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1 December 2021

Consents Team Leader
Waipa District Council
Private Bag 2402
Te Awamutu 3840

Dear Sir/Madam,

RE: LAND USE CONSENT APPLICATION UNDER SECTION 88 OF THE RESOURCE MANAGEMENT ACT 1991 FOR A WASTE TO ENERGY FACILITY AT 401 RACECOURSE ROAD, TE AWAMUTU

Please find enclosed a resource consent application, on behalf of the applicant, Global Contracting Solutions Limited, for a Waste to Energy facility, at the above address.

Also enclosed is a completed application form, assessment of effects report and various attachments.

I trust that this application satisfies the requirements of s88 and Schedule 4 of the Resource Management Act and will be accepted for processing on this basis.

If you have any questions regarding the above please do not hesitate to contact me on 022 509 9562 or email chris.dillon@terragroup.co.nz.

Yours faithfully,

CHRIS DILLON
SENIOR PLANNER
BRP(Hons), MNZPI



07 850 6331
022 509 9562



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Resource Consent Application Form

Section 88 of the Resource Management Act 1991. This form provides us with your contact information and details about your proposal. Please print clearly and complete all sections.

To: Name of Council who is the consent authority for this application

Type of resource consent being applied for:

Land use consent

Subdivision

Combined land use and subdivision

Activity Status

Controlled

Restricted Discretionary

Discretionary

Non-complying

I don't know

Fast Tracked Resource Consent

The Resource Management Act 1991 provides for land use activities that have a Controlled Activity status to be fast tracked through the resource consent process and processed within 10 working days by Council. Your consent may be fast tracked if you tick yes to the first two questions below.

- | | | |
|---|-----|----|
| 1. Is this application for a controlled activity (land use only)? | Yes | No |
| 2. Have you provided an electronic address for service? | Yes | No |

If you wish to opt out of the fast track process, tick here:

Applicant name

Please provide the full name of the persons, company, society or trust applying for this resource consent. If the applicant is a trust, please provide the full name/s of all trustees of that trust.

Contact person *(for companies, societies and trusts only)*:

Name:

Phone:

Postal address:

Email:



Applicant Contact Details

Postal Address:

Post code:

Email:

Phone:

Mobile:

Agent Contact Details

If you have an agent or other person acting on your behalf, please complete the details below.

Agent:

Contact person:

Postal Address:

Post code:

Email:

Phone:

Mobile:

Location of Proposal

Please complete with as much detail as you can, so the site for your proposal is clearly identifiable. Include details such as unit number, street number, street name and town.

Property address:

Legal description:

Description of Proposal

Please provide a brief description of your proposal and the reasons why resource consent is required i.e. which rules in the District Plan are infringed. If the space provided is insufficient, please attach any additional pages.

Correspondence and Invoices

Please let us know where to send any correspondence and invoices. Please note that where possible any correspondence will be sent by email.

All correspondence excluding invoices sent to: Applicant or Agent

All invoices sent to: Applicant or Agent

Other Consents

Please let us know of any other consents that you have applied for or know that you need to apply for related to this application. This includes any resource consents that may be required from a Regional Council under a Regional Plan.

| | |
|-------------------------|--|
| Other resource consents | Resource consent no. (if known) |
| Building Consent | Building consent no. (if known) |
| Regional Plan consent | Type of Regional consent: <i>e.g. water discharge permit, water take permit, earthworks</i> |

National Environmental Standards (NES)*

Please let us know if you require consent under a National Environmental Standard. National Environmental Standards are regulatory documents that contain standards pertaining to certain matters e.g. management of contaminated land, telecommunications.

Is consent required under a NES?: Yes No I don't know

Tick the following applicable NES:

NES for Air Quality

NES for Drinking Water

NES for Telecommunication Facilities

NES for Electricity Transmission Services

NES for Assessing and Managing Contaminants in Soil to Protect Human Health

NES for Plantation Forestry

Other

**For further information about National Environment Standards, their requirements and forms please refer to any other sheets provided with these application forms.*

Pre-application Information

We recommend that you have a pre-application discussion about your proposal with a Council planner.

Have you had a pre-application meeting with a Council planner? Yes No

Have you had any other conversations with any other Council staff? Yes No

Date of meeting

Please provide the names of Council staff you have spoken with:

If notes of the meeting or other conversations were provided to you, please include a copy of these.

Have you attached any minutes/notes from the meeting: Yes No

Notification

The Resource Management Act 1991 allows applications to be notified for public submissions on request of the applicant.

Are you requesting that your application be publicly notified? Yes No

If you selected 'yes' to the above question, please attach a short summary outlining the details of your application.

Have you attached a summary? Yes No

Owner of Site

Landowner's full name, phone number and address:

OR:

Same as applicant details

Site Visit Requirements

As landowner and with the consent of any occupiers or lessee, I am aware that Council staff or authorised consultants will visit the site which is the subject of this application, for the purposes of assessing this application, and agree to a site visit.

OR

If the applicant is not the landowner, I understand that Council staff or authorised consultants will visit the site, which is the subject of this application, for the purposes of assessing this application, and agree to a site visit.

Is there a locked gate or security system restricting access by Council Staff? Yes No

Do you have a dog on the property? Yes No

Is there any hazard that may place a visitor at risk? Yes No

Provide details of any entry restrictions that Council staff should be aware of e.g. health and safety, organic farm etc.

Draft Conditions

When a consent is granted, Council can include conditions to manage any adverse effects.

Do you wish to see draft conditions prior to Council making a decision on the application? Yes No

By ticking this box, I understand that the opportunity to review the draft conditions is an act of good faith by the Council and is intended to assist with identifying errors, not to encourage debate over conditions. I further understand that Council has the right to continue processing the consent if too much time is taken with the circulation of draft conditions. By requesting draft conditions you agree to an extension of time under section 37 of the RMA for the time it takes to resolve draft conditions.

Signature of the Applicant(s) or Agent

Please read the information below before signing the application form

Payment of fees and charges

I have read and completed any supplementary forms and/or guidance as provided by Council related to fees and charges.

I/we understand that Council will invoice me for the actual and reasonable costs incurred in the processing of this application. Subject to my/our rights under sections 357B and 358 of the RMA, I/we undertake to pay all and future processing costs incurred by the Council. The Council may issue interim invoices for applications. Without limiting the Council's legal rights, if any steps, including the use of debt collectors, are necessary to recover unpaid processing costs, I/we agree to pay all costs of recovering those processing costs. If this application is made on behalf of a trust (private or family), a society (incorporated or unincorporated) or a company, in signing this application I/we are confirming that I/we are authorised to bind and are binding the trust, society or company to pay all the above costs and guaranteeing to pay all the above costs in my/our personal capacity.

Privacy information

The Council requires the information you have provided on this form to process your application under the RMA and to collect statistics. The Council will hold and store the information, including all associated reports and attachments, on a public register. The details may also be made available to the public on the council's website. These details are collected to inform the general public and community groups about all consents which have been processed or issued through the Council. If you would like to request access to, or correction of any details, please contact the Council.

Information checklist

The information checklist provided overleaf sets out the full set of mandatory information that Council requires for your application to be considered complete. If inadequate information is supplied with your application, this will cause delays in processing or may result in the application being returned pursuant to section 88(3) of the RMA. Your completed application should be submitted to Council with any supplementary forms and/or guidance as provided by Council.

Confirmation by the applicant

I/we confirm that I/we have read and understood the information and will comply with our obligations as set out. A signature is not required if you provide your information by electronic means.

| | | |
|-----------------|------------|-------|
| Applicant name: | Signature: | Date: |
| Applicant name: | Signature: | Date: |
| Applicant name: | Signature: | Date: |

Confirmation by the agent authorised to sign on behalf of the applicant

As authorised agent for the applicant, I confirm that I have read and understood the above information and confirm that I have fully informed the applicant of its/their obligations in connection with this application, including for fees and other charges, and that I have the applicant's authority to sign this application on its/their behalf.

