



RAINBOW MOUNTAIN RENEWABLE
ENERGY LTD

**ANAEROBIC-THERMAL-
REDUCTION PYROLYSIS TRIALS**

Resource Consent Application and
Assessment of Environmental Effects

9 February 2022

TABLE OF CONTENTS

Part A: Resource Consent Application

Part B: Assessment of Environmental Effects

1.	Introduction	1
1.1	Overview of Proposal	1
1.2	Applicant	2
1.3	Report Structure	2
2.	Existing Environment	4
2.1	Environmental Setting	4
2.2	Zoning and Land Ownership	5
2.3	Transport Environment	6
2.4	Contaminated Land	6
2.5	Cultural Values	6
2.6	Existing Consents	6
3.	Proposal Description	7
3.1	Overview	7
3.2	Stormwater Management	12
4.	Resource Consent Requirements	13
4.1	District Plan Requirements	13
4.2	Regional Plan Requirements	13
4.3	Summary	14
4.4	Permitted Activities	14
5.	Consultation	17
5.1	Iwi	17
5.2	Other	17
6.	Assessment of Effects	18
6.1	Introduction	18
6.2	Positive Effects	18
6.3	Air Quality Effects	18
6.4	Effects on the Transport Environment	19
6.5	Landscape and Visual Effects	20
6.6	Cultural Values	20
6.7	Summary	20
7.	Statutory Assessment	21
7.1	Introduction	21
7.2	Section 104	21
7.3	Actual and Potential Effects	22
7.4	Relevant Statutory Planning Documents	22
7.5	Part 2 of the Resource Management Act 1991	25
8.	Notification Assessment	26



8.1	Section 95A	26
8.2	Section 95B Limited Notification	26
8.3	Assessment of Effects on Persons (S95E)	26
8.4	Notification Conclusion	26
9.	Concluding Statement	27

LIST OF FIGURES

Figure 1:	Aerial view of the site.	4
Figure 2:	Rural properties in relation to proposed ATR plant on the site.	5
Figure 3:	Proposed site layout. The trials will be associated with the ATR plant number 7) and ASR stockpiles (number 5).	8
Figure 4:	Simplified layout / image of an ATR plant.	9

LIST OF TABLES

Table 1:	District Plan resource consent requirement.	13
Table 2:	RWLP resource consent requirements.	14
Table 3:	Permitted activities under the District Plan associated with the trials.	14

LIST OF APPENDICES

Appendix A:	Certificates of Title
Appendix B:	Air Quality Assessment
Appendix C:	Whaoa Runanga Trust Letter





PART A

Resource Consent Application

FORM 9

APPLICATION FOR RESOURCE CONSENT

Sections 88 and 145, Resource Management Act 1991

To Rotorua Lakes District Council
1061 Haupapa Street
Rotorua 3010

1. **Rainbow Mountain Renewable Energy Ltd apply for the following type(s) of resource consent:**

A land use consent to authorise resource recovery and recycling activities associated with the anaerobic-thermal-reduction (“**ATR**”) pyrolysis trials at the site. The Rotorua District Plan requires that recycling facilities within the Industrial 1 zone obtain resource consent.

2. **The activity to which the application relates (the proposed activity) is as follows:**

The proposed activity is to undertake resource recovery and recycling activities associated with ATR pyrolysis trials in order to test variables and record results to confirm the process discharges.

3. **The site at which the proposed activity is to occur is as follows:**

The site is located at 216 State Highway 38, Waimangu, legally described as Fee Simple, 1/1, Section 1-2 Survey Office Plan 61678 and Lot 1 Deposited Plan South Auckland 91029.

4. **The full name and address of each owner or occupier (other than the applicant) of the site to which the application relates are as follows:**

The site is owned by the applicant under the name Robof 2 Limited.

5. **The other activities that are part of the proposal to which the application relates are as follows:**

Other aspects of the proposal which are permitted under the relevant statutory planning documents are described in the attached Assessment of Environmental Effects.

6. **The following additional resource consents are needed for the proposal to which this application relates and is applied for;**

Discharge to air consent from the Bay of Plenty Regional Council.

7. **I attach an assessment of the proposed activity's effect on the environment that—**
 - (a) includes the information required by Clause 6 of Schedule 4 of the Resource Management Act 1991;
 - (b) addresses the matters specified in Clause 7 of Schedule 4 of the Resource Management Act 1991; and
 - (c) includes such detail as corresponds with the scale and significance of the effects that the activity may have on the environment.
8. **I attach an assessment of the proposed activity against the matters set out in Part 2 of the Resource Management Act 1991.**
9. **I attach an assessment of the proposed activity against any relevant provisions of a document referred to in section 104(1)(b) of the Resource Management Act 1991, including the information required by clause 2(2) of Schedule 4 of that Act.**
10. **No other information is required to be included in this resource consent application by the Rotorua Lakes District Council.**

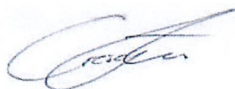
Assessment of Environmental Effects

Appendix A: Certificate of Title

Appendix B: Air Quality Assessment

Appendix C: Ngati Tahu-Ngati Whaoa Runanga Trust Letter

Signature:



Date: 9 February 2022

Email: craig.mathieson@mitchelldaysh.co.nz

Telephone: 021 1779 664

Postal Address: Mitchell Daysh Limited
PO Box 300 673,
Auckland 0752

FORM 9

APPLICATION FOR RESOURCE CONSENT

Sections 88 and 145, Resource Management Act 1991

To Bay of Plenty Regional Council
PO Box 364,
Whakatāne 3158

1. **Rainbow Mountain Renewable Energy Ltd apply for the following type(s) of resource consent:**

A discharge permit to discharge contaminants to air to authorise resource recovery and recycling activities associated with the anaerobic-thermal-reduction (“**ATR**”) pyrolysis trials at the site.

2. **The activity to which the application relates (the proposed activity) is as follows:**

The proposed activity is to undertake resource recovery and recycling activities associated with ATR pyrolysis trials in order to test variables and record results to confirm the process discharges.

3. **The site at which the proposed activity is to occur is as follows:**

The site located at 216 State Highway 38, Waimangu, legally described as Fee Simple, 1/1, Section 1-2 Survey Office Plan 61678 and Lot 1 Deposited Plan South Auckland 91029.

4. **The full name and address of each owner or occupier (other than the applicant) of the site to which the application relates are as follows:**

Site is owned by the applicant under the name Robof 2 Limited.

5. **The other activities that are part of the proposal to which the application relates are as follows:**

Other aspects of the proposal which are permitted under the relevant statutory planning documents are described in the attached Assessment of Environmental Effects.

6. **The following additional resource consents are needed for the proposal to which this application relates and is applied for;**

A land use consent to authorise resource recovery and recycling activities associated with the ATR pyrolysis trials at the site. Recycling facilities require resource consent within the Industrial 1 zone.

