

**BEFORE THE MANAWATŪ-WHANGANUI REGIONAL COUNCIL
INDEPENDENT HEARING PANEL**

IN THE MATTER of the Resource Management Act 1991 ("RMA" or "the Act")

AND

IN THE MATTER of resource consent applications to **MANAWATŪ-WHANGANUI REGIONAL COUNCIL** by **WINSTONE PULP INTERNATIONAL LIMITED** to discharge up to 750m³/day of condensate wastewater, and land disturbance together with any ancillary diversion of water and discharge of sediment for the associated construction of a wetland (ATH-2010011593.03 and ATH-202609463.00).

**STATEMENT OF EVIDENCE OF PAUL DUDER
DATED 29 SEPTEMBER 2026**

1. SUMMARY OF EVIDENCE

- 1.1 Te Ara Hiko Ltd are proposing to construct and operate a Biocoal manufacturing facility on the WPI Pulp Mill Site producing 180,000tpa of Biocoal pellets to supply both domestic and export customers.
- 1.2 Biocoal is a renewable solid fuel product which will be manufactured from Radiata pine sourced from plantation forests surrounding the Site. Biocoal is used by customers as a replacement for fossil coal in industrial heat applications.
- 1.3 The Site presents significant advantages as a Biocoal manufacturing site with respect to its previous operations, its availability, its location and its existing infrastructure and assets.
- 1.4 Biocoal is manufactured using a 'Torrefaction' process whereby wood chips are heated in the absence of oxygen to remove both moisture and volatile organic compounds which increases the energy density of the product.

- 1.5 The volatile organic compounds released and captured as gas during the Torrefaction process, plus other waste biomass products such as bark, are combusted in a furnace to generate heat energy which is used to drive the Biocoal manufacturing process.
- 1.6 The combustion of biomass to create the required heat energy produces a flue gas which contains water vapour and recoverable heat energy. The heat energy is recovered by condensing the water vapour in the flue gas stream before it is discharged through the exhaust stack.
- 1.7 The condensed water vapour, known as condensate, becomes a wastewater stream that needs to be discharged, and which is the subject of this consent application.
- 1.8 The condensate characteristics used for our application come from laboratory test results of condensate samples from a Biomass combustion plant in Denmark supplied by our technology supplier, which uses the same combustion technology, flue gas treatment technology and condenser system as will be installed at Te Ara Hiko.
- 1.9 To mitigate manufacturing risk and accurately understand the resulting Biocoal properties, Te Ara Hiko have delivered 40 tonnes of freshly chipped Radiata pine (sourced from the central North Island) to the Andritz production test facility in Austria. These trials have been completed, and the results confirm Radiata pine as an extremely good biomass source for the manufacture of consistent and high-quality Biocoal.
- 1.10 We have requested a 20 year consent duration to provide the investment surety necessary to enable the Te Ara Hiko project.

2. **INTRODUCTION**

- 2.1 My name is Paul Duder. I am the Director of Duder Project Management Ltd.
- 2.2 I have been working with Te Ara Hiko and its founding shareholders since September 2024. Te Ara Hiko is a New Zealand company incorporated in April 2026 with the goal of developing a Biocoal manufacturing and supply chain in New Zealand capable of supplying both domestic and export markets. Specifically, my role is focused on developing and delivering the Biocoal manufacturing capital works.
- 2.3 This evidence has been prepared in respect of the resource consent applications by Winstone Pulp International Limited ("**WPI**" or "**the Applicant**") to consent the discharge of up to 750 m³/day of wastewater

associated with the proposed wood processing operations, in addition to consent for land disturbance together with any ancillary diversion of water and discharge of sediment associated with construction of the wetland ("**the Proposal**") at 1002 State Highway 49, Tangiwai ("**the Site**") under the Horizons Regional Council One Plan ("**One Plan**").