Agent's full name:

Signature: 

Date:

Information Checklist for Resource Consent Application

All applications **must** include the following information:

A description of the activity

A description of the site where the activity will occur

The full name and address of each owner or occupier of the site

A description of any other activities that are part of the proposal to which this application relates

A description of any other resource consents required for the proposal to which this application relates

An assessment of the activity against Part 2 of the Resource Management Act 1991. This will need to address section 5 'Purpose', section 6 'Matters of national importance', section 7 'Other matters' and section 8 'Treaty of Waitangi'

An assessment of the activity against any relevant objectives, policies or rules in the District Plan

An assessment of the activity against any relevant requirements, condition or permissions in any rules in a document (as per section 104 (1) (b) of the RMA)

An assessment of the activity against any relevant provisions of a:

- National Environmental Standard
- National Policy Statement
- Regional Policy Statement
- Regional Plan

A description of any part of the activity that is permitted under the District Plan.

If a permitted activity is part of the proposal to which the application relates, a description of the permitted activity that demonstrates it complies with the relevant requirements and conditions for that permitted activity (so that resource consent not required for that activity).

An assessment of effects (AEE) of the activity.

An AEE is an essential part of your application. If an AEE is not provided Council is unlikely to accept your application.

The AEE should discuss all the actual and potential effects of your proposed activity on the environment. Schedule 4 of the RMA outlines all of the matters that must be addressed in your AEE. The amount of detail provided must reflect the scale and significance of the effects that the activity may have on the environment. For example, if there are major effects arising from the proposal, a detailed analysis and discussion of these effects must be included in the AEE. It may require the provision of information from specific experts (e.g. a traffic engineer). If the effects of the proposal are very minor, then a less detailed AEE can be submitted. *The Council has information available to assist you to prepare the AEE – please contact us if you have any questions.*



Land-Use Consent Application under Section 88 of the Resource Management Act 1991, for a Waste to Energy facility at 401 Racecourse Road, Te Awamutu



Prepared for:

Global Contracting Solutions Limited

Prepared by:

A handwritten signature in blue ink, appearing to read "Chris Dillon".

1 December 2021

Chris Dillon

Senior Planner

Terra Consultants (CNI) Ltd

1 EXECUTIVE SUMMARY

This application has been prepared by Terra Consultants (CNI) Ltd on behalf of the applicant, Global Contracting Solutions, for a Waste to Energy facility, at 401 Racecourse Road, Te Awamutu. This proposal is for a major shift in the way waste is managed in New Zealand transforming it into electrical power and helping create a springboard to further uptake of renewables. The inevitable, immediate corollary is potential criticism that all positives are overshadowed by air discharges. This report and that which is made in parallel to the Regional Council shows that air discharges are benign. Proven technology is applied that will strip out pollutants resulting in effects that are compellingly demonstrated as less than minor.

The entrance to this Industrial site is across land zoned Residential. The use of this land as access continues under this proposal, albeit much more intensively. This report concludes that such a zoning is accidental, and is not intended to throttle the realisation of the site's overall Industrial zoning. No other realistic access is available to this site and without it use is sterilised back to its current as grazing. Effects of the intensified use are also shown to be acceptable and consistent with the outcomes expected for the Residential area. The site is next to the Te Awamutu Racecourse, from which Deferred Residential has recently been uplifted and replaced with Residential zoning, with development possibly occurring in the next 10 years. Effects on this land are also demonstrated as no more than minor, assisted by the likely imposition of a substantial setback on residential dwellings coming to the racecourse site.

The purpose of the Specialised Dairy Industrial Policy Overlay is to protect the Fonterra complex from direct and indirect effects of non-aligned uses. The subject proposal triggers assessment, and this report demonstrates no significant effects including overall impacts on the local airshed and reverse sensitivity. The two activities are well aligned.

Overall this report concludes that any actual or potential adverse effects on the environment will be minor or less than minor overall, and land use consent can be granted.

The application includes the following:

- The details of the proposal.
- A relevant statutory and plan assessment.
- An assessment of environmental effects.

The supporting information attached in the appendix includes:

- Appendix A: Record of Titles
- Appendix B: Site Layout Plan, Land Use Plans, Elevations
- Appendix C: District Plan Rules Assessment
- Appendix D: District Plan Assessment Criteria
- Appendix E: Waikato Regional Policy Statement Objectives & Policies
- Appendix F: Waipa District Plan Objectives & Policies
- Appendix G: National Environmental Standard Air Quality

- Appendix H: Site Suitability Assessment
- Appendix I: Site Selection Process
- Appendix J: HAIL Assessment
- Appendix K: Hazardous Facilities Screening Procedure Assessment
- Appendix L: Landscaping Plan
- Appendix M: Infrastructure Assessment Report
- Appendix N: WRPS General Development Principles
- Appendix O: BERL Waste to Energy Review November 2019
- Appendix P: Air Quality Assessment
- Appendix Q: Acoustic Assessment
- Appendix R: Architectural Design Statement
- Appendix S: Flooding Assessment
- Appendix T: Economic Impact Assessment
- Appendix U: Integrated Transportation Assessment
- Appendix V: Pre-application Meeting notes
- Appendix W: Letters of Support
- Appendix X: Front entrance acoustic barriers location and recession plane

1. APPLICATION AND PROPERTY DETAILS

| | |
|------------------------------------|---|
| Applicant/Proprietor: | Global Contracting Solutions Limited |
| Physical address: | 401 Racecourse Road, Te Awamutu |
| Legal Description: | SA44C/676 Lot 1 DPSA 12327; Lot 1 – 2 DPSA 52865; Part Lot 1 DP 18196; Part Lot 7 DP 20887; Part Lot 1 DP 24251, Part Lot 2 DP 30449 |
| Total Site Area: | 11ha area of site subject to application; total site area 64.1ha |
| Instruments & Interests | Rights of way instruments |
| Zoning, Overlay, Hazards: | Industrial Zone Specialised Dairy Industrial Area Policy Overlay In part affected by Dairy Manufacturing Noise Contour In part affected by Airport Approach Surface from Hamilton Regional Airport Cultural Landscape Area Alert – Mangapiko Stream Flood Hazard Area Racecourse Road: Collector Road Residential zone |

2 SITE AND LOCALITY

2.1 SITE

The subject site is located in the north of the urban area of Te Awamutu, adjacent the urban area boundary. The subject site comprises the southern lots of title SA44C/676, that is Part 7, DP 20887; Lot 1 DPS 12327 and various part lots which make up the right of way access mouth at the intersection with Racecourse Road. That part of the site subject to this application comprises approximately 11ha.

In landform terms the site comprises for the most part a series of terraces which gently cascade down to the Mangapiko Stream which forms the site's southern boundary. The highest parts of the site are those furthest from the stream adjoining the north-eastern boundary; the lowest parts of the site those adjoining the Stream and the western boundary. As the site is entered from Racecourse Road topography is level and maintains the same form as the properties to the north and south of the right of way. This quickly changes as the accessway opens out onto the site proper with landform splitting between an upper shelf and a lower terrace down to the stream. Further towards the centre of the site upper and lower terraces meld more smoothly to a fairly uniform slope before taking a more defined form to the rear of the site's northern dwelling.

Geological mapping of the area indicates the site is likely to be underlain by the younger soils of the Piako sub group to the south west of the site, and the older soils of the Hinuera Formation to the north east. The Piako Subgroup is described as alluvial and colluvial sand, silt, mud and clay with local gravel

and peat beds. The Hinuera Formation is described as cross bedded pumice, sand, silt and gravel with interbedded peat.

Drainage generally follows the slope of the land down towards the Stream and the western boundary. There are some localised wet areas which flow via open channel, draining to a culvert located towards the south of paddocks and on to the Mangapiko Stream. Some paleo channels identified through the site suitability aerial assessment appear to have been filled to allow for better pasture utilisation. A drain is located at the base of the terrace in the east of the site which opens onto Mangapiko Stream near almost at the centre of the eastern reach.

The site is currently overwhelmingly pasture. There are some isolated stands of trees at the base of the terrace scarp in the east of the site, and around dwellings in the north-east of the site. At the boundary with the Stream pasture finishes in streamside vegetation containing a mixture of native and introduced species. At points pasture confronts the stream directly, contributing to at times what can be considered degraded stream margins, especially in the west of the site.

The predominant land use across the site is dairy support farming. Dwellings for the current owner and farm staff are located near the north-east boundary on the top terrace. Some minor quarrying for sand and deposition of clean fill has taken place in the east of the site at the base of the steeper terrace scarp. Fill was placed in this location during construction of the nearby wastewater plant.