7. **I attach an assessment of the proposed activity's effect on the environment that—**
 - (a) includes the information required by Clause 6 of Schedule 4 of the Resource Management Act 1991;
 - (b) addresses the matters specified in Clause 7 of Schedule 4 of the Resource Management Act 1991; and
 - (c) includes such detail as corresponds with the scale and significance of the effects that the activity may have on the environment.
8. **I attach an assessment of the proposed activity against the matters set out in Part 2 of the Resource Management Act 1991.**
9. **I attach an assessment of the proposed activity against any relevant provisions of a document referred to in section 104(1)(b) of the Resource Management Act 1991, including the information required by clause 2(2) of Schedule 4 of that Act.**
10. **No other information is required to be included in this resource consent application by the Rotorua Lakes District Council.**

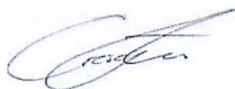
Assessment of Environmental Effects

Appendix A: Certificate of Title

Appendix B: Air Quality Assessment

Appendix C: Ngati Tahu-Ngati Whaoa Runanga Trust Letter

Signature:



Date: 9 February 2022

Email: craig.mathieson@mitchelldaysh.co.nz

Telephone: 021 1779 664

Postal Address: Mitchell Daysh Limited
PO Box 300 673,
Auckland 0752





7 B L

PART B

Assessment of Environmental Effects

1. INTRODUCTION

1.1 OVERVIEW OF PROPOSAL

Rainbow Mountain Renewable Energy Ltd (“**RMRE**” and “**the company**”) propose to conduct anaerobic-thermal-reduction (“**ATR**”) pyrolysis trials (the “**pyrolysis trials**” or “**trials**”) to authorise resource recovery and recycling activities at the site located at 216 State Highway 38, Waimangu (“**the site**”). A Certificate of Title is attached as **Appendix A**.

The technology and processes proposed have not yet been undertaken in New Zealand, therefore, the company proposes to conduct trials in order to demonstrate the technology, authenticate environmental parameters, and optimise operating conditions in relation to a future potential full-scale metal resource recovery operation at the site.

The shredding of automobiles results in a random mixture of many plastics, natural and synthetic rubbers, glass, wood, dirt, and stones, called automotive shredder residue (“**ASR**”), and is very costly and difficult to recycle. In New Zealand, approximately 140,000 tonnes of ASR are produced per year, with all of this material being dumped at landfills and wasted. The company proposes to significantly reduce the volume of material being dumped by utilising an ATR plant to process ASR to a useable end by-product; liquid monomers (as an oil), carbon black (as a powder), and gas. The oil and carbon black by-product will be transported off-site for use at Oji’s Kinleith Processing Plant as fuel, and Allied Asphalt’s Rotorua Plant as a bitumen additive, respectively, while the gas will be reused as the primary source of heat energy driving the ATR process. In future, the company also proposes to offer resource recovery services to a wide range of plastic waste producers, such as within the agriculture and horticulture sectors, which will further reduce material that is diverted to landfill and wasted.

The company also propose to utilise a two knife destoner cleaning plant (also referred to as the “**cleaning plant**”) within the site in order to remove unwanted material (i.e., glass, metallics, stones, dirt and more) from the ASR product stream. This will result in clean ASR material which will be loaded into the ATR plant for processing, producing a better end product and more favourable air discharges from the pyrolysis process.

A consent period of 6 months is being sought to conduct the trials at the site. This will involve both ‘no load’¹ testing and ‘in load’² testing of the ATR Pyrolysis process. All variables will be tested, and the results recorded and analysed by independent laboratories, to confirm the nature of the discharges and how those discharges are able to be sufficiently managed to avoid, remedy or mitigate adverse environmental effects.

¹ Operating the ATR pyrolysis plant with no ASR material.

² Operating the ATR pyrolysis plant with different forms of ASR material.

Optimisations of the process can also then be made based on results. The trialing process is described further in **Section 3** of this Assessment of Environmental Effects (“**AEE**”).

This AEE has been prepared in support of an application to both the Rotorua Lakes District Council (“**District Council**”) and the Bay of Plenty Regional Council (“**Regional Council**”) to authorise the trials. An air quality assessment has been prepared in support of this AEE by Industrial Compliance Solutions Limited and is attached as **Appendix B**.

1.2 APPLICANT

RMRE is a new resource recovery business. The owners also run similar operations in the metal recovery business, Metalco Recyclers Ltd (“**Metalco**”).

While RMRE’s operations will focus on the site, Metalco has metal recovery / recycling operations in Tauranga, Te Puke, Hamilton, Palmerston North and Gisborne; all of which employ effects mitigation equipment or have infrastructure to reduce or eliminate negative environmental impacts of their operations including discharges to air, site discharges, noise, traffic, etc.

Working together, the businesses aim to introduce state-of-the-art technology and lead the way in which discarded materials can be processed in New Zealand to recover their latent material or energy value. The vision of the parent company is for the Rainbow Mountain facility to be a centre of excellence for resource recovery and secondary commodity value-add.

1.3 REPORT STRUCTURE

This AEE comprises nine sections as follows:

- Section 1:** Is this Introduction.
- Section 2:** Provides a description of the environment for which the activity relates.
- Section 3:** Provides a description of the activities for which resource consent is sought.
- Section 4:** Sets out the reasons for Resource Consent.
- Section 5:** Provides a summary of consultation undertaken.
- Section 6:** Provides an assessment of environmental effects associated with the undertaking of pyrolysis trials at the site.
- Section 7:** Sets out the statutory framework against which the application has been made and considers the provisions of the Resource Management Act 1991 and the relevant statutory planning documents.

Section 8: Sets out the notification assessment and why the application can be processed on a non-notified basis.

Section 9: Provides a short concluding statement.

2. EXISTING ENVIRONMENT

2.1 ENVIRONMENTAL SETTING

The site is 64 ha and is located at 216 State Highway 38, Waimangu, approximately 24 km south-east of Rotorua (shown in **Figure 1**, below).



The site is located within a wider rural landscape at the foot of Rainbow Mountain, which is located immediately southwest. It is a highly modified industrial site that was previously used as a timber treatment yard and landfill³. The site currently consists of a range of industrial style buildings, sealed and unsealed transport roads leading to various areas of the site. The site is largely hidden from view from the adjacent State Highway (“SH”) 38, given it is elevated above street level due to the natural gradient of the surrounding environment, and is vegetated along its boundary. The site is currently fenced and is accessed via two gated entrances off SH38.

The site is predominantly flat, with a gentle rise from SH38 towards the southern area of the site (the foot of Rainbow Mountain Scenic Reserve). There are pockets of vegetation within the site; this includes a densely vegetated area around a stormwater pond on the western portion of the site close to SH38, a small area in the centre of the site, and

³ The landfill has been capped and revegetation of the area is in process. Consent has been obtained for discharge to land from the closed landfill (RC 65172-AP).

densely vegetated areas on the southern boundary adjacent to the boundary shared with the Rainbow Mountain Scenic Reserve.

The surrounding environment is predominantly rural in nature. Rural properties in the vicinity of the site are predominantly located adjacent to SH38, as depicted in **Figure 2**.

