MEMORANDUM

TO:	Sukhi Singh	Date:	20 April 2026
COPY TO:		Job No:	68095#ID1
FROM:	Paul Duder: Project Director - Babbage Consultants		

TE ARA HIKO – PROJECT SUMMARY AND TORREFACTION TECHNICAL MEMO

Our Torrefaction Project – Te Ara Hiko

The Te Ara Hiko Project proposes to utilise the strategic location of the WPI site and its existing infrastructure to produce torrefied solid biofuel from radiata pine. Torrefied biomass fuel can, in many cases, be used as a direct replacement for coal, thus supporting industries' move towards renewable energy.

This project is being undertaken in collaboration with the New Zealand Governments' Energy Efficiency and Conservation Authority (EECA) and aligns with New Zealand's objectives to reduce emissions from non-renewable energy sources.

Te Ara Hiko will produce 180,000tpa of solid biofuel, which will require in the order of 500,000tpa of radiata pine feedstock, which will be sourced from surrounding forests. This is approximately the same quantity of feedstock that was imported onto the site to supply the previous WPI pulp process.

The existing site has a log yard, debarking, chipping and storage facilities that were used in the previous pulp manufacture process, and which are directly usable for the new Torrefaction process. Likewise, the existing rail spur onto the site provides the ability to export torrefied biofuel by rail directly to the customer or port.

In addition to the utilisation of this existing infrastructure, the project will also require the construction of a new processing plant on the existing WPI site. The new production building will be constructed at the northern end of site, which is currently vacant of any significant building or infrastructure.

The existing pulp mill building (and the process within) is not required as part of the Te Ara Hiko project and, as such, will be left "as-is". Similarly, the existing wastewater treatment system, which was used to treat pulp wastewater, is not required for the new Torrefaction process and will be either left 'as-is' or strategically part demolished to create space if necessary.

The overall site layout is shown in **Appendix 1**.

Babbage Consultants Limited
Level 4, 68 Beach Road, Auckland 1010
PO Box 2027, Shortland Street,
Auckland 1140, New Zealand
T 09 379 9980 F 09 377 1170
E admin@babbage.co.nz www.babbage.co.nz

We understand this facility will be one of the first of its type in NZ. Internationally, there are numerous operational Torrefaction commercial facilities, including:

- Idemitsu - Vietnam

https://idemitsu.vn/idemitsu-group-in-vietnam/green-energy/

- TSI - USA

https://www.tsitorrefaction.com/news-1/blog-post-title-one-ekzpt/

- Nextfuel

https://nextfuel.com/

- Aymium

https://aymium.com/about/

- MUCC

https://www.mu-cc.com/en/corporate/business/energy.html

What is Torrefaction?

Torrefaction is a thermal treatment process applied to wood chips to improve their characteristics as a solid biofuel. Moisture and volatile compounds are evaporated from the wood chips by applying heat, resulting in a final product that has increased energy density, is low in moisture and exhibits other beneficial properties such as becoming hydrophobic and therefore more resistant to environmental moisture (i.e. rain and humidity).

Torrefaction involves wood chips being heated in a low-oxygen environment for around 20 minutes at a temperature of around 300 °C. After torrefaction, the torrefied wood chips are ground and densified into pellets to further improve their properties and efficiency of handling.

Torrefied biomass fuel can, in many cases, be used as a direct replacement for coal, thus supporting industries' move towards renewable energy.

***Figure 1**: Feed source- Radiata Pine wood chip*

***Figure 2**: Finished Product - Torrefied Pellets*

What is the Te Ara Hiko Torrefaction Process?

The specific end-to-end process for producing torrefied biofuel on the WPI site is as follows:

Phase 1: Log receival, Storage and Chipping – **Existing activities on WPI Site**

1. **Log Yard:** Pine logs are received from the surrounding forests and stored in the existing log yard
2. **De-barker:** Logs are taken from the log yard and fed through the de-barker system. Bark is removed from the log and stored for use as a fuel for the hot water heater on site.
3. **Chipping:** De-barked logs are then fed into the chipper, where the logs are chipped into approximately 25mm square wood chips.
4. **Screening:** Wood chips are then screened to remove any oversize chips before being conveyed to the main chip storage piles.
5. **Storage:** Wood chips are stored on the two existing main storage piles prior to being conveyed to the torrefaction process.

It's worth noting that all the prementioned steps currently exist on the WPI site as part of their current pulp manufacturing process and will be reused in the torrefaction process.

