540:2011, modificeret	
Naphthalen		<0.010	µg/l	0.010	0.030	DS/ISO 28540:2011, modificeret	30
Acenaphthylen		<0.010	µg/l	0.010	0.030	DS/ISO 28540:2011, modificeret	30
Acenaphthen		<0.010	µg/l	0.010	0.030	DS/ISO 28540:2011, modificeret	30
Phenanthren		<0.010	µg/l	0.010	0.030	DS/ISO 28540:2011, modificeret	30
Antracen		<0.010	µg/l	0.010	0.030	DS/ISO 28540:2011, modificeret	30
Fluoren		<0.010	µg/l	0.010	0.015	DS/ISO 28540:2011, modificeret	30
Fluoranthen		<0.010	µg/l	0.010	0.030	DS/ISO 28540:2011, modificeret	30
Pyren		<0.010	µg/l	0.010	0.030	DS/ISO 28540:2011, modificeret	30
Benz(a)anthracen		<0.010	µg/l	0.010	0.030	DS/ISO 28540:2011, modificeret	30
Chrysen		<0.010	µg/l	0.010	0.030	DS/ISO 28540:2011, modificeret	30
Benzo(b+j)fluoranthen		<0.010	µg/l	0.010	0.030	DS/ISO 28540:2011, modificeret	30
Benz(k)fluoranthen		<0.010	µg/l	0.010	0.0150	DS/ISO 28540:2011, modificeret	30
Benz(a)pyren		<0.0050	µg/l	0.0050	0.0150	DS/ISO 28540:2011, modificeret	30
Indeno(1,2,3-cd)pyren		<0.010	µg/l	0.010	0.030	DS/ISO 28540:2011, modificeret	30
Dibenz(a,h)anthracen		<0.010	µg/l	0.010	0.030	DS/ISO 28540:2011, modificeret	30
Benz(ghi)perylen		<0.010	µg/l	0.010	0.030	DS/ISO 28540:2011, modificeret	30
PAH, sum påviste (EPA - 16 komp.)	#	<0.010	µg/l	0.010	0.050	DS/ISO 28540:2011, modificeret	30

Tegnforklaring,Resultat:
i.p.: Ikke påvist, -: analysen er ikke udført
i rapporten betyder ikke akkrediteret

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Ordrenr: 975516
Sagsnavn: Hillerød Kraftvarme aps

ANALYSERAPPORT

Prøvenr.: 996/26

Parameter		Resultat	Enhed	LD	LQ	Metode	Urel (%)
PAH, sum af påviste (4 komp. jf. bek. 1272, 2025)	#	<0.10	µg/l	0.10	0.50	DS/ISO 28540:2011, modificeret	30
PAH, sum af påviste (6 komp. jf. bek. 1275, 2025)	#	<0.10	µg/l	0.10	0.50	DS/ISO 28540:2011, modificeret	30

Kommentar

Ingen kommentar

Underleverandør

*1 SGS Analytics Denmark A/S, DANAK Akk. nr. 401

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Biljana M. Popovic

Biljana Micic Popovic

Tegnforklaring,Resultat:
i.p.: Ikke påvist, -: analysen er ikke udført
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Ordrenr: 941853
Sagsnavn: Hillerød Kraftvarme aps

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ANALYSERAPPORT

Hillerød Kraftvarme ApS
Solrødgårds Alle 6
3400 HIllerød
Att.: Henrik Bertelsen

Udskrevet: 01-12-2025
Version: 1
Modtaget: 12-11-2025
Analyseperiode: 12-11-2025 - 01-12-2025
Ordrenr.: 941853

Sagsnavn Hillerød Kraftvarme aps
Lokalitet: Hillerød Kraftvarme
Prøvested: BKV, 3400 Hillerød
Udtaget: 11.11.2025 kl. 09:30 - 12.11.2025 kl. 09:30
Prøvetype: Spildevand
Prøvetager: LAB/SKN
Kunde: Hillerød Kraftvarme ApS, Solrødgårds Alle 6, 3400 HIllerød, Att. Henrik Bertelsen