Qualifications and experience

- 2.4 I hold a New Zealand Certificate in Engineering (1991), a Bachelor of Engineering from Auckland University (1993) and a Post Graduate Diploma from Massey University (1995).
- 2.5 I have 30 years' experience in Project Management within the industrial manufacturing sector of New Zealand. I specialise in orchestrating the delivery of industrial manufacturing projects from concept to completion incorporating international suppliers and technologies.
- 2.6 Examples of my experience relevant to this project are:
 - (a) Leading the delivery of the Oceania Dairy Ltd major capital projects from 2013 to 2026, totalling over \$400m; and
 - (b) Leading the delivery of the Synlait Milk Ltd major capital projects from 2010 to 2020, totalling over \$500m.

Involvement in Te Ara Hiko project

- 2.7 I am the author of:
 - (a) Technical Memo 1 dated 20_April 2026 included in the notified resource consent application.
- 2.8 This evidence should be read alongside that memorandum.
- 2.9 I have read the following documentation:
 - (a) The resource consent application prepared by Suhki Singh of Babbage Consultants Limited dated 30 April 2026 and associated technical memorandums;¹

1 Technical Memorandums 1-8.

- (b) Council's section 92 request dated 18 May 2026, and Babbage Consultants Limited's response dated 11 June 2026 and associated attachments;²
- (c) The submissions filed on the application;
- (d) The Applicant's memorandum dated 8 September 2026; and
- (e) Council's s 42A reports ("**s 42A Report**") prepared by Ms Fiona Morton and Mr Kerry Pearce dated 22 September 2026 and attachments.

2.10 I have visited the Site multiple times since September 2024.

Purpose and scope of evidence

2.11 The purpose of my evidence is to provide an overview of the Te Ara Hiko Project and the Biocoal manufacturing process as it relates to the Site and the creation of a wastewater stream whose discharge is the subject of this consent application.

2.12 Specifically, my evidence will:

- (a) Provide an overview of the Te Ara Hiko Project (Section 3);
- (b) Provide an overview of the Biocoal manufacturing technology to be used on the Te Ara Hiko Project (Section 4);
- (c) Provide an overview of the Biocoal manufacturing process to be used on the Te Ara Hiko project (Section 5);
- (d) Provide an overview of where the wastewater stream originates from within the Biocoal manufacturing process (Section 6);
- (e) Comment on issues raised by submitters relevant to my area of expertise (Section 7); and
- (f) Comment on matters raised in the Council Officer's s 42A Report relevant to my area of expertise (Section 8).

Expert Witness Code of Conduct

2.13 I have read the Code of Conduct for Expert Witnesses, contained in the Environment Court's Practice Note (2023) and I agree to comply with it. I

² Attachments 1-7.

can confirm that the issues addressed in this statement are within my area of expertise and that in preparing my evidence I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed.

3. TE ARA HIKO PROJECT OVERVIEW

- 3.1 Te Ara Hiko Ltd propose to construct and operate a 180,000tpa Biocoal manufacturing facility on the Winstone Pulp Mill site at Tangiwai, consuming around 500,000tpa of Radiata pine pulp logs and biomass residues.
- 3.2 Biocoal is a renewable solid fuel product manufactured from biomass. In the case of the Te Ara Hiko project, this Biomass will come from Radiata pine sourced from surrounding Radiata pine plantation forests.
- 3.3 Biocoal is produced in pellet form and in many cases can be used as a direct replacement for fossil coal currently used in industrial heat applications such as power generation and manufacturing.
- 3.4 The Biocoal produced by Te Ara Hiko will abate around 400,000t of CO₂ per annum when used as a fossil coal replacement.
- 3.5 Te Ara Hiko proposes to establish a Biocoal manufacturing facility on the Site as it already has significant existing benefits which support a Biocoal manufacturing facility. This includes:
 - (a) Surrounding Radiata pine plantation forests;
 - (b) An existing log yard for the receival and storage of logs;
 - (c) Existing log de-barking and chipping facilities required to make the wood chips of appropriate size and consistency;
 - (d) Existing hog fuel³ and chip receival facilities to import both hog fuel and chip from third party sawmills and other wood processing facilities;
 - (e) Availability of electricity via the adjacent Transpower sub-station;
 - (f) Onsite rail siding which allows for the export of Biocoal via either truck or rail to domestic customers or to port for international export; and
 - (g) Existing offices, amenities and maintenance facilities.