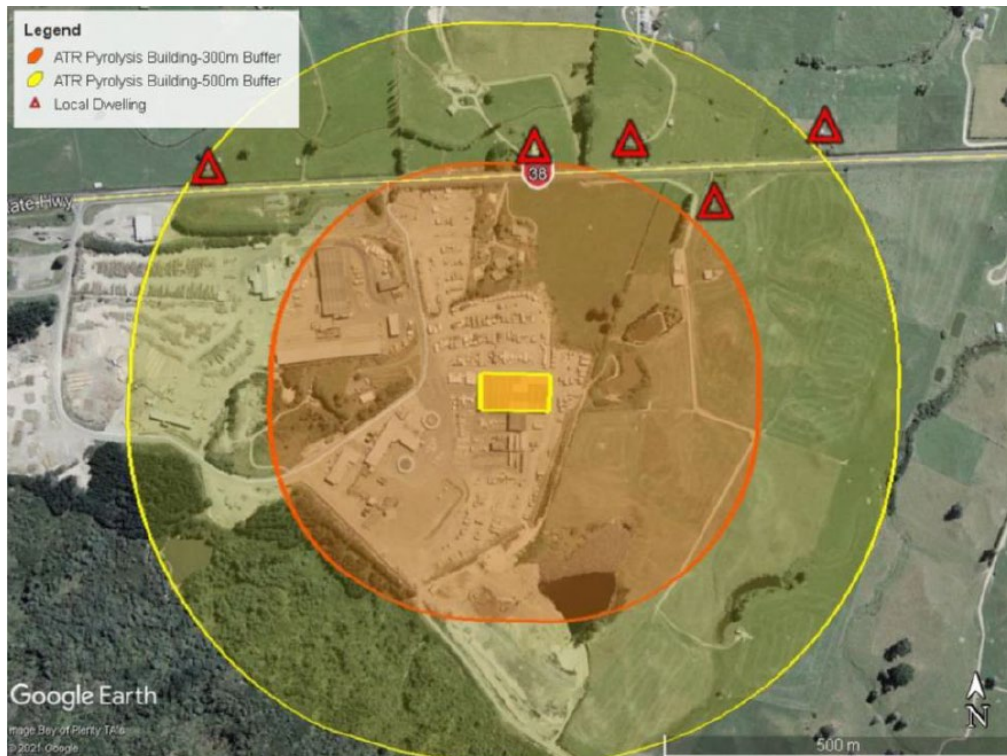


Figure 2: Rural properties in relation to proposed ATR plant on the site.

2.2 ZONING AND LAND OWNERSHIP

The Rotorua District Plan (“**District Plan**”) planning maps indicate the site as being within the *Industrial 1 Zone*, which provides for a mix of light industrial activities, including large bulky buildings, high levels of noise, odour, signage and heavy vehicle and car movements, with lighting, and use and storage of hazardous substances, being common features. A small area near the northern half of the site is identified under the District Plan as a ‘Fault avoidance zone’. There are no historic heritage sites, sites of significance to Māori, or archaeological sites within the site.

The surrounding area predominantly consists of a *Rural 1 zone*, with the Rainbow Mountain Scenic Reserve (located southeast of the site) affording a *Reserve 1 zoning*. The Rainbow Mountain Scenic Reserve is also scheduled as an *outstanding natural feature and landscape*; however, this does not encroach into the subject site.

2.3 TRANSPORT ENVIRONMENT

SH38 is classified in the District Plan as a Strategic, Rural Primary Arterial. It provides the main arterial route between SH5 and Murupara. The highway has a sealed carriageway marked with a centreline and edge lines to provide a single traffic lane in each direction with a 100 km/h speed limit. A right turn bay is provided on SH38 at the western access to the site.

2.4 CONTAMINATED LAND

The site is listed on the Hazardous Activities and Industries List (“**HAIL**”) (code A18) due to previous Timber Treatment activities on the site.⁴

An area located on the south-eastern portion of the site has also been previously used as a landfill. The landfill has been capped and revegetation of the area is in process. Consent has been obtained for discharge to land from the closed landfill.⁵

2.5 CULTURAL VALUES

Maunga Kakaramea (Rainbow Mountain) and its surrounding lakes and waters are of the utmost significance to the iwi of Ngati Tahu-Ngati Whaoa.

The site is also within the BOP Affiliate Te Arawa Iwi and Hapu Deed statutory acknowledgement area.

2.6 EXISTING CONSENTS

The discharge of stormwater from the site is currently authorised by Resource Consent 65172 and relates to discharges from timber processing. It is proposed to vary this consent to address stormwater management at the site from the resource and recycling facility – this will be addressed via a separate change of conditions application, to be lodged with the Regional Council in parallel with this application.

⁴ Wood treatment or preservation including the commercial use of anti-sapstain chemicals during milling, or bulk storage of treated timber outside).

⁵ Resource consent 65172-AP

3. PROPOSAL DESCRIPTION

3.1 OVERVIEW

A consent period of 6 months is being sought to conduct the trials at the site. This will involve both 'no load' testing and 'in load' testing of the ATR Pyrolysis process and will provide sufficient time to run batches, have monitored samples analysed, assess changes necessary (including equipment modifications), and to repeat the process as needed.

The purpose of the 'no load' testing is to ensure the ATR plant is operating safely prior to introducing ASR material (i.e. 'in load' testing). During in load testing, different forms ASR material (i.e., different plastics, metals etc.) will be introduced in order to observe and monitor how the ATR pyrolysis plant reacts to this material. All the variables will be tested, and the results recorded and analysed by independent laboratories, to confirm the nature of the discharges and how those discharges are able to be sufficiently managed to avoid, remedy or mitigate adverse environmental effects. Optimisation of the process during the trial period will then occur based on results.

ASR is currently produced at Metalco's Te Puke site; most of the ASR required to conduct the trials is already stored on site within enclosed buildings.

The company also propose to utilise a two knife destoner cleaning plant within the site in order to remove unwanted material (i.e., glass, metallics, stones, dirt and more) from the ASR product stream. This will result in clean ASR material which will be loaded into the ATR plant for processing, resulting in a better end product and more favourable air discharges from the pyrolysis process. Most of the materials removed from the ASR product stream will be remediated and re-used within the site. For example, remediated dirt (where practicable) will be used for landscaping and bunding purposes in order to improve the visual aspect of the site and to further mitigate any noise generated. Aggregate will be reused for concreting purposes. Material not able to be re-used within the site will be placed in undercover stockpiles and transported offsite to landfill.

Processing of ASR through pyrolysis involves the rendering of ASR under heat and pressure (in the range 350 - 650°C), in the absence of oxygen⁶ to decompose the ASR material into a usable end product, being oil, carbon black and gas. Oil will be stored in a storage tanker and carbon black will be stored in sealed containers. Both products will be transported offsite daily via trucks for use at Oji's Kinleith Processing Plant in Tokoroa (oil), and Allied Asphalt's Rotorua Plant (carbon black).

Following the trial, the company intends on applying for the relevant resource consents to authorise a full-scale resource recovery and recycling activity at the site.

⁶ To this extent, it is not a combustion process, but rather an anaerobic decomposition process.