Access to the site is solely gained from Racecourse Road. The accessway entrance is located just south of the curve of Racecourse Road as it turns south-east off from its previous south-west trajectory. A paved access road follows the right of way along the site’s northern perimeter, by which vehicle access is gained for the site’s dwellings and further dwellings and farm buildings to the north. The site’s dwellings gain potable water supply from a water main located primarily on the racecourse site. As no reticulated systems are available stormwater and wastewater disposal for both are on-site.

A curiosity of the site is that it also extends to an isolated exclave on the opposite side of the Mangapiko Stream (see Appendix A title plan). This slip of land is part of Part 7, DP20887 and is heavily vegetated and is not proposed to form part of the application site. It’s isolation is likely a product of an historical shift in the course of Mangapiko Stream, as can be seen from the review of historical photographs accompanying the Preliminary Geotechnical Investigation.

2.2 SITE SELECTION

This specific site was selected for a range of compelling reasons, set out in the accompanying Site Selection Process (Appendix I). Various sites around Waikato and Auckland were considered, as below.

| Region | Location | Authority |
|----------|-------------------------|----------------------|
| Auckland | Drury South | Auckland Council |
| Waikato | Kopu industrial area | Thames-Coromandel DC |
| Waikato | Hautapu Industrial Zone | Waipa DC |

| | | |
|---------|---------------------------|----------------------|
| Waikato | Paterangi Rd, Te Awamutu | Waipa DC |
| Waikato | Racecourse Rd, Te Awamutu | Waipa DC |
| Waikato | Hopuhopu | Waikato DC |
| Waikato | Wickham Street extension | Waipa DC/Hamilton CC |
| Waikato | Latham Court | Waipa DC/Hamilton CC |

Table 1: Sites considered

All sites were evaluated according to several criteria, as set out below.

| Criteria factor | Drury | Kopu | Hautapu | Paterangi Rd | Racecourse Rd |
|------------------------|--|--|--|---|---|
| Iwi connection | No – Ngati Apakura Yes – Ngati Tamaoho | No | Moderate | Strong | Strong |
| Environmental, zoning | Industrial zone, consent specifics to be satisfied | Industrial zone, existing use | Industrial zone, consent specifics to be satisfied | Industrial zone, environmental specifics to manage, e.g., landfill, contamination | Industrial zone, environmental specifics to manage, e.g., adjacent stream, traffic access |
| Territorial engagement | Moderate | High | High | High | High |
| Vendor engagement | Low | High | Low | Moderate | High |
| Property | Highest cost | Favourable | Unavailable | Favourable, unsuccessful attempt to acquire | Favourable |
| Transportation | Northern end of highway network | State highway adjacent, furthest from other operations | Expressway close by, additional travel to | Centrally located on highway network between operations | Centrally located on highway network between operations |

| | | | | | |
|----------------------|--|--|---|-----------------------------|--------------------------------------|
| | between operations | and main highway links | Southern operations | | |
| Power grid | Major substation in area, technical challenges | Substation further removed, technical challenges | Substation available, further removed, upgrade plans underway | Grid substation available | Grid substation in closest proximity |
| Fuel | Competitive | Suitable | Suitable | Suitable | Suitable |
| Water | Restricted | Available, close | n/a | Available, slightly removed | Available and close |
| Steam/water off-take | Future possibility | Yes | High probability | Yes | Yes |
| Economic | Most expensive | Good value | Expensive | Moderate | Best value |

Table 2: Site evaluation

The Site selection process document concludes as follows:

“Adding the other factors, particularly the positive position from production-type factors of transportation, water and network proximity, strengthened the consideration of the two Te Awamutu locales. The environmental factors for these sites were manageable. In fact, the construction of the facility on these sites was seen as an opportunity for improvement of the surroundings as much as the zoning and compliance rules were not detrimental to the project.

Ultimately, the final choice of property is often decided by having a “willing buyer-willing seller” relationship, and that is the case here. The vendor of the original chosen site, Paterangi Road, Te Awamutu, decided for their own reasons that they had a preferred option other than the waste to energy plant proposed.

The option to utilise the Paterangi Rd site expired, and with the support of Waipa DC, an approach to the Racecourse Rd vendor was made. This was received positively and, once further evaluation was completed and proven to have additional advantages, this site was confirmed to proceed with.”

In summary, the subject site possesses several features commending pursuit of consent, chiefly proximity to transport and utilities networks, accommodative zoning, availability of water, iwi connection and cost. The confluence of all those factors is hard to achieve for any one site but is possible at this location. Further, a chief concern for a proposal such as this is proximity to sensitive receptors from perceived adverse effects. The site is well buffered on three sides and contiguous to other industrial zoned and used land to the west, with any effects of proximity on future residential

at the racecourse site able to mitigated through measures applied to the facility operation and setbacks.

Any adverse effects must be balanced with the economic benefits of the proposal, which the analysis later in this reports concludes as strongly positive. An isolated location deep in a rural area is the only other real alternative which would in itself generate its own particular package of negative effects that would likely outweigh any benefits of solitary seclusion.

As such I am comfortable that the location chosen is the right location for a facility such as this, and this assessment will demonstrate convincingly that any negative impacts are adequately mitigated.

2.3 LOCALITY

The nature of the sites surrounding the subject site is diverse. The eastern part of the site where the accessway leads off from Racecourse Road adjoins single detached dwellings. Properties opposite the entrance also comprise detached dwellings.

The dwelling on the northern side of the right of way at No. 417 Racecourse Road is slightly isolated as it does not directly adjoin other residential development. It also appears this property's legal boundary and fencing are out of alignment. The right of way boundary almost skims past the dwelling, whereas the formed accessway and fencing bounding this are located some distance to the south giving the false impression that this dwelling is somewhat buffered from the accessway. See Figure 3 which shows legal boundaries superimposed over a recent aerial.

The property to the south of the right of way at No. 381 Racecourse Road is deep and flows from the terrace along Racecourse Road down to the lower shelf before meeting streamside land.

The Mangapiko Stream forms the southern boundary to most of the site. The Stream is a large tributary of the Waipa River and flows northwest to south east. It is approximately 7 -10m wide and previously liberally meandering in its floodplain but which over the years has been corrected and straightened as it runs past the site. Riverbanks are grassed or slightly vegetated as above, and about 3m high. Land on the other side the stream is playing fields or paddock for the most part before transitioning into industrial use approaching Factory Road.

Land across the Stream to the south-west forms part of the Fonterra Dairy factory complex, which extends across the stream to the north and adjoins the subject site as effluent ponds. Moving further north the site nearly grazes a railway siding leading off from the North Island Main Trunk Railway which is located just to the west of the site. The railway siding leads off in a north easterly direction and is one of a number that are either external or internal to a large dry goods store used as part of the Fonterra operation for the shipment of product by rail. Vehicle access to this part of the Fonterra complex begins at Factory Road over a bridge across the Mangapiko Stream then running parallel with the railway past the effluent ponds before terminating at the warehouse.

The Te Awamutu Racecourse forms the northern and north eastern boundary of the site. A mature box thorn hedge demarcates the boundary behind which is pasture which then transitions into the racing track.

2.4 WIDER AREA

The site is located at the northern fringe of the township of Te Awamutu. The wider area to the west is industrial which finishes at Paterangi Road before switching to pasture grazing. Beyond the Fonterra warehouse to the north similarly land use reverts to pasture grazing. Properties across Racecourse Road to the east are residential behind which land use reverts to small lifestyle farming and open pasture, with residential development on Racecourse Road forming a ribbon which is intermittent as it approaches State Highway 3 to the east but becomes more consistent as it nears the subject site access and turns south towards the urban area of Te Awamutu proper.

The proximity of State Highway 3 was a factor in the selection of the site and allows for convenient access of large vehicles directly from the state highway network. Road access to the south and west is somewhat constrained by the urban and local nature of these roads.

Te Awamutu is a medium sized town in the southern part of the Waikato Region with a population of 13,000 and has undergone significant growth in the last 6 years or so, with population increasing nearly 3% between 2013 and 2018, partly due to the proximity to Hamilton and Cambridge, with both of these centres only about 25 minutes distant.