Phase 2: Torrefaction of wood chips – **New process on the site**

6. **Chip Dryer:** Wood chips from the storage piles are received via conveyor and then passed through a belt dryer, where hot air is used to evaporate the majority of the moisture from the wood chips.
7. **Torrefaction:** After drying, the chips are fed into the Torrefaction Reactor. This is where the actual Torrefaction transformation takes place. During torrefaction, further moisture and volatiles are removed from the wood chips.
8. **Cooling:** The torrefied wood chips exit the reactor at a temperature greater than 200 °C and thus must be cooled. Cooling is done by transferring the torrefied chips via a water-jacketed conveyor. Heat is taken from the chips by the cooling water, thus cooling them down.
9. **Densification:** Once cooled, the torrefied chips are ground and pelletised into a final biofuel product. This 'densifies' the torrefied product, increasing both its bulk density and physical robustness.

10. **Storage:** Finished product is then stored in a pile on site, awaiting export via rail. The finished product pile will be able to store up to around 5 days' worth of production and provide a buffer against short-term logistical interruptions.

The above steps replace the pulp manufacturing process currently on the WPI site, although it is worth noting that the chip drying does have similarities to the current sawdust drying process used by WPI.

Phase 3: Export of finished product – **Existing activities on WPI site**

11. **Export:** Finished product is loaded onto the rail for export to customers using the existing rail spur on site.

What are the main discharges generated from Torrefaction?

The main discharges from Torrefaction are:

a) Wastewater (condensate), which is proposed to be discharged to the river via a constructed wetland, and
b) Air emissions from the wood chip drier and heat plant

Air discharge emissions

- **Wood chip drying process**

Raw wood chips have a moisture content of around 55% and must be dried to around 5% before being torrefied.

This drying process is done by placing the wood chips onto a belt dryer and passing hot air over the chips to evaporate the moisture. The hot air is approximately 100degC upon entry to the belt dryer.

During the drying process, both water vapour and some volatile organic compounds (VOC's) are evaporated off the wood chips.

Although different in quantum and location on site, from a compositional perspective, the hot air-drying process is the same as that currently used by WPI to dry their sawdust for feeding into their current biomass boiler.

For commentary on air discharges from the Torrefaction process, refer to the technical memo from Air Matters Limited and the Planning Report.

- **Combustion flue gases discharge**

The full torrefaction process includes combustion of biomass (wood chips and bark) in a new hot water heater and combustion of biomass gas (Torr Gas) in the torr gas burner.

Combustion of wood and torr gas creates flue gas, which is discharged to the air via an exhaust stack.

Although different in quantum and location on site, the biomass combustion process and flue gas discharge are essentially the same as that currently used by WPI in their current biomass boiler.

For commentary on air discharges from the Torrefaction process, refer to the technical memo from Air Matters Limited and the Planning Report.

Wastewater discharge

Wastewater is formed when heat is recovered from the flue gas streams of both the Torr Gas burner and the biomass hot water heater by condensing the water vapour contained in the flue gas streams.

The resulting condensate is a wastewater stream which is discharged from the site.

Where and how is the wastewater generated?

Wastewater is created from two locations within the wider process. These are:

Source 1: Torrefaction flue gas condensate

The Torrefaction transformation takes place in the reactor. During this process, both free moisture and volatiles are evaporated from the wood chips through the application of heat.

The volatiles evaporated from the wood chips are known as “Torr Gas”. Torr Gas is combustible and, as such, is sent into a burner (called the “Torr Gas Burner”) where it is combusted to generate heat, which is then used in both the chip dryers and the reactor.

When Torr Gas (or any biofuel for that matter) is combusted, an amount of water vapour is created. In the case of the Torr Gas burner, water vapour is created from the combustion of hydrogen contained in the wood chip (i.e. 2H + O2 = 2H2O) AND the free moisture being evaporated off the chip directly.

This water vapour travels in the flue gas stream and contains useful heat energy. Therefore, a flue gas condenser is used to condense the water vapour from the flue gas stream, thus recovering its energy.

Condensing the water vapour changes it from a gas to a liquid stream, and it is this liquid condensate stream which is the first source of wastewater.