3.1.1 Site Layout

Figure 3 outlines a broad layout of the site. Of particular relevance to the trials is the area depicted as number 5 (being the buildings where the ASR is stored), and the area depicted as number 7 (the ATR Plant).

Up to 20,000 tonnes of ASR will be stored onsite during the trial period with most of this material already onsite. Approximately 10 tonnes of ASR will be transported via truck to the ATR plant for processing.

The ATR plant is located within an enclosed concrete padded area (indicated by number 7 in Figure 3). It will measure approximately 18 m by 24 m and will include an emission stack that will be no higher than 15 m above ground level. The plant includes a wet scrubber process to prevent fine particles from being discharged through the ATR emission stack. An indicative layout / image of an ATR plant is outlined in **Figure 4**.

The cleaning plant will be within an enclosed building within the site, in a location which optimises receipt of materials for cleaning and sorting. The cleaning plant will be approximately 3 m wide, 12 m long and 5 m in height and approx. 250 m from the nearest site boundary.

The site will not actively be seeking end-of-life tyres, however, if this material is received, it will be stockpiled within an enclosed area within the site in accordance with the National Environmental Standards for Storing Tyres Outdoors (“**NES Tyres**”) (refer Section 4.4.2).

The ATR Plant will be constructed prior to the trials commencing. It is noted there will be no site scraping or earthworks associated with any aspect of the proposal. All concrete poured will be above grade, as such, there will be no disturbance of soils.

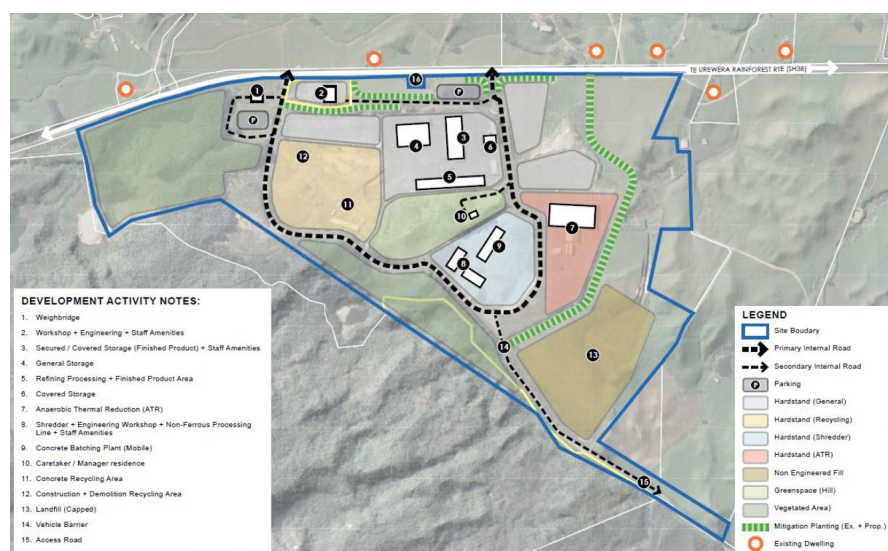


Figure 3: Proposed site layout. The trials will be associated with the ATR plant number 7) and ASR stockpiles (number 5).

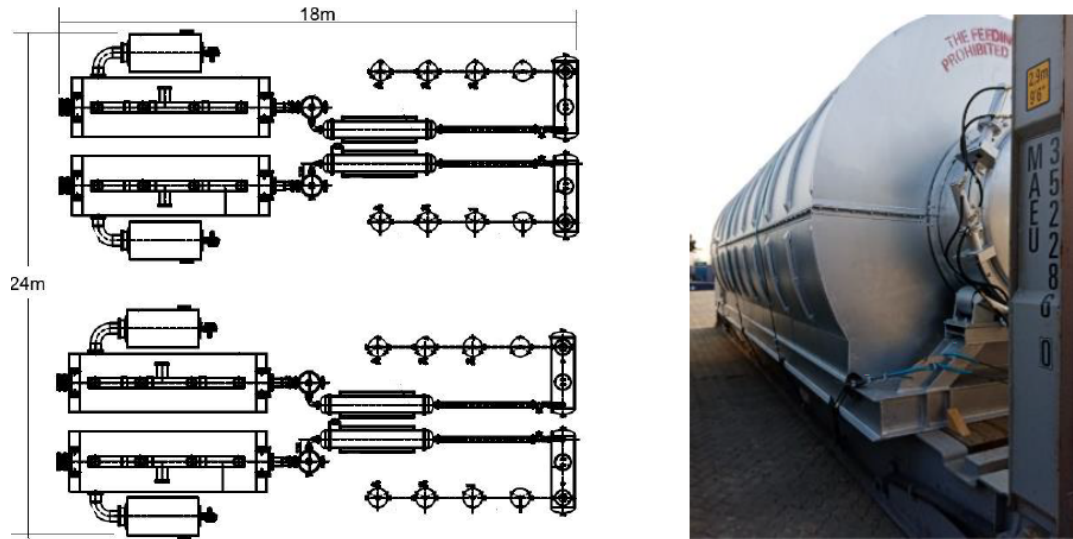


Figure 4: Simplified layout / image of an ATR plant.

3.1.2 Operating Parameters

In load trials will test various ASR materials. Some in load testing will be undertaken at full scale, being 10 tonnes of ASR per batch. Each batch takes an entire day to be processed by the ATR plant.

The batches will be varied in the ratio of ASR to known plastics in order to:

- Track the generation of the targeted acids according to mix ratio;
- Enable the development and testing of feedstock mixing methods;
- Conduct sampling at each phase change location; and
- Ascertain whether intentional dilution of the PVC content has benefit to the emissions.

The trials will aim to result in an exhaust plume from the ATR plant emission stack that is:

- Free of particulate;
- Free of any carcinogenic and/or mutagenic compounds; and
- Low in temperature.

3.1.3 Products of the ATR

The by-products of the ATR pyrolysis process are the formation of ASR oil and carbon black, which will be promptly transported off-site.

Approximately 400 to 600 litres of oil will be produced per batch. The carbon black will be subjected to size reduction and separation on site to remove any metal contaminants and will be packed into 500 kg bulk bags.

3.1.3.1 Process Substances

The ATR process requires a number of process substances which each play a different role in the pyrolysis process.

There will be sulphuric acid and caustic soda solutions stored on site (contained in the scrubbers) at maximum of 5,500 litres each. The wet scrubbers (acid & alkali) are enclosed and are on bunded pads.

Oil produced through the trials will flow from the condenser within the ATR plant, to the surge tank by gravity, where it will then be pumped by a simple centrifugal pump into the road tanker for transportation off site. Approximately 5,000 litres of oil will be produced from each trial batch. The tanker will be within 10 m of the surge tank, just outside the building.

An emergency management procedure will be developed by a suitably qualified person in relation to a potential spill and/or tank rupture at the site and will be implemented prior to any substances being stored on site. This procedure will detail information such as the spill kits on site, the location of the various tanks within bunds each with sufficient capacity to hold the full volume of the substance plus a 24-hr rainfall event. In regard to the road tanker loading operation, a rupture or connection failure would be rare, however, should this occur, the onsite operator would isolate the hose, with the non-return on the tanker filling port preventing backflow. Onsite spill kits of absorbents and soakers along with portable dams will be utilised to prevent flow into stormwater systems.