2.5 LOCALITY PLANS

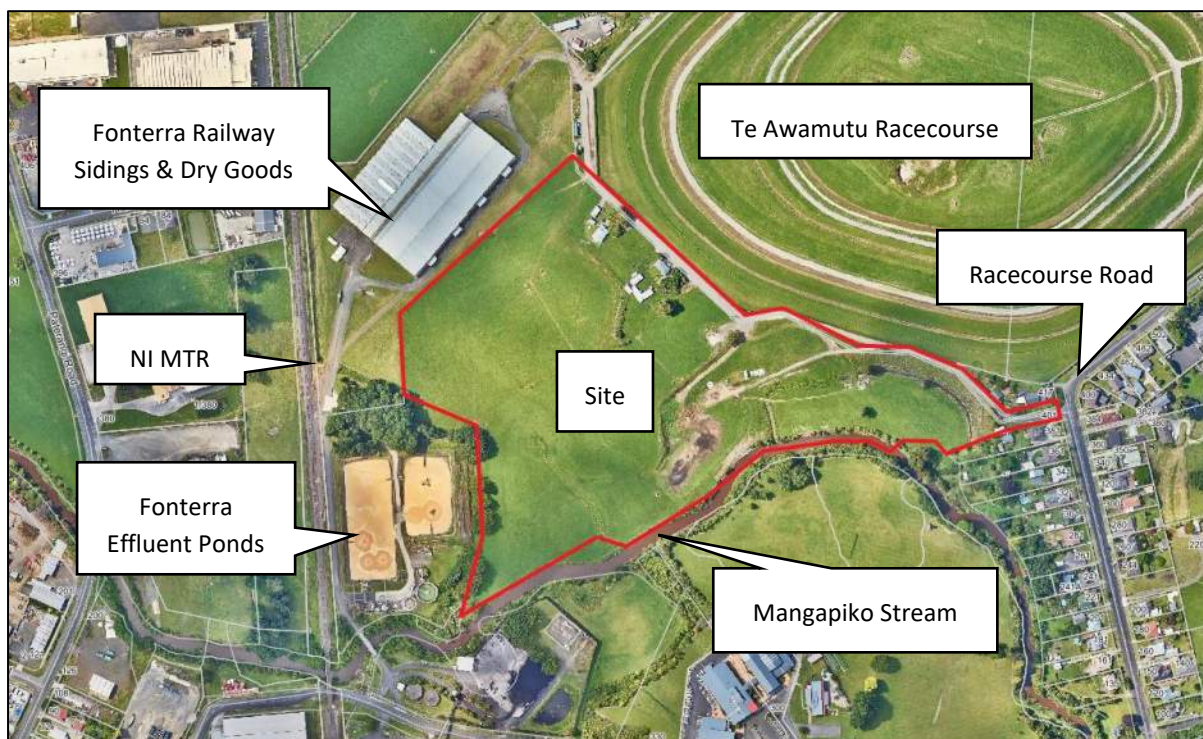


Figure 1: Aerial photo of site and surrounds

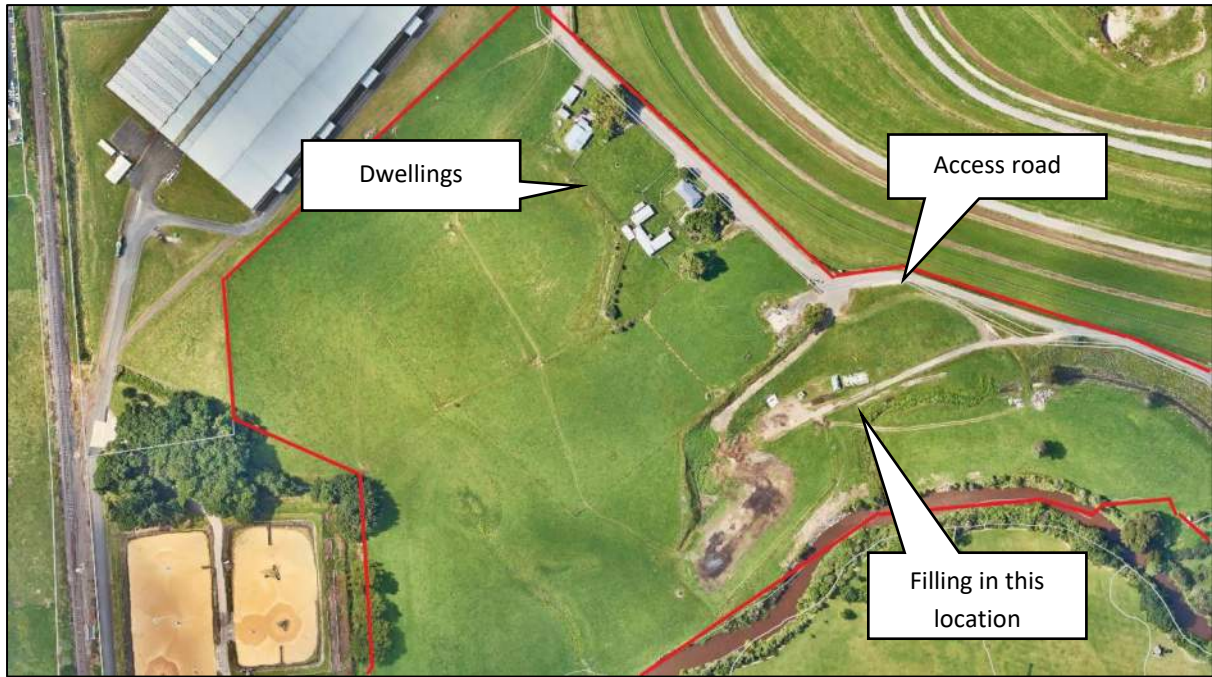


Figure 2: Closer view of site

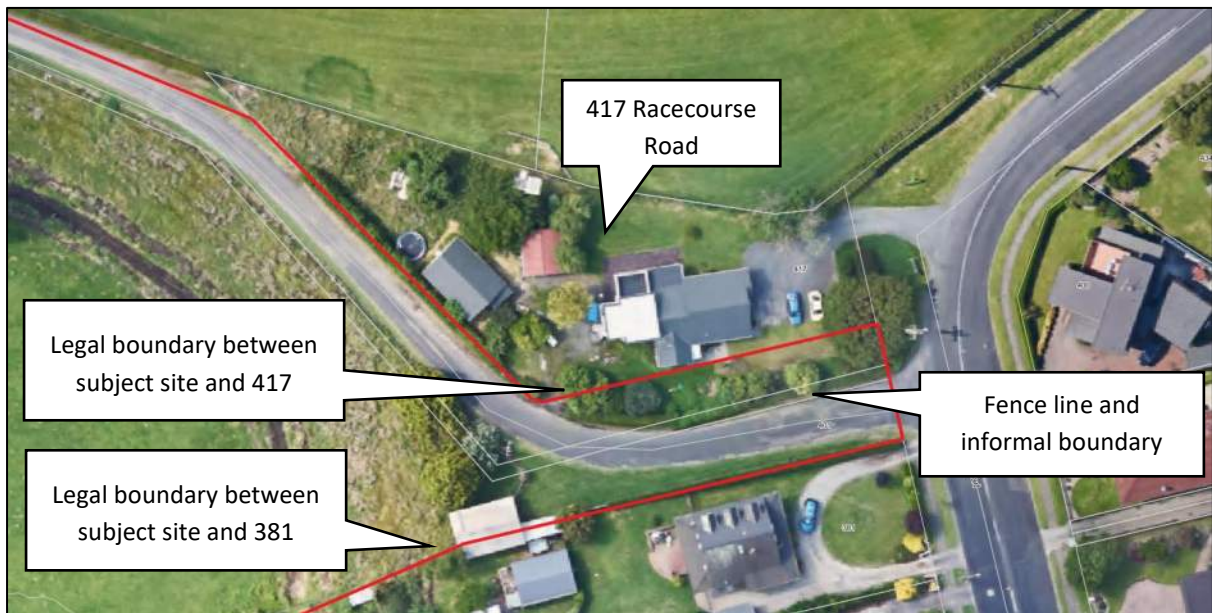


Figure 3: Close-up of site access

Figure 3 highlights the departure between the legal boundaries of the site and occupation that has occurred near the site's entrance. There is significant disparity between the legal boundary and the extent of occupation by the property at 417 Racecourse Road. Similarly it appears that a shed used by occupants at the property at 381 Racecourse Road is mostly located on the subject site.

Figure 4 below confirms the ownership of this part of the site, and figure 5 provides a closer view for clarity.