Source 2: 20MW Hot water boiler flue gas condensate

At times when the raw chip moisture is high and/or the ambient air temperature is low, there is a need for a supplementary heat source to provide the level of heat energy required for the drying and Torrefaction process. The additional heat required comes from a new 20MW biomass-fuelled hot water heater to be installed as part of the project. The fuel used is the bark and waste wood chips obtained from the logs when they are debarked, plus other raw waste wood streams not suitable for Torrefaction.

In exactly the same way as occurs when Torr Gas is combusted, wood burned in the hot water heater creates a flue gas stream that contains water vapour from both the combustion of hydrogen AND the water being evaporated off the bark/wood fuel.

There is useful heat energy to be recovered from the water vapour, and hence a condenser is again employed to recover the energy.

Condensing the water vapour changes it from a gas to a liquid stream, and it is this liquid condensate stream which is the second source of wastewater.

What are the wastewater characteristics?

The combustion processes in both the Torr Gas burner and the biomass hot water heater occur at around 950°C. At this temperature, organic compounds, phenols and the like are essentially fully destroyed.

Accordingly, the resulting wastewater condensed from the flue gas does not contain these groups of contaminant compounds.

Metal contaminants in the condensate arise from those same metal elements present naturally in the wood at micro levels. The wood (i.e. trees) naturally takes up these elements from the environment as they grow.

For a detailed compositional analysis of the condensate stream, please refer to the technical memo attached in **Appendix 2.**

How does Torrefaction wastewater compare to existing WPI wastewater?

Being condensate, the wastewater stream from the Torrefaction process is significantly ‘cleaner’ than the approved discharge from the pulp process. The colour of the condensate is visibly clear.

The volume of wastewater is also significantly reduced with the Torrefaction process, producing less than 750m^3/day compared to the current pulp process, which is consented to discharge 5,200m^3/day.

The temperature of the condensate off the plant is expected to be around 40-50 °C. After holding in the condensate tank and transferring and transiting through the wetland, it is expected that the condensate discharge temperature to the river will be below 25 °C.

Appendix 1 – Site Layout

Map Prepared

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WPI Site

DISCLAIMER: This map/plan is illustrative only and all information should be independently verified on site before taking any action. Whilst due care has been taken, Grip gives no warranty as to the accuracy and plan completeness of any information on this map/plan and accepts no liability for any error, omission or use of the information.

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February 11, 2026

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Appendix 2 – Assessment of Condensate Composition – Technical Memo

MEMORANDUM

TO:	Sukhi Singh	Date:	22 April 2026
COPY TO:		Job No:	[Keywords]
FROM:	Christian Jirkowsky – Director, Polytechnik Biomass Energy PTY Limited		

TE ARA HIKO – RESOURCE CONSENT APPLICATION TECHNICAL MEMO

COMBUSTION PRODUCTS AND CONDENSATE COMPOSITION

1. Introduction

Te Ara Hiko are proposing to construct and operate a 180,000 tpa torrefaction plant to convert wood chips into torrefied biomass pellets.

The wider torrefaction process incorporates both a biomass boiler and a TorrGas burner to generate heat to drive the torrefaction process.

Polytechnik are the proposed designers and technology providers for both the biomass boiler and TorrGas burner.

Polytechnik are an Austrian domiciled company with their subsidiary company Polytechnik Biomass Energy PTY Limited providing biomass combustion technology and solutions into the New Zealand market for the last 18 years.

2. Purpose of this memo.

This memo is written to support the application for a wastewater discharge consent and provide an assessment of the likely type and level of contaminants to be present in the condensate wastewater stream which is discharged from the process.

3. Two sources of biomass combustion

The wider torrefaction process has two separate biomass combustion sources which are:

- Biomass boiler (used to provide top up heat to the wood chip dryers), and
- TorrGas burner (use to provide primary heat to the torrefaction process)

The biomass boiler combusts a mix of approximately 70% wood chip and 30% bark.

The TorrGas burner combusts the gasses released during the torrefaction reaction which occurs when wood chips are heated to 300degC.

Combustion of both solid biomass fuel (as occurs in the biomass boiler) and TorrGas (as occurs in the TorrGas burner) occurs at around 950deg C.

Babbage Consultants Limited
Level 4, 68 Beach Road, Auckland 1010
PO Box 2027, Shortland Street,
Auckland 1140, New Zealand
T 09 379 9980 F 09 377 1170
E admin@babbage.co.nz www.babbage.co.nz

An excess level of oxygen is maintained to ensure complete combustion and both systems are designed to ensure a residence time of flue gas at >850degC for around 2 seconds.