The implementation of an emergency management procedure prior to the storage and use of process substances on site will ensure that any accidental spill or rupture can be managed to avoid adverse effects on the surrounding environment.

3.1.4 Hours of Operation

The trials will be undertaken 24 hours / day for 5 days / week (Monday through Friday). The loading, heating, cooling, and emptying of the ATR plant typically takes between 18 and 22 hours. Each trial will occupy one full 24-hour period of processing and at least 8 hours of consideration and analysis.

3.1.5 Noise

Activities within the site will be undertaken over 24-hours a day basis, from Monday through Friday. It is noted the ATR Plant will not significantly contribute to the generation of noise at the site, given pyrolysis is anaerobic (no air and no burning), is a relatively quiet process, and the plant will be enclosed in a large industrial building which will mitigate noise effects. The contribution of noise from the cleaning plant is predominately associated with the sorting of material through the feed hopper. The cleaning plant will not

significantly contribute to the generation of noise at the site, particularly as it will be placed within an enclosed structure approximately 250 m from the nearest site boundary.

Therefore, noise associated with the trials will be predominantly associated with the movement of 2 to 4 trucks per trial day. This covers the transportation of ASR to the site, transportation of the end product off site to Oji's Kinleith Processing Plant and Allied Asphalt's Plant, and the removal of unwanted material offsite. To a lesser extent, noise will also be associated with the transportation of ASR material within the site to the ATR plant, the sorting of the ASR stockpile material, and the sorting of unwanted material removed from the ASR waste stream. It is noted that cars will not be shredded on site – this will be undertaken using the shredder at the existing Te Puke site and the ASR is then transported to the site. The movement of trucks within the site is anticipated to result in insignificant noise effects, particularly when considered in relation to the neighbouring transport environment utilising SH38.

The entire site is zoned Industrial 1, which anticipates a higher level of noise than other zones within the district. The permitted daytime (7am-10pm) noise limit within the Industrial 1 Zone in the District Plan is 75 dB LAeq, while nights and public holidays it is reduced to 70 dB LAeq. Any noise from the trials process will be within these permitted noise limits.

As shown in Figure 1, nearby rural properties are sufficiently distanced from the processes within the site, and thus are not considered to be adversely affected by noise from the trials.

3.1.6 Staff

There will be about 6-8 staff on-site at any one time.

3.1.7 Traffic Movements

While the majority of the ASR is currently stored onsite, some ASR will be delivered to the site throughout the trial period via semitrailer trucks consisting of 1 or 2 truck movements to and from the site each day.

Byproduct will be transferred off site approximately 2 to 3 times per week via tanker and/or semitrailer trucks after each trial is completed. Unwanted material removed from the ASR waste stream will be removed on an as needed basis, likely to be 1 or 2 times per week.

Vehicles enter the site via the main (most western) entrance located directly off SH38, via a median strip enabling safe right turning for large vehicles into the site.

Vehicle movements within the site are via formed vehicle routes. There is ample space within the site to ensure vehicles are able to exit the site via a forward-facing direction. Vehicles will enter and exit the site via the western access.



3.1.8 Discharges to Air

The ATR plant operates at temperatures between 350 and 650°C, and the process uses the wet scrubber to clean and cool the emissions and prevent fine particulates from being dispersed. Ordinarily, this will be a clear outflow but on cooler days this will resemble a steam plume from the emission stack.

Any odour discharges from the ASR stockpile will be contained, given this material is stored onsite within enclosed buildings, and given it is non odorous material (being predominantly metals and plastics).

It is noted that 'no load' trials will not result in any discharges to air and are undertaken to ensure the ATR pyrolysis plant is operating safely prior to undertaking 'in load' testing.

An assessment of the potential discharges to air from the trials is provided by Industrial Compliance Solutions Limited attached as Appendix B to this AEE.

Discharges to air from the cleaning plant will be dust only, mitigated through use of conventional dust control measures. The feed hopper will be located undercover to mitigate any dust dispersion associated with feeding the plant.

3.1.9 Monitoring

The purpose of the trials is to prove the company's design in terms of the exhaust being benign CO² and water vapour. Periodic samples will be taken from several points across the process to ensure that each stage is behaving as designed, including;

- Particulates (PM₁₀ and PM_{2.5})
- Volatile organic compounds (VOCs)
- Poly aromatic hydrocarbons (PAHs)
- Acid gases (HCl and HF)
- Heavy metals; and
- Dioxins and furans.

The samples will be analysed by a laboratory (Verum Group Ltd) and used to inform the proposed long-term operations onsite.

3.2 STORMWATER MANAGEMENT

As previously stated in Section 2.5, the discharge of stormwater from the site is currently authorised by Resource Consent 65172 and relates to discharges from timber processing. It is proposed to vary this consent to address stormwater management at the site from the resource and recycling facility – this is being addressed via a separate change of conditions application to be lodged to the Regional Council.



4. RESOURCE CONSENT REQUIREMENTS

Relevant rules are contained in the:

- District Plan; and
- Regional Natural Resources Plan (“**RNRP**”).

Each is addressed below.

4.1 DISTRICT PLAN REQUIREMENTS

The trials involve the recycling of ASR into usable end products, and in turn, will significantly reduce the amount of waste being sent to landfill once in permanent operation. This process is consistent with the basic definition of ‘recycling’ which is converting waste into a usable material. While the District Plan is silent on any definition of ‘recycling station / facility’, it is considered that trials sit within the ‘recycling station / facility’ activity description. This activity is permitted under Rule INZ-R14 of the District Plan (subject to compliance with performance standards, described further in Section 4.4 below), however, requires resource consent under the Energy Infrastructure and Transport chapter of the District Plan.

Given the rules in the Energy, Infrastructure and Transport chapter override the rules of the underlying Industrial 1 zone, it is considered the activities on site requires consent as a discretionary activity under Rule EIT-R11 of the District Plan, as indicated in **Table 1**.

Table 1: District Plan resource consent requirement.

Activity	Standard	Status	Comment
Part 2, District Wide Matters - Energy Infrastructure and Transport			
Composting sites, solid waste management sites and transfer and recycling stations	EIT-R11	Discretionary	The proposal falls within the activities captured by Rule EIT-R11. Resource consent is therefore required as a Discretionary Activity.

4.2 REGIONAL PLAN REQUIREMENTS

The RNRP replaces the Regional Water and Land Plan (“**RWLP**”) and was made operative in 2017. The RNRP is also subject to plan changes, notably, proposed plan change 13 which includes rules relevant to air quality. The site is not subject to any regional planning overlays which would influence the activity status or resource consent requirements for the proposal.



It is considered the discharges to air associated with the trials will require resource consent as a discretionary activity under Rule AIR-R15 of the RWLP, as outlined in **Table 2**, below. This includes any odour discharges from the stockpiling of ASR (noting this material will be stored on site within enclosed buildings).

Table 2: RWLP resource consent requirements.