Figure 4: Ownership around site access



Figure 5: Closer view of ownership around site access mouth for clarity

2.6 SITE PHOTOS



Figure 6: Existing access entrance



Figure 7: View from access looking north



Figure 8: View from access looking south



Figures 9 & 10: View from within site looking back to access entrance; view from near the rear boundary of 417 Racecourse Road looking west



Figures 11 & 12: View from near where fill has been deposited looking north west; view from same location looking north east



Figures 13 & 14: View looking across rear of property at No. 381 Racecourse Road; view from same location looking across site to Mangapiko Stream



Figures 15 & 16: View from centre of site looking south west to Fonterra complex; View across site to dwelling in north of site



Figures 17 & 18: View from centre of site looking north to Fonterra warehouse; view across northern boundary to Te Awamutu Racecourse



Figures 19 & 20: View near edge of application site looking north west; view at edge of application site looking down accessway, north

3 DISTRICT PLAN

3.1 Operative Waipa District Plan (14 August 2017)

The zoning of the site under the Operative Waipa District Plan (ODP) is shown in Figure 21 below.

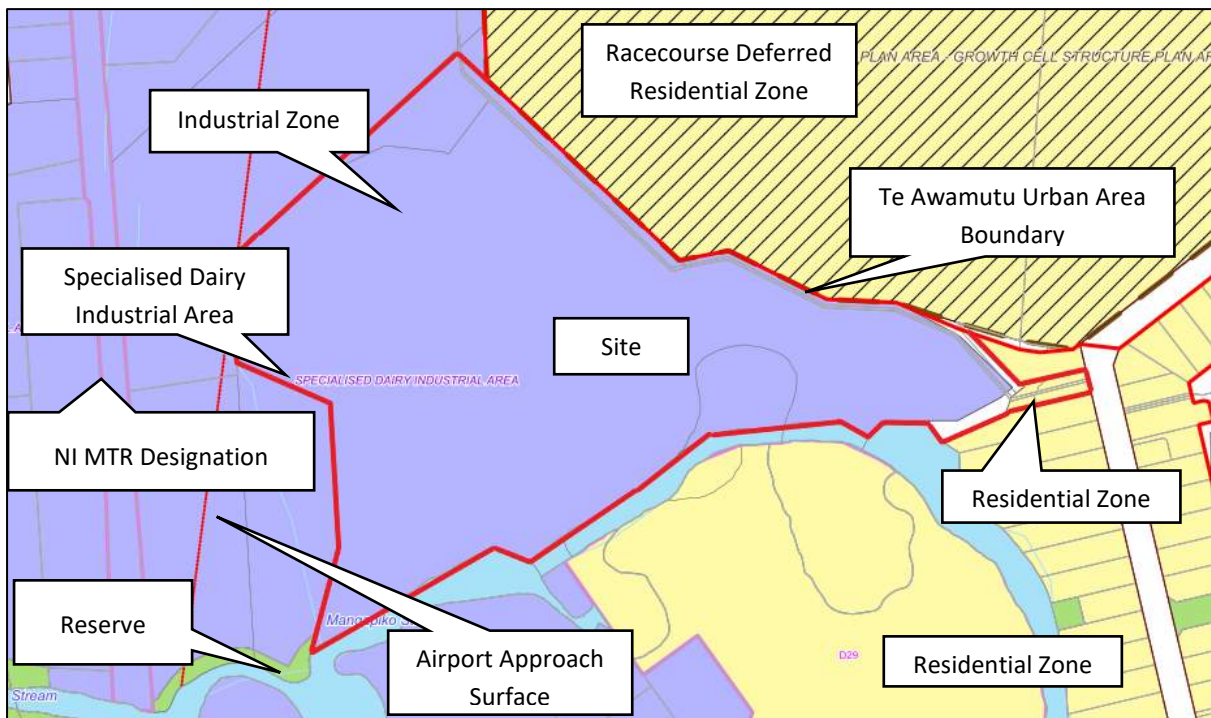


Figure 21: Zoning of the site under the Waipa District Plan

The majority of the site is zoned Industrial, with Specialised Dairy Industrial Area Policy Overlay. The area around the entrance is zoned Residential. A small area in the extreme west of the site is affected by the Airport Approach Surface. The boundary of the Te Awamutu Urban area abuts the site to the north.

Land to the west of the site is zoned Industrial with the same Specialised Dairy Industrial Area annotation. Land to the south across the Mangapiko Stream is also zoned Industrial, with Specialised Dairy Industrial Area annotation. Land to the south east across the Mangapiko Stream is zoned Residential, as are properties along Racecourse Road. Further to the north east along Racecourse Road zoning is rural. The subject site bounds a small area of land zoned Reserve in the extreme south west of the site.

The current zoning of the Racecourse is Deferred Residential, with underlying Rural zoning. However Plan Change 13 uplifts the Deferred Residential zoning and changes to Residential for all those structure plan areas identified for development prior to 2035, as is this site (T13). It is understood no appeals have been received in respect of the proposed rezoning of the Racecourse, therefore the Residential zoning is beyond challenge and can be taken as Operative. Consequential mapping changes are pending.

Racecourse Road is classified as a Collector Road, confirmed by Council's GIS Mapping system, and has a posted speed limit of 50km/hr.

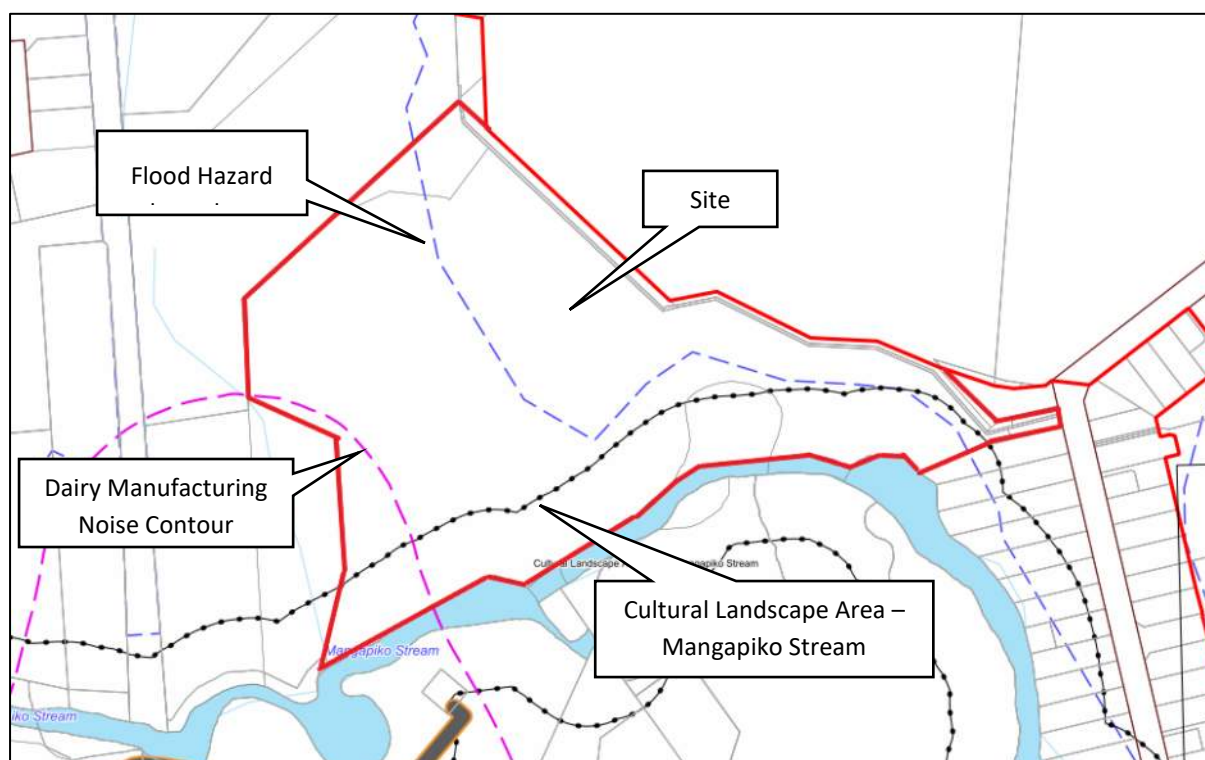


Figure 22: Policy Overlays under the Waipa District Plan

The site is affected by the Flooding Hazard but no other hazards. The Dairy Manufacturing Noise Contour affects part of the south western corner of the site. That part of the site adjacent to the Mangapiko Stream is affected by the Mangapiko Cultural Landscape Area.