4. Flue Gas Contaminants and Particulates

Flue gas contaminants come from two sources, namely:

1. Those elements and compounds that exist in the biomass fuel and which during the combustion process make their way into the flue gas stream, and
2. Those compounds which are created during the combustion process via thermos-chemical reactions and make their way into the flue gas stream.

The level of contaminants in the flue gas stream differs between the biomass boiler and the TorrGas burner. The reason for this is that the biomass boiler fully combusts the solid biomass fuel at 950degC and includes a particulate emission control system (ESP), whereas the TorrGas burner only combusts the volatile gas component released from the wood chips when they are heated to the much lower temperature of around 300degC. During torrefaction, essentially any elements or compounds with an evaporation temperature greater than 300degC will not be released into the flue gas stream and will remain within the torrefied wood chip.

It is therefore reasonable to conclude that the biomass flue gas will contain a greater quantity of particulates and contaminants than will the TorrGas flue gas.

Due to the design of the combustion process, the combustion temperatures being around 950C and the flue gas residence time being above 850degC for around 2sec, then almost all volatile organic compounds, phenols, and residual hydrocarbons are destroyed in the combustion process.

4.1 Biomass boiler condensate

We have used the analysis of condensate samples taken from a Polytechnik facility in Denmark. This plant was supplied by Polytechnik and includes the same technology, flue gas treatment and flue gas condenser systems as that proposed to be installed in Te Ara Hiko. With a capacity of 25.4MW it is also comparable in size to the 20MW unit proposed for Te Ara Hiko.

A summary analysis of the condensate composition is as follows:

Parameter	Result (Average)	Unit
Nitrifikationshastighed (Nitrification rate)	**2.9**	N/g SS h
pH	**7.1**	pH
Ammonium+ammoniak-N	**4.6**	mg/l
Nitrit+Nitrat-N	**3.5**	mg/l
Chlorid, Cl-	**15.3**	mg/l
Sulfat, SO4--	**27**	mg/l
Suspenderede stoffer (Suspended solids)	**3.4**	mg/l
Mineralolie	**<1**	mg/l
Bly, Pb	**16.0**	µg/l
Cadmium, Cd	**1.8**	µg/l
Chrom, Cr	**17.7**	µg/l
Kobber, Cu	**14**	µg/l
Kviksølv, Hg	**0.1**	µg/l
Nikkel, Ni	**2.1**	µg/l
Zink, Zn	**417**	µg/l

Full laboratory analysis of the condensate is given in **Appendix 1.**

4.2 TorrGas burner condensate

Given that the TorrGas flue gas is less contaminated than the biomass flue gas, a conservative assumption can be made to treat all flue gas as if it was biomass flue gas.

Thus, for the purposes of identifying the condensate contamination levels, we will assume all condensate comes from biomass flue gas.

APPENDIX 1 – Biomass Condensate Lab Analysis

Ordrenr: 902387
Sagsnavn: Hillerød Kraftvarme aps

ALS Denmark A/S
Bakkegårdsvej 406 A
DK-3050 Humlebæk
Telefon: +45 4925 0770
www.alsglobal.dk

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

ALS Denmark A/S
Bakkegårdsvej 406 A
DK-3050 Humlebæk
Telefon: +45 4925 0770
www.alsglobal.dk

ANALYSERAPPORT

Kommentar

Ingen kommentar

Underleverandør

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

May Stattau

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

Ordrenr: 941853
Sagsnavn: Hillerød Kraftvarme aps

ALS Denmark A/S
Bakkegårdsvej 406 A
DK-3050 Humlebæk
Telefon: +45 4925 0770
www.alsglobal.dk

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
i rapporten betyder ikke akkrediteret

Ordrenr: 941853
Sagsnavn: Hillerød Kraftvarme aps

ALS Denmark A/S
Bakkegårdsvej 406 A
DK-3050 Humlebæk
Telefon: +45 4925 0770
www.alsglobal.dk

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

ALS Denmark A/S
Bakkegårdsvej 406 A
DK-3050 Humlebæk
Telefon: +45 4925 0770
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Ordrenr: 975516
Sagsnavn: Hillerød Kraftvarme aps

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

Ordrenr: 975516
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ANALYSERAPPORT

Prøvenr.: 996/26

Parameter		Resultat	Enhed	LD	LQ	Metode	Urel (%)
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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

I tvivl om ægtheden?
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Verificeringkode:

Biljana M. Popovic

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