Activity	Standard	Status	Comment
Proposed Plan Change 13 (Air Quality)			
The discharge of contaminants into air from specific activities, including AIR-15(24)(b) - waste facilities including refuse transfer stations, resource recovery, recycling centres, baling stations	AIR-R15	Discretionary	As the trials will involve the discharge of contaminants to air as a result of resource recovery processes, resource consent is required as a discretionary activity.

4.3 SUMMARY

Overall, land use consent is required under the District Plan as a discretionary activity, and a discharge permit is required under the RWLP as a discretionary activity.

The overall activity status for the trials is **discretionary**.

4.4 PERMITTED ACTIVITIES

Table 3 below outlines the permitted activities associated with the proposal.

4.4.1 District Plan

An analysis of the permitted activities under the District Plan associated with the trials are outlined in detail within Table 3.

Table 3: Permitted activities under the District Plan associated with the trials.

Activity	Standard	Status	Comment
Part 2, District Wide Matters - Hazards and Risks			
Storage, use and transportation of hazardous substances	HAZS-R1	Permitted	The substances classes are covered by Appendix HAZS-APP1 and the maximum quantities for a permitted activity are not exceeded. As set out in Section 3.1.3.1, the relevant performance standards are complied with:



Activity	Standard	Status	Comment
			<ul style="list-style-type: none"> ➤ Design and management HAZSS1; ➤ Waste management HAZS-S2; ➤ Signs HAZS-S3; and ➤ Emergency management HAZSS4
Transportation of hazardous substances unless otherwise stated	HAZS-R14	Permitted	The ATR pyrolysis process will produce oil and carbon black, which will be transported offsite daily as required.
Part 2 - General District Wide Matters			
Light - Direct or indirect illumination	LIGHT-S1	Permitted	Lighting associated with the trials process will be managed to comply with performance standard LIGHT-S1
Emission of noise	NOISE-R1	Permitted	<p>Noise associated with the trials process will be managed to comply with performance standard NOISE-S1(4);</p> <p>Daytime (7am to 10pm, any day except public holidays): 75 dB LAeq (15 minutes)</p> <p>Night-time and public holidays (at all other times): 70 dB LAeq (15 minutes) 80 dB LAmx</p>
Construction Noise	NOISE-R2	Permitted	Construction noise will comply with the relevant noise levels stated in NZS 6803:1999 and be measured and assessed in accordance with NZS 6803:1999 'Acoustics – Construction Noise'.
Part 3 - Area Specific Matters – Industrial Zone			
Building Height	INZ-R1	Permitted	The emission stack on the ATR plant will be constructed to a height less than 15 m above the natural ground level, thereby complying with performance standard INZ-S1.
Yards	INZ-R1	Permitted	There are no yard requirements relevant to the site (performance standard INZ-S2).
Site Coverage	INZ-R1	Permitted	There are no maximum site coverage requirements (performance standard INZ-S3).



Activity	Standard	Status	Comment
Parking, access and turning.	INZ-R1	Permitted	<p>Parking access and turning will comply with performance standard with standard INZ-S4.</p> <p>There is ample space within the site for parking and on-site turning of vehicles (thereby being in accordance with the provisions of Appendix APP1 – Parking, Access and Turning standards).</p>
Landscaping	INZ-R1	Permitted	There is no landscaping proposed or required under performance standard INZ-S5.
Recycling facilities	INZ-R14	Permitted	The proposal will comply with all relevant performance standards (INZ-S1, INZ-S2, INZ-S3, INZ-S4 and INZ-S5).

4.4.2 National Environmental Standards for Storing Tyres Outdoors

As previously indicated, the company will not actively be seeking tyre material from vehicles, however, if this material is received, it will be stored in accordance with Regulation 11 and 12 of the NES Tyres. Specifically, storage of tyres will be less than 100 m³ in volume, will be less than 3 m in height, and will be more than 20 m away from any surface water body.

Therefore, the storage of tyres at the site will be a permitted activity under the NES Tyres.

4.4.3 National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health (NES Soils)

As previously noted, the site is listed on the HAIL due to previous Timber Treatment activities on the site. However, given there will be no disturbance of soil / material associated with the proposal, and there is no change to land use at the site, the NES Soils does not apply.



5. CONSULTATION

5.1 IWI

The company has provided preliminary information to the Ngāti Tahu-Ngāti Whaoa Runanga Trust in relation to the proposed full scale resource recovery operation at the site. Following review of this information, the Ngāti Tahu-Ngāti Whaoa Runanga Trust have provided a letter in support of the proposal provided there is continued engagement and the conditions proposed by the District and Regional Council are complied with. This letter is attached as **Appendix C** to this AEE.

5.2 OTHER

Consultation has not been undertaken with nearby dwellings or the New Zealand Transport Agency in relation to the pyrolysis trials, however, this will occur prior to lodging consents for the full-scale operation at the site.



6. ASSESSMENT OF EFFECTS

6.1 INTRODUCTION

This section of the AEE addresses the actual and potential effects associated with the proposed trials at the site.

The relevant actual and potential effects are considered to be:

- Positive effects;
- Air quality effects;
- Effects on the transport network; and
- Effects on cultural values.

This section is informed by the air quality assessment attached as Appendix B.

6.2 POSITIVE EFFECTS

The proposed trials will provide greater certainty with respect to the potential environmental effects resulting from a full-scale resource recycling centre at the site using ATR Pyrolysis, which has yet to be undertaken in New Zealand. The trials therefore will assist in the consenting of a full-scale future operation of the resource recycling centre at the site, which will significantly reduce the amount of car material from being diverted to landfill and wasted.

This is particularly important given space in landfills across New Zealand is rapidly decreasing, while waste going to landfill is rapidly increasing. A long-term operational ATR plant will assist in the transitioning into a circular economy through keeping materials in use for longer instead of landfilling them.

The full-scale operation, once consented, will play a significant role in reducing waste diverted to landfills in New Zealand by converting this material into a usable end product.

Furthermore, the operation of the resource recycling centre will make a significant contribution to the social and economic wellbeing of people and communities in the local area through the employment of people required to run the facility.

6.3 AIR QUALITY EFFECTS

Industrial Compliance Solutions Limited has prepared an air quality assessment in support of the application, attached as Appendix B. The air quality assessment concludes;

Based on the information provided by Dr Feng Gau, I consider the discharges from the ATR stack during the trial period will be less than minor for the following reasons.

- *The short duration of the trials and the remote site location.*

- *40% of the trial will involve the plant operating under 'no load'. This will result in no discharge of contaminants as no ASR material is being processed.*
- *Being a trial, the process will be under a high level of scrutiny and operational control.*
- *Appropriate emission control equipment has been proposed for the project; and*
- *A high level of emission monitoring to be undertaken during the trials.*

Data collection from this trial will also form the foundation for a longer-term air discharge consent application and will be used in atmospheric dispersion modelling.