Investigations by HDGeo Limited have confirmed the site does not appear to be a HAIL site (attached as Appendix H).

Utilities for the site are limited, with the site reticulated for freshwater internally, and sewer at the boundary with Racecourse Road, as below.

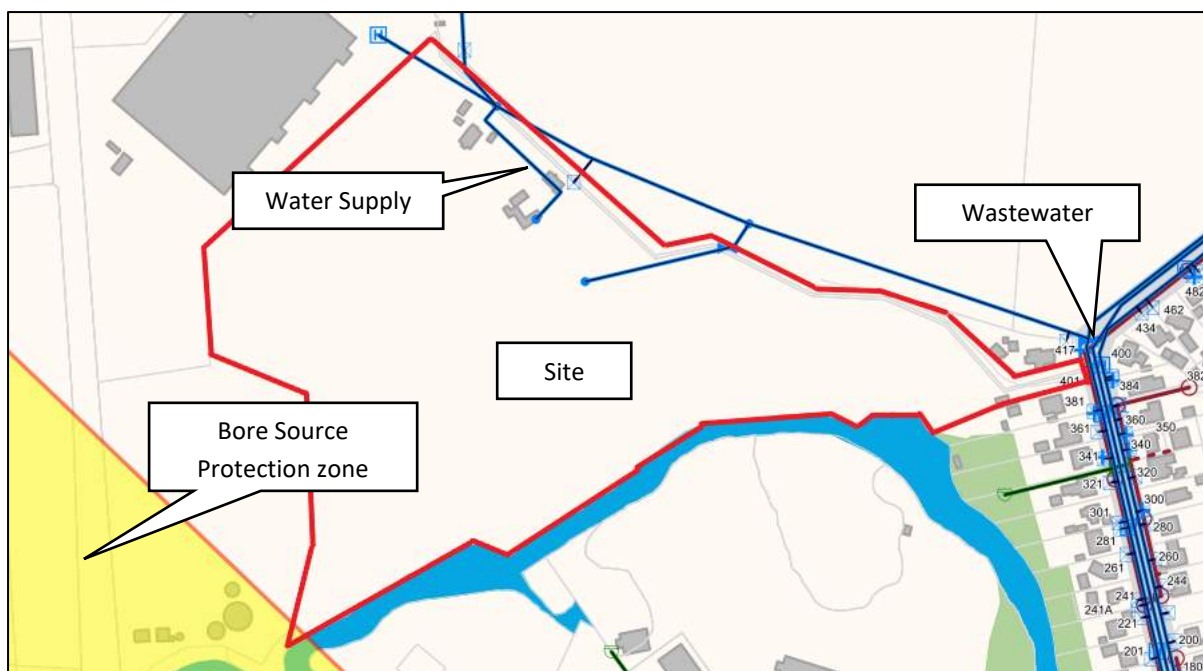


Figure 23: Utilities

4 PROPOSAL

4.1 Introduction

The proposal is a ground breaking initiative for New Zealand, one of the first of its kind in this country, signals a new era of electricity generation and has the potential to dramatically improve the waste management landscape. As the proposal is novel in New Zealand, to assist decision makers the description that follows is extensive.

Simply, the purpose of the activity is to generate power through combustion of refuse derived fuel (RDF). RDF is produced by shredding, sorting, and dehydrating solid waste, typically consisting of combustible components of Municipal Solid Waste (MSW) and other waste. The fuel is then combusted to heat water converting it to steam, and the pressure from the steam used to drive turbine blades.

The plant will operate twenty four hours a day, seven days a week so as to ensure continuous generation of electricity (as noted below this can be adjusted). However transport movements to the property will be restricted recognising the increased sensitivity of the residential properties along Racecourse Road at night. Therefore the operation hours in terms of heavy vehicle deliveries are:

- 07:00 – 17:00 Monday – Saturday
- 08:00 – 17:00 Sunday & Public Holidays

There will be a total workforce of 60 staff, including engineers (27), a recycling team (22), a yard team (8) and office/other staff (6). At night there is likely to be a minimum of 20 staff at the site, increasing to around 40 during the day. Daytime activity is higher since all the material is received during this time, office staff are present, and the education and exhibition facility will be open. Night duties will involve dosing the furnaces, maintenance and security.

A simple schematic of the fuel handling process is shown in Figure 24 and the individual features are discussed below.

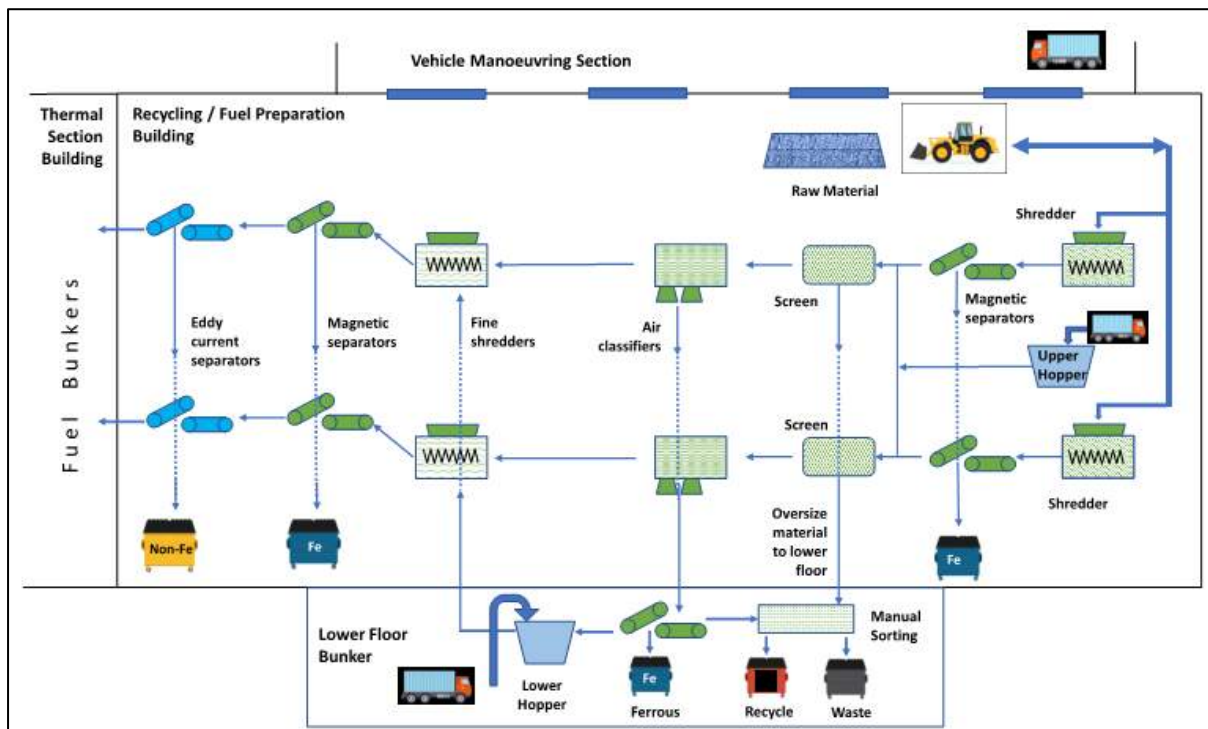


Figure 24: Waste material flow diagram

The area of the site subject to this application is approximately 11ha. The remainder of the site will be unaffected by the proposal, apart from a redirection of access. Access will be formed and pushed through from the unformed access from State Highway 3 opposite 5021 Ohaupo Road, indicated as Greenhill Road (Not Drive) on the title plan. The rights of way currently enjoyed over the land subject to the application and attached to the title will be corrected at a future point.

4.2 Pre-delivery off-site sorting

A high proportion of the fuel will be received at facilities remote to the Paewira Plant. Fuel collection is performed at other facilities, either managed by the principal or from contract suppliers. Guidelines will clearly define what material will be accepted at the plant, as well as being defined in conditions of contract established with other suppliers. This will explicitly state that putrescible material will not be accepted and will be filtered at the source.

The material that is acceptable is larger-scale material with high-calorific value. Putrescible material is not suitable for removal of valuable recycling material or for conversion to fuel, so it is not desirable and will therefore be limited as far as possible.

4.3 Material Reception

The recyclable material will be delivered to site by truck. Some will come as unrefined, whole material, some may be pre-shredded such as tyres.