Prøvenr.: 175613/25

Parameter		Resultat	Enhed	LD	LQ	Metode	Urel (%)
Prøvetagning, flow		Flow	-			DS/EN ISO 5667-10:2020	
Vandmængde		112	m3/d			Målt i felten	
Prøvevol. og delprøve krav opfyldt		Ja	-			DS/EN ISO 5667-10:2020	
Antal delprøver		72	-			DS/EN ISO 5667-10:2020	
Temperatur ved prøvetagning	#	49.1	°C			Målt i felten	
Nitrifikationshæmning, 200 ml/l		<10	%	10	30	DS/EN ISO 9509:2006 +Reflab metode 3:2004	30
Aktivt slam fra	#	Sydkysten	-			-	
Suspenderede stoffer, aktivt slam suspension		19400	mg/l	1	3	DS/EN 872:2005, 1,6µm	15
Nitrifikationshastighed	#	3.3	N/g SS h			DS/EN ISO 9509:2006 +Reflab metode 3:2004	
pH		6.9	pH	0.1	0.3	DS/EN ISO 10523:2012	10
Ammonium+ammoniak-N		4.4	mg/l	0.003	0.009	DS/EN ISO 15923-1:2024+DS 224:1975,MOD	15
Nitrit+Nitrat-N		3.2	mg/l	0.005	0.015	DS/EN ISO 15923-1:2024	15
Chlorid, Cl-		5.6	mg/l	0.5	1.5	DS/EN ISO 15923-1:2024	15
Sulfat, SO4--		29	mg/l	0.5	1.5	DS/EN ISO 15923-1:2024	15
Suspenderede stoffer		3.7	mg/l	1	3	DS/EN 872:2005, 1,6µm	15
Mineralolie	*1	<1	mg/l	1		DS/R 209:2006	30
Bly, Pb		23	µg/l	0.30	3	DS 259:2003+DS/EN ISO 17294-2:2023	20
Cadmium, Cd		2.2	µg/l	0.050	0.15	DS 259:2003+DS/EN ISO 17294-2:2023	20
Chrom, Cr		32	µg/l	0.30	3	DS 259:2003+DS/EN ISO 17294-2:2023	20
Kobber, Cu		16	µg/l	0.30	3	DS 259:2003+DS/EN ISO 17294-2:2023	20
Kviksølv, Hg		0.072	µg/l	0.0050	0.015	DS 259:2003 + DS/EN ISO 17852:2008	20
Nikkel, Ni		0.87	µg/l	0.50	3	DS 259:2003+DS/EN ISO 17294-2:2023	20
Zink, Zn		510	µg/l	3	15	DS 259:2003+DS/EN ISO 17294-2:2023	20
PAH'er 16 komp. Spildevand			-			DS/ISO 28540:2011, modificeret	
Naphthalen		<0.010	µg/l	0.010	0.030	DS/ISO 28540:2011, modificeret	30
Acenaphthylen		<0.010	µg/l	0.010	0.030	DS/ISO 28540:2011, modificeret	30
Acenaphthen		<0.010	µg/l	0.010	0.030	DS/ISO 28540:2011, modificeret	30
Phenanthren		<0.010	µg/l	0.010	0.030	DS/ISO 28540:2011, modificeret	30
Antracen		<0.010	µg/l	0.010	0.030	DS/ISO 28540:2011, modificeret	30
Fluoren		<0.010	µg/l	0.010	0.015	DS/ISO 28540:2011, modificeret	30
Fluoranthen		<0.010	µg/l	0.010	0.030	DS/ISO 28540:2011, modificeret	30
Pyren		<0.010	µg/l	0.010	0.030	DS/ISO 28540:2011, modificeret	30
Benz(a)anthracen		<0.010	µg/l	0.010	0.030	DS/ISO 28540:2011, modificeret	30
Chrysen		<0.010	µg/l	0.010	0.030	DS/ISO 28540:2011, modificeret	30
Benzo(b+j)fluoranthen		<0.010	µg/l	0.010	0.030	DS/ISO 28540:2011, modificeret	30
Benz(k)fluoranthen		<0.010	µg/l	0.010	0.0150	DS/ISO 28540:2011, modificeret	30
Benz(a)pyren		<0.0050	µg/l	0.0050	0.0150	DS/ISO 28540:2011, modificeret	30
Indeno(1,2,3-cd)pyren		<0.010	µg/l	0.010	0.030	DS/ISO 28540:2011, modificeret	30
Dibenz(a,h)anthracen		<0.010	µg/l	0.010	0.030	DS/ISO 28540:2011, modificeret	30
Benz(ghi)perylen		<0.010	µg/l	0.010	0.030	DS/ISO 28540:2011, modificeret	30
PAH, sum påviste (EPA - 16 komp.)	#	<0.010	µg/l	0.010	0.050	DS/ISO 28540:2011, modificeret	30

Tegnforklaring,Resultat:
i.p.: Ikke påvist, -: analysen er ikke udført
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Ordrenr: 941853
Sagsnavn: Hillerød Kraftvarme aps

ANALYSERAPPORT

Prøvenr.: 175613/25

Parameter		Resultat	Enhed	LD	LQ	Metode	Urel (%)
PAH, sum af påviste (4 komp. jf. bek. 1272, 2025)	#	<0.10	µg/l	0.10	0.50	DS/ISO 28540:2011, modificeret	30
PAH, sum af påviste (6 komp. jf. bek. 1275, 2025)	#	<0.10	µg/l	0.10	0.50	DS/ISO 28540:2011, modificeret	30

Kommentar

Ingen kommentar

Underleverandør

*1 SGS Analytics Denmark A/S, DANAK Akk. nr. 401

May Stattau

May Stattau

Tegnforklaring,Resultat:
i.p.: Ikke påvist, -: analysen er ikke udført
i rapporten betyder ikke akkrediteret