To confirm the effectiveness of the proposed emission controls over the trial period, the air quality assessment proposes the following monitoring conditions to be included as conditions of consent relating to the testing of contaminants for each trial operational scenario, and to provide a detailed monitoring program to the Regional Council prior to commencing trials;

- *Particulates (PM₁₀ and PM_{2.5})*
- *Volatile organic compounds (VOCs)*
- *Poly aromatic hydrocarbons (PAHs)*
- *Acid gases (HCl and HF)*
- *Heavy metals*
- *Dioxins and furans.*

It is also considered that any odour discharges from the ASR stockpile will be contained, given this material is stored onsite within enclosed buildings, avoiding any dispersion caused by wind and rain. Discharges to air from the cleaning plant is limited to dust only and will be mitigated through use of conventional dust control measures and given the plant will be located within an enclosed structure approx. 250 m from the nearest site boundary.

Overall, given the reasons outlined above, it is considered any adverse effects from discharges to air during the pyrolysis trials will be less than minor.

6.4 EFFECTS ON THE TRANSPORT ENVIRONMENT

Traffic associated with the trials will be vehicles transporting ASR to the site (approx. 1 - 2 traffic movements per day), transporting the end byproduct offsite (approx. 2 - 3 traffic movements per week), transporting separated unwanted material from the cleaning plant offsite (1 or 2 traffic movements per day), and staff travelling to the site (approximately 6-8 staff required). The effect of this increase would be insignificant.

There is ample area available within the site to accommodate the expected parking demand, and the available separation distances between the vehicle entrance and the adjacent intersections exceed the NZTA minimum required.



Overall, it is considered any impact on the adjacent transport environment during the trial process will be less than minor.

6.5 LANDSCAPE AND VISUAL EFFECTS

The site is located entirely within the *Industrial 1* zone and is typical of an industrialised site.

Overall, given the established industrialised character of the site, and considering the size of the site and location of the ATR plant and cleaning plant within the site, it is considered the addition of an ATR plant and associated ancillary activities is anticipated by the district plan zoning, and would result in very low and less than minor landscape and visual effects.

Further, as detailed in the above sections, any adverse effects, notably air discharge, from the trials on the surrounding environment will be less than minor. It is therefore anticipated the proposal will not result in any adverse effects on the nearby Rainbow Mountain Scenic Reserve.

6.6 CULTURAL VALUES

It is acknowledged that Maunga Kakaramea (Rainbow Mountain) and its surrounding lakes and waters are of the utmost significance to the iwi of Ngati Tahu-Ngati Whaoa. The site is also within the BOP Affiliate Te Arawa Iwi and Hapu Deed statutory acknowledgement area.

The proposal will not result in any adverse effects on Rainbow Mountain. Additionally, as outlined in Section 5, Ngati Tahu-Ngati Whaoa Runanga Trust have reviewed information provided by the company in respect to the activities proposed at the site and are in support of the proposed resource recovery aspirations at the site, provided there is continued engagement and the conditions proposed by the District and Regional Council are complied with. The company will continue to engage with local iwi in respect to operations at the site.

6.7 SUMMARY

The trials are able to be undertaken in a manner which ensures any effect on the environment will be less than minor.

7. STATUTORY ASSESSMENT

7.1 INTRODUCTION

The RMA is the principal statutory document governing the use of land, air and water. The purpose of the RMA is to “promote the sustainable management of natural and physical resources”. This section of the AEE sets out the framework under the RMA that applies to the resource consents that are being sought from the District Council and the Regional Council to authorise the short-term discharges associated with the trials of the resource recovery facility at the site.

7.2 SECTION 104

Section 104 of the RMA lists the matters that a consent authority must have regard to in determining whether a resource consent application should be granted. It states:

- 1) *When considering an application for a resource consent and any submissions received, the consent authority must, subject to Part 2, have regard to—*
 - a) *any actual and potential effects on the environment of allowing the activity;*
 - ab) *any measure proposed or agreed to by the applicant for the purpose of ensuring positive effects on the environment to offset or compensate for any adverse effects on the environment that will or may result from allowing the activity; and*
 - b) *any relevant provisions of—*
 - i) *a national environmental standard;*
 - ii) *other regulations;*
 - iii) *a national policy statement;*
 - iv) *a New Zealand coastal policy statement;*
 - v) *a regional policy statement or proposed regional policy statement;*
 - vi) *a plan or proposed plan; and*
 - c) *any other matter the consent authority considers relevant and reasonably necessary to determine the application.*
- 2) *When forming an opinion for the purposes of subsection (1)(a), a consent authority may disregard an adverse effect of the activity on the environment if a national environmental standard or the plan permits an activity with that effect.*
- 2A) *When considering an application affected by section 124 or 165ZH(1)(c), the consent authority must have regard to the value of the investment of the existing consent holder.*

Section 104 of the RMA does not give any of the matters to which a consent authority is required to have regard, primacy over any other matter. All of the relevant matters are to

be given such weight as the consent authority sees fit in the circumstances, and all provisions are subject to Part 2 of the RMA.

7.3 ACTUAL AND POTENTIAL EFFECTS

The actual and potential effects of the trials are set out in Section 6 of this AEE.

7.4 RELEVANT STATUTORY PLANNING DOCUMENTS

In terms of section 104(1)(b) of the RMA, the following sub-sections provide an assessment of the activities associated with the short-term discharges from the trials proposed at the site:

- National environmental standards for air quality (“**NESAQ**”);
- National environmental standards for storing tyres outdoors;
- Bay of Plenty Regional Policy Statement;
- Bay of Plenty Regional Plan; and
- Rotorua Lakes District Plan.

7.4.1 National Environmental Standards for Air Quality

The NESAQ sets out ambient air quality standards for a number of contaminants for the protection of public health.

As assessed above and as outlined in the air quality assessment, it is considered the discharges to air during the trials will be less than minor, will be contained within the site, and resource consent from the Regional Council is sought for the discharges.

As such, the NESAQ is not an impediment to the granting of consent to authorise trials at the site.

7.4.2 National Environmental Standards for Storing Tyres Outdoors

The National Environmental Standards for Storing Tyres Outdoors (“**NES Tyres**”) sets regulations to encourage consistent management practises across New Zealand to ensure the risks of harm to the environment, human health and local communities from outdoor tyre storage are appropriately managed.

As previously stated, the company is not actively seeking tyre material, however, acknowledge that this is likely to be a product as a result of receiving discarded vehicles. The company will ensure that any storage of tyres is undertaken in compliance with the regulations of the NES Tyres, as such, the NES Tyres is not an impediment to the granting of consent to authorise trials at the site.

7.4.3 Bay of Plenty Regional Policy Statement

The Bay of Plenty Regional Policy Statement (“RPS”) provides an overview of the resource management issues for the Bay of Plenty Region, and sets out objectives, policies and methods intended to achieve the integrated management of natural and physical resources.

The topic in the RPS of most relevance to the proposed trials at the site is Air Quality.

Air Quality Objective 1 seeks to ensure the adverse effects of odours, chemical emissions and particulates are avoided, remedied or mitigated so as to protect people and the environment.

This objective is supported by Policies which seek to discourage reverse sensitivity effects⁷ and to manage adverse effects associated with discharge of odour, chemicals, and particulates⁸.