There are two reception areas for material:

1. Material will arrive via the upper floor delivery building. This building will have controlled door access via the entry road and be sufficiently large for indoor vehicle manoeuvring. Some public waste reception will be allowed for hard-material disposal only. This will be handled within this area also. Once inside the manoeuvring area, vehicles will reverse through an interior door to then dump material within the Recycling Plant building. The two-door system effectively provides double isolation for control of wind-blown material and any odour.
2. The lower floor bunker will be for vehicles from the applicant's own operations as well as contract operators that supply the partially pre-processed material such as flock or shredded tyres. Vehicles will traverse the entry road, down a private ramp and enter the bunker through a controlled-door access. Dumping will only occur when the access door is closed. This part of the operation is principally for large size recyclable material and tyres.

The breakdown of refuse is summarised in the table below.

| Refuse component | Percentage | Tonnes | Description/comment |
|-----------------------|------------|-------------------------|--|
| Flock | 10% | 17,529 tonnes annual | combustible materials left over from a vehicle once recyclables have been stripped out |
| End of life Tyres | 20% | 35,058 tonnes annual | |
| Municipal solid waste | 45% - 50% | 78,880 tonnes | Regionally sourced |
| Plastic | 20% | 35,058 tonnes | |
| Total | 100% | 166525 | Approx. 456 tonnes/day |

Table 3: Composition of refuse entering the site

It should be noted that 480 tonnes total per day is assumed for the operation of the furnaces, on which the air quality and traffic assessments are based. This is likely slightly more than what is needed, as denoted by the variance between the above tonnage and tonnage assumed in the supporting reports and indicates further to the other assumptions adopted that overall assumptions are conservative.

A breakdown and routing of waste is summarised in the diagram below.

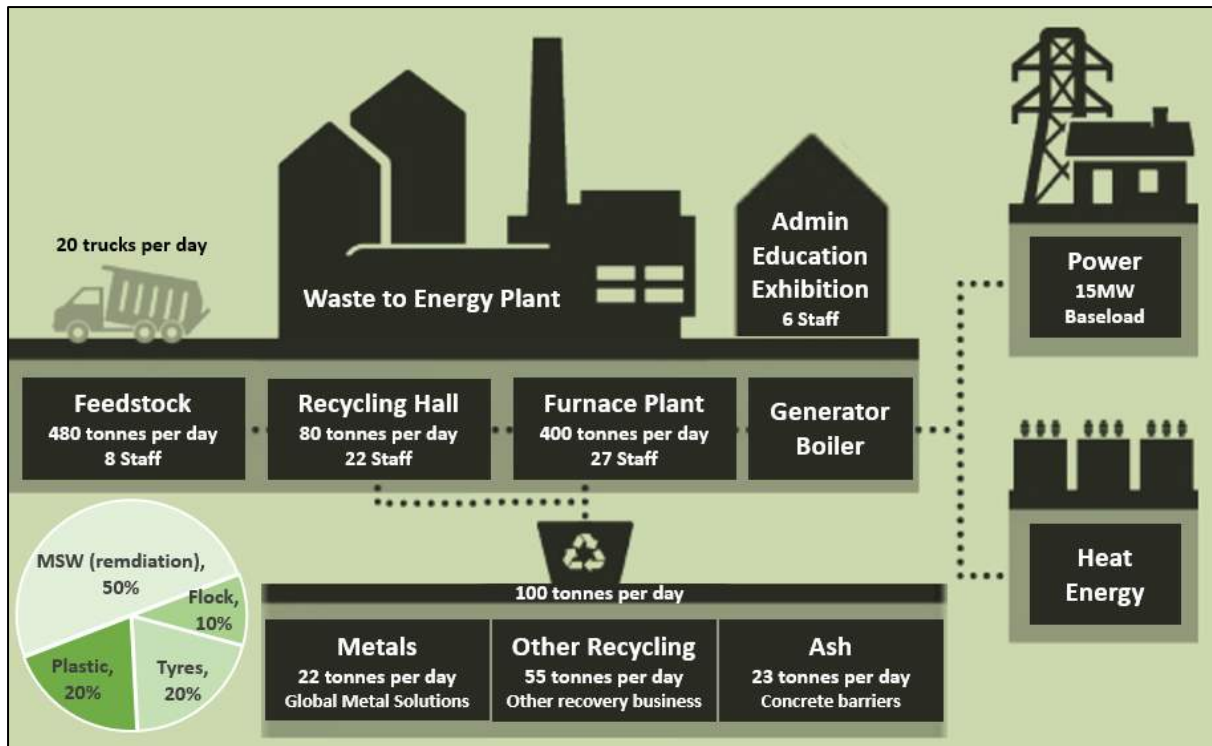


Figure 25: Breakdown and direction of waste

Material is deposited into a storage bunker, from where it is shunted to the eastern end of the building by front-end loaders where it is extracted and moved by crane into the recycling plant, at the head of the processing conveyors.

It is important to note that while the Economic report and the diagram at Figure 25 above refer to remediated materials as a component of the feedstock stream, this is definitively **not proposed** as part of this application. The Air Quality report is based on the fuel mix set out in Table 3 above. If material from remediated landfills was to be considered as a material for feedstock, a revised air quality report would be needed and pursued through an application for a variation to any consent granted to the current applications.

4.4 Material Handling

The lower floor bunker material moves through a manual picking process. This is followed by magnetic removal of ferrous material and shredding. (This is denoted 8-2-3 on the schematic). Once shredded it is moved upstairs via conveyor belt. Recyclable materials and metals are extracted through this phase and transferred to an underground bunker from where they will be uplifted and sent to other facilities off-site for further processing. Examples of materials that will be removed are: Aluminium, tin cans, metals, household appliances, whiteware and engineering offcuts.

The recycling/fuel treatment (upper floor) is the following process (denoted 1 thru 7 on the schematic):

- a. Primary shredding
- b. Magnetic separation of ferrous material

- c. Sifting of large vs small material. Larger material is conveyed to the lower floor bunker for manual sorting and further treatment.
- d. Fine shredding. Lower floor material re-enters at this stage.
- e. Magnetic separation
- f. Eddy-current separation for non-ferrous material

4.5 Excess material handling

There are two types of excess material produced from the waste/fuel process.

1. Recycled material will be loaded into enclosed vehicles within the building for transportation to other processing facilities. These materials include ferrous and non-ferrous metals, etc. Approximately 27,900 tonnes will be fed back into recycling operations elsewhere, equating to ca. 77 tonnes per day, made up of 22 tonnes metals, and 55 tonnes other recycling.

Importantly, 17% of the weight of tyres is steel and 2.3% of MSW will also be metals. In total approximately 8,000 tonnes of metal are expected to be recycled from the plant.

2. Non-recyclable material, such as fines, wood, etc, are loaded into enclosed waste bins within the building. These are then loaded onto trucks for removal to other sites, generally landfill.

4.6 Material Summary

As indicated in Figure 25 above, 480 tonnes of refused will be received per day. 80 tonnes will be retrieved at the recycling plant, and 400 tonnes sent to the furnace plant for combustion and steam generation.

The activity will generate ca. 100 tonnes per day material output, comprising 22 tonnes metals for recycling, 55 tonnes other materials for recycling, and 23 tonnes ash from the combustion process. Of this ash, fly ash, around 2 tonnes per day will be used for low grade concrete such as barriers. All other ash, ie 21 tonnes, will be sent to landfill for disposal.

4.7 Thermal System

The remaining material, now feedstock for the furnace system, is allocated evenly to each of the three fuel bunkers at the head of each of the three furnaces by conveyor.

A grab claw suspended from gantry is located within each of the fuel bunkers which uplifts the feedstock and deposits in the loading chute for each of the furnaces. To ensure a balanced flow and even operation across each three furnaces mass fuel rate is measured and calibrated across all furnaces. The grab claw is also used to homogenise fuel within each of the bunkers.

The loading chute is one part of each furnace's fuel dosing unit which also comprises fuel dosing which carefully controls the rate at which feedstock is fed into the furnace to ensure an even and controlled burn within carefully calibrated operational parameters.

Feedstock will be combusted at a firebox temperature of 850 degrees over a moving grate. Primary air is fed into five primary air zones underneath the grating by individual fans, with air rate, primary air temperature and pressure all controlled. Total air delivered will be 28,000 Nm³/h at a temperature of 20 – 30°C.