³ 'Hog fuel' is the bark removed from the log in the de-barker plus other low grade forest biomass which is not suitable for production into Biocoal.

4. **BIOCOAL MANUFACTURING TECHNOLOGY**

4.1 Te Ara Hiko will utilise key technologies from Austrian companies Andritz and Polytechnik in the manufacture of Biocoal:

- (a) Andritz have the torrefaction and densification technologies required to process the raw wood chips into an energy dense Biocoal product; and
- (b) Polytechnik have the combustion technology required to combust the torrefaction off-gas and hog fuel to create the heat energy necessary to drive the Biocoal manufacturing process.

4.2 I note that the specific manufacturing parameters and the final properties of the Biocoal produced are very dependent upon the specific type of biomass being consumed. To mitigate manufacturing risk and accurately understand the resulting Biocoal properties, Te Ara Hiko have delivered 40 tonnes of freshly chipped radiata pine (sourced from the central North Island) to the Andritz production test facility in Austria. These trials have been completed and the results from those trials confirm Radiata pine as an extremely good biomass source for the manufacture of consistent and high-quality Biocoal. These results have been used to inform our detailed plant design.

5. **BIOCOAL MANUFACTURING PROCESS**

5.1 Biocoal will be manufactured using the following four primary steps:

- (a) De-barking and chipping;
- (b) Wood chip Drying;
- (c) Wood chip Torrefaction; and
- (d) Densification into pellets.

Debarking and Chipping

5.2 Logs from the log yard are fed into the de-barker where residual bark is removed from the outside of the log. The de-barked log is then chipped into wood chips, screened for size and placed onto storage piles.

Wood chip Drying

5.3 Wood chips from the storage piles contain around 55% moisture and need to be dried before further processing. Drying is achieved by passing hot air over the wood chips which evaporates off the majority of the free moisture.

Wood chip Torrefaction

- 5.4 Dried wood chips are then subjected to a process known as 'Torrefaction'. Torrefaction occurs in a Torrefaction reactor and involves heating the wood chips in a low oxygen environment to around 280-300 degrees Celsius. This evaporates off further residual moisture plus volatile organic compounds. Together the gas stream containing evaporated moisture and volatile compounds is known as 'Torr gas'.

Densification into pellets

- 5.5 Torrefied wood chips are then converted into pellets which make the final Biocoal product more robust to handle and transport, plus increases the overall bulk density which makes it more economic to transport (i.e. increases how many tonnes of Biocoal can fit into a rail car or ship).

6. ENERGY RECOVERY AND WASTEWATER

- 6.1 The Torr gas from the Torrefaction reactor is combustible and is immediately combusted in a furnace to generate heat energy. This heat energy is used to both dry the incoming wood chips and heat the Torrefaction reactor.
- 6.2 The amount of heat generated from combusting the Torr gas is insufficient to provide the full heat requirements of the process and therefore hog fuel is also combusted in the furnace to provide additional heat energy.
- 6.3 The combustion of the hog fuel and Torr gas in the furnace produces a flue gas stream which is discharged to atmosphere via an exhaust stack (or chimney). The flue gas stream contains a significant amount of energy within its water vapour component which is recoverable, and doing so reduces the amount of hog fuel required and the overall operational cost of the facility.
- 6.4 The energy is recovered by cooling the flue gas stream to condense out the water vapour before the flue gas is discharged to atmosphere. Condensing the water vapour recovers its energy with the condensed water vapour now being a 'condensate', which is a wastewater stream to be discharged and is the subject of this consent application.
- 6.5 Given the Te Ara Hiko facility has yet to be constructed we cannot take a sample of the actual condensate that will be produced and test its composition. Therefore, we have relied upon laboratory analysis of condensate samples taken from a commercial Polytechnik biomass combustion plant operating in Hillerod, Denmark.