As assessed above, the discharges from the ATR stack during the trial period are anticipated to be less than minor and able to be contained within site boundaries. The purpose of the trial process is to confirm discharges associated with a full-scale resource recovery operation, and to make adjustments to optimise the reduction and management of such effects. As such, it is considered the proposal is consistent with the objectives and policies of the RPS.

7.4.4 Bay of Plenty Regional Plan

The RNRP replaces the RWLP and was made operative in 2017. The RNRP is also subject to plan changes, notably, proposed plan change 13 in relation to air quality.

The objectives of proposed plan change 13 of relevance to the proposed trials seek to protect air from adverse effects, notably those that effect human health, cultural and amenity values, and the receiving environment.⁹

The objectives are supported by the policies which seek to manage the effects of discharges¹⁰, and recommend a number of matters for consideration, including the proximity to sensitive receivers, and the effect of the discharge on the surrounding environment including cultural and amenity values¹¹. The policies seek to ensure that any discharge to air does not breach the ambient air quality standards of the NESAQ.

⁷ RPS Policy AQ 1A.

⁸ RPS Policy AQ 2A and 3A.

⁹ RNRP Policy AIR-O1 and AIR-O3.

¹⁰ RNRP Policy P3.

¹¹ RNRP Policy P4.

As stated in section 6, the trials are anticipated to result in insignificant air quality effects which are able to be entirely contained within site boundaries. As such, it is considered the proposal is consistent with the objectives and policies of the RNRP.

7.4.5 Rotorua Lakes District Plan

The District Plan was made operative in 2016. Under the District Plan, the site is located entirely within the Industrial 1 zone.

Of most relevance to this proposal are the objectives and policies within the Industrial Zone chapter, and the Energy, Infrastructure and Transport (“EIT”) chapter of the District Plan.

The objectives within the Industrial Zone chapter of the District Plan seek to enable industrial activities in a manner that promotes the economic wellbeing of the district¹² and that are consistent with the intended use of the zone¹³. This is directly supported by the policies which seek to ensure activities supported by the intended use of the zone, and which support the economic and employment growth in the district. are enabled and supported.¹⁴

Further, the objectives of the EIT chapter seeks to provide infrastructure that provides for the economic, cultural, social and environmental wellbeing of the Rotorua district, the region and New Zealand¹⁵, in a manner which appropriately avoids, remedies or mitigates the adverse effects on the character and amenity of the area¹⁶, and which does not result in adverse reverse sensitivity effects¹⁷.

Of particular relevance to the proposal is the policy which seeks to enable the research, exploration, development, operation, maintenance and upgrading of infrastructure that avoids, remedies or mitigates adverse effects on the environment.¹⁸

The assessment of effects on air quality confirms that air discharge effects from the proposal are likely to be less than minor and contained within the site boundaries. The purpose of the trials is to ensure this and make appropriate adjustments to optimise output and minimise environmental impact when operating the facility at full scale and will occur within an environment for which the activity is intended. The resultant benefits will be felt

¹² District Plan Objective INZ-O1.

¹³ District Plan Objective INZ-O3.

¹⁴ District Plan Policy INZ-P1 and INZ-P2.

¹⁵ District Plan Objective EIT-O1.

¹⁶ District Plan Objective EIT-O2.

¹⁷ District Plan Objective EIT-O7.

¹⁸ District Plan Policy EIT-P1.



regionally through enabling trials to support a full-scale operation that will significantly reduce waste going to land fill and will provide employment opportunities to the district.

Overall, it is considered the proposal is consistent with the relevant objective and policies of the District Plan.

7.4.6 Summary

The proposal is not contrary to and is consistent with the provisions of the relevant statutory documents. It is appropriately zoned and will avoid, remedy or mitigate its adverse effects on the environment in accordance with the relevant objective and policy provisions.

7.5 PART 2 OF THE RESOURCE MANAGEMENT ACT 1991

It is understood that a consent authority is generally no longer required to consider Part 2 of the RMA beyond its expression in the relevant statutory planning documents, unless it is appropriate to do so. In this case, it is considered that the planning context is clear, and the proposed deposition activities for maintenance purposes align with the various planning directions set out earlier. However, for completeness and in accordance with Schedule 4(2)(1)(f) of the RMA, Part 2 of the RMA is considered in the following paragraphs.

The proposed trials will not affect the safeguarding of the life-supporting capacity of air, water, soil and ecosystems. The trials will provide surety in respect to environmental effects and enable the applicant to make adjustments to optimise output and minimise adverse environmental impact, such that the effects on the wellbeing of people in accordance with section 5 of the RMA are adequately managed.

It is considered that the proposed activities will promote the sustainable management of natural and physical resources in accordance with Part 2 of the RMA.

8. NOTIFICATION ASSESSMENT

8.1 SECTION 95A

Whether the application should be publicly notified has been assessed as follows, according to section 95A of the RMA:

- The application does not require mandatory public notification under Step 1;
- The application is not precluded from public notification under Step 2;
- The application does not require public notification under the circumstances detailed in Step 3; and
- The application does not require public notification under special circumstances as described in Step 4.

As such, public notification of the application is not required under section 95A of the RMA.

8.2 SECTION 95B LIMITED NOTIFICATION

According to section 95B(1) of the RMA:

- The application does not require notification of the certain affected groups and affected persons identified in Step 1;
- The application is not precluded from limited notification under Step 2; and
- The proposal falls into the 'any other activity' category under Step 3.

As such, the effects of the application on any persons are to be assessed in accordance with section 95E to determine if limited notification is required.

8.3 ASSESSMENT OF EFFECTS ON PERSONS (S95E)

According to section 95E of the RMA, a person is an affected person if the activity's adverse effects on the person are minor or more than minor (but are not less than minor). Section 95E(3)(a) of the RMA, states that a person is not an affected person in relation to a resource consent application for an activity if the person has given approval for the proposed activity.

As noted previously, the discharges to air will be less than minor.

Therefore, it is considered the party is affected by this temporary activity.

8.4 NOTIFICATION CONCLUSION

it is concluded that the application is able to be processed on a non-notified basis.



9. CONCLUDING STATEMENT

The company is seeking resource consent to conduct ATR Pyrolysis Trials at the site located at 216 State Highway 38, Waimangu. The technology and processes proposed have not yet been undertaken or proven in New Zealand, therefore, the company proposes to conduct trials in order to demonstrate the technology, authenticate environmental parameters, and optimise operating conditions in relation to a future potential full-scale metal resource recovery operation at the site.

The proposed trials will provide greater certainty with respect to the potential environmental effects resulting from a full-scale resource recycling centre at the site and will significantly reduce the amount of car material from being diverted to landfill and wasted by converting this material into a usable end product.

The effects of the trials have been assessed as less than minor and to be managed in accordance with the expectations of the relevant planning documents and conditions of consent, in particular, monitoring measures as proposed by Industrial Compliance Solutions Limited within their air quality assessment.

Overall, it is considered that the proposal is consistent with the purpose and principles of the RMA and that the resource consent can be granted on the terms sought.





APPENDIX A

Certificates of Title



APPENDIX B

Air Quality Assessment



APPENDIX C

Ngati Tahu-Ngati Whaoa Runanga
Trust Letter