Start-up combustion for pre-heating and combustion of initial refuse is provided by a diesel package burner that is switched off once combustion is self-supporting and the firebox attains the stable temperature of 850 °C. In limited instances where fuel load does not deliver required temperatures primary combustion will be supplemented by the auxiliary burners. Auxiliary burners will also be installed at the post combustion chamber inlet for stabilising flue gas temperatures above the minimum permitted values, in case of feedstock variability or low calorific value (drops below about 9 MJ kg⁻¹) or partial load and ensures even delivery of steam to the electricity turbines. It is expected that supplementary firing using the diesel burners will occur for only short periods as energy from diesel expended will outweigh energy obtained.

Heat from the furnace heats the boiler. The boiler is split into two parts reflecting the two ways in which water within the boiler is superheated and converted to steam:

- Radiation section – direct heating of water by heat and gas from the furnace, with three gas passes.
- Convection section – heated gasses heat driven air within the convection section which heat water as its passes through the section.

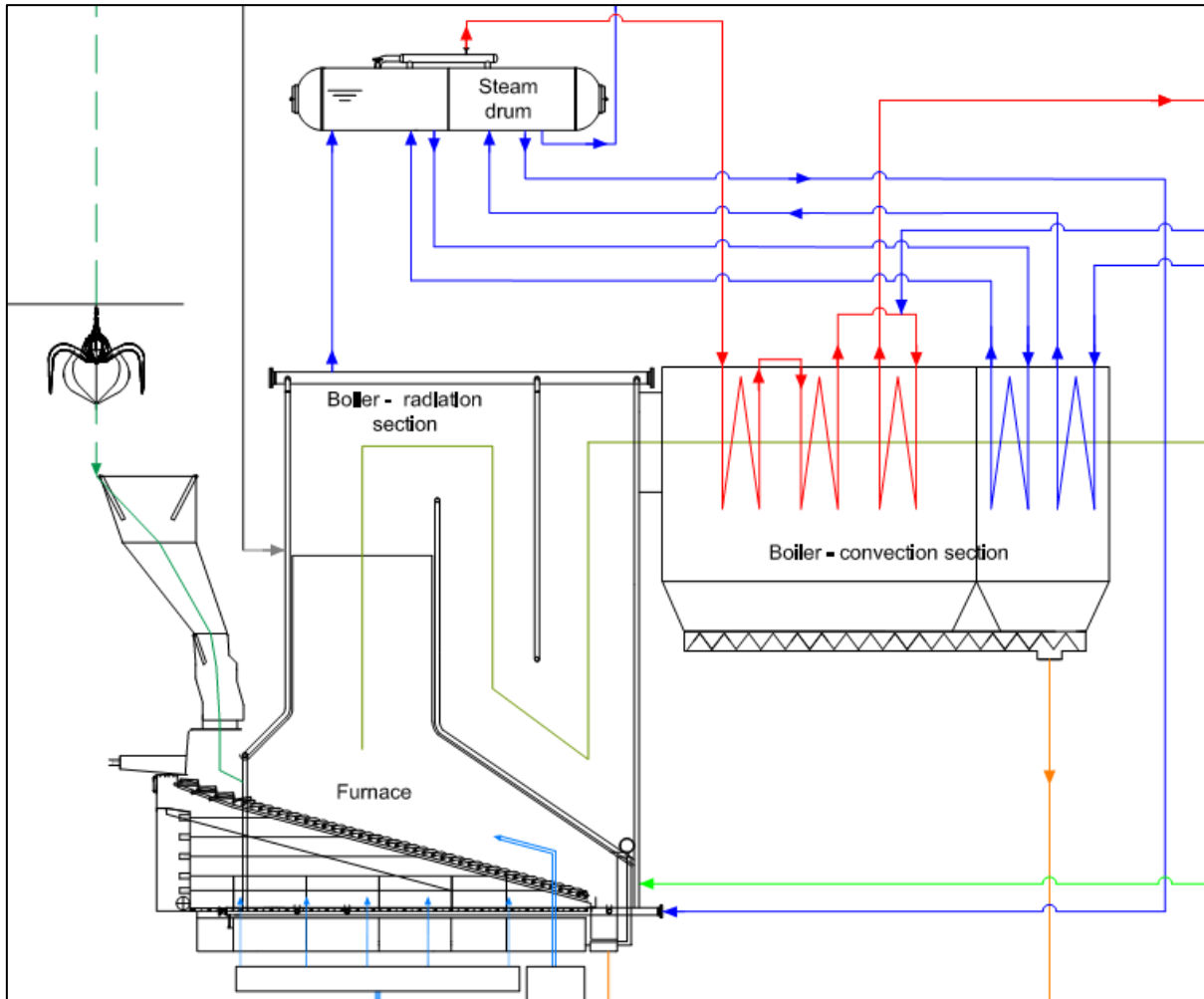


Figure 26: Detail of furnace and radiation and convection sections of boiler

In the case of the radiation section superheated steam is delivered directly to the steam drum, which balances out temperature and pressure. This balanced out steam is sent to the convection section of the boiler and heated to a specific temperature and delivered to the steam turbine to generate electricity, primarily through pressure action against turbine blades, not heat per se.

A simplified overview of the thermal process is shown in Figure 27 below.

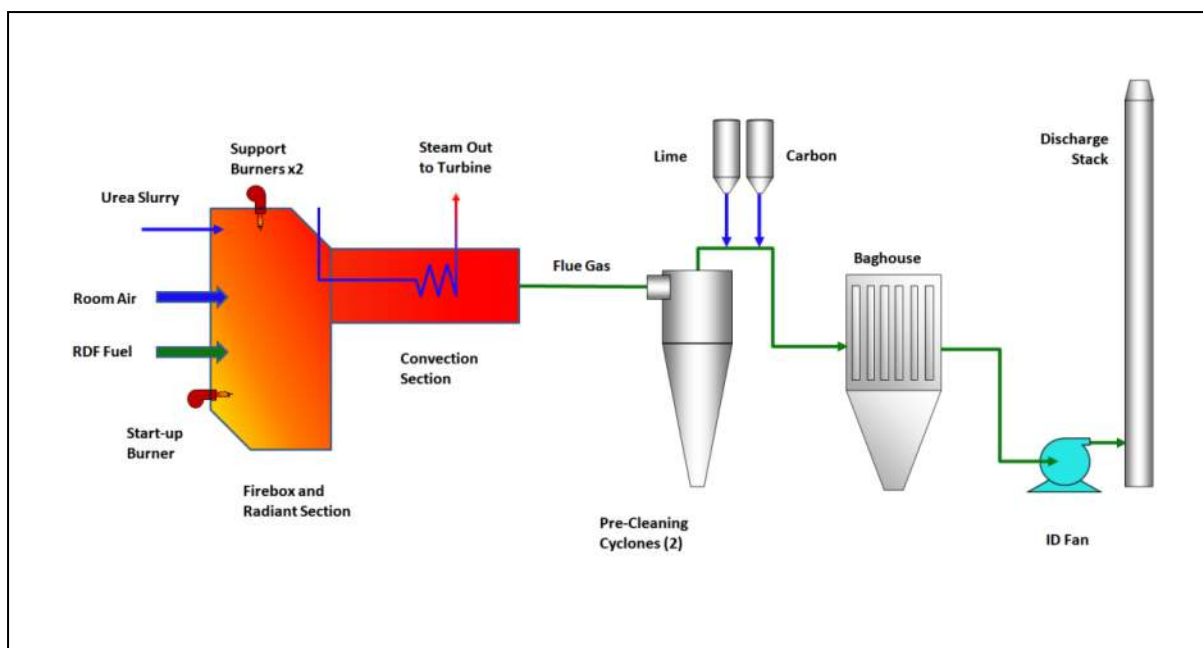


Figure 27: Simplified thermal section including gas flue cleaning

4.8 Flue Gasses Cleaning

Flue gasses are then expelled and cleaned through a four stage flue gas cleaning process:

1. Selective Non-Catalytic Reduction (SNCR)
Nitrogen oxides (NO_x) are removed by the SNCR process by the addition of a urea slurry into the firebox that reduces the NO to inert Nitrogen N_2 reducing the total NO_x by ca. 30%. Any small amounts of urea solids that exit the firebox are collected in the particulate removal filter.
2. Sulphur Dioxide (SO_2) and other acid