- 6.6 The Denmark plant has been operating since April 2016 and was designed and installed by Polytechnik. The capacity of the Denmark plant is 12MW which aligns well with the 10MW capacity of the Te Ara Hiko units. The Denmark plant has the same combustion design parameters and flue gas treatment system, incorporating an electrostatic precipitator (ESP) and flue gas condenser, from the same suppliers as will be installed at Te Ara Hiko.
- 6.7 The fuel used in the Denmark plant is a blend of wood chips, bark and sawdust with a moisture content of up to 60%. This fuel aligns well with the fuel that will be combusted at Te Ara Hiko.
- 6.8 We are therefore confident that the condensate analysis taken from the Denmark plant and used in our application as the basis of assessment is appropriate and representative of the condensate that will be generated from the Te Ara Hiko plant.

7. ISSUES RAISED BY SUBMITTERS

Pukeatua Farming

- 7.1 Mr Andrew Sherratt of Pukeatua Farming raised four points for consideration (via phone consultation with myself) regarding the application and his previous experience with WPI, which were:
- (a) Any constructed wetland should be lined to avoid leaching of condensate into the ground;
 - (b) Where is the ash from the furnace being disposed of;
 - (c) The previous WPI operations generated noise from:
 - (i) Reversing beepers on the loaders used in the log yard; and
 - (ii) The de-barking and chipping operations,
 - (d) The consent for the MyNoke worm farm was poorly granted by council and the operation produced leachate runoff that entered Mr Sherratt's wetland.
- 7.2 I address these points as follows:
- (a) Our proposed draft conditions of consent includes the requirement for the wetland to be lined with an impermeable layer.

- (b) Wood ash has beneficial properties as a fertiliser additive, and we have had discussions to deliver the ash to MyNoke at their Taupo site. Discussions are ongoing and a formal contractual agreement for the supply of ash to MyNoke has not yet been entered into.
- (c) Although not related to our discharge consent application, we will ensure that loaders used in the log yard have broadband directional alarms as opposed to the basic tonal beepers, which were likely previously used.
- (d) The previous operation of a worm farm by MyNoke on a property not connected in anyway with WPI is outside the scope of this application hence I make no further comment on this matter.

Ngati Rangi

7.3 Ngati Rangi raised the following points in their written submission for consideration:

- (a) That the condensate be discharged via a wetland and at a volume no greater than that stipulated in the Consent;
- (b) That the wetland should either be relocated to another site or sealed with a PVC or clay liner;
- (c) There should be monitoring of contaminants upstream and downstream of the discharge site;
- (d) Monitoring should be done in conjunction with Ngati Rangi;
- (e) Discharge monitoring systems must be put in place to measure flow volumes, automatic cleaning and there should be regular checking of discharge pipe to ensure not leaks; and,
- (f) The selection of plants for any wetland should be done in conjunction with Ngati Rangi.

7.4 I address these points as follows:

- (a) A wetland has been included as part of the discharge system and the volume being discharged will not exceed the volume limit stipulated in the consent;
 - (i) As a further note, the full 750m³/day wetland system will be constructed in two stages to better match the volume of

condensate being discharged. Stage 1 will accommodate the first 200m³/day of condensate. Stage 2 will be constructed for flows exceeding 200m³/day.

- (b) The wetland design and construction will incorporate an impermeable layer under the water flow path;
- (c) The proposed consent conditions contain requirements for sampling and testing of the river upstream and downstream of the discharge location;
- (d) The proposed consent conditions set out a framework for Ngati Rangī to be involved in the monitoring regime;
- (e) A flow meter will be installed to continuously measure discharge flow volumes to the wetland and the discharge pipe will be inspected as part of normal maintenance operations; and
- (f) The proposed consent conditions contain requirements for the planting plan to be developed in conjunction with Ngati Rangī.

Health New Zealand

7.5 Health New Zealand raised the following points in their written submission:

- (a) The biomass being used processed or combusted onsite should be limited to virgin forest material and the consumption of treated timber, demolition timber, recycled wood and mill waste of unknown origin should be prohibited;
- (b) Routine monitoring of condensate quality should be undertaken;
- (c) Ongoing inspection, maintenance and performance of the wetland; and
- (d) Recommends that an air quality assessment be undertaken.

7.6 In response:

- (a) A condition of consent has been agreed to limit the biomass being processed or combusted on site to virgin forest material. For clarification such a condition will permit the processing and use of saw dust, hog fuel and chip originating from third party sawmills and other wood processing facilities where it is known that such biomass itself originates from virgin forest material;

- (b) The proposed consent conditions contain requirements for sampling and testing of the wastewater;
- (c) The wetland will be inspected and maintained as part of normal maintenance operations; and
- (d) Although not related to this condensate discharge application a separate air discharge consent application including dispersion modelling and identification of sensitive receivers will be lodged with Council in due course.

8. **ISSUES RAISED IN THE COUNCIL OFFICER'S REPORT**

Units of discharge limits

- 8.1 The 42A Report proposes within the proposed consent conditions that the wastewater contaminant levels be set as a concentration in mg/l.
- 8.2 It is requested that the wastewater discharge limits for contaminants be stipulated in kg/day. This aligns with the units used in the current WPI discharge consent.
- 8.3 Units of kg/day are the appropriate units for the setting of limits because:
 - (a) The high level of consistency of the Radiata Pine fuel source, which is the source of the discharge contaminants, is expected to result in very stable condensate concentrations without significantly peaking values;
 - (b) The discharge flow rate will be very constant across the entire 24hr period of each day as it originates directly off the continuous 24/7 operation of the plant;
 - (c) The condensate contaminant levels used in the assessment are average values taken from actual laboratory test analysis. No 'contingency' allowances have been added to the laboratory test results, and it is expected that the actual condensate contaminant levels will fluctuate relatively tightly around the average contaminant levels used; and
 - (d) The discharge flow rate of 750m³/day used in the assessment contains the contingency allowance necessary to ensure that the consent holder can reliably and consistently operate within the consent limits measured in kg/day.

Consent duration

- 8.4 Ms Morton does not consider the 10-year lapse period and the 20-year consent term to be appropriate for the discharge permit consent conditions.
- 8.5 A consent term of 20 years is requested because:
- (a) The Te Ara Hiko Biocoal facility requires significant levels of investment funding to bring it to life. Without investment funding, the proposed Biocoal facility will not be established and therefore none of the positive benefits with respect to employment, support to the local economy or support for New Zealand's move away from fossil coal use will be realised.
 - (b) A key factor in attracting funding is to reduce investment risk.
 - (c) From a financial model perspective, the Te Ara Hiko Biocoal business is modelled on a 20 year lifespan. Investors become concerned when a business model is not supported by the necessary operational consents required to enable operation for the lifespan of the model. A consent duration of less than 20 years will be deemed by many potential investors as an unacceptable risk resulting in non-investment.
 - (d) A consent duration of 20 years best supports attracting the investment necessary to enable the Te Ara Hiko Biocoal plant to become operational.
- 8.6 A lapse period of 10 years is requested to ensure sufficient time to obtain the necessary financial investment ahead of constructing and commissioning the plant. Constructing the plant is expected to take 3 to 4 years and under a 5 year lapse period, this would leave insufficient time to secure the necessary financial investment.

Paul Duder
29 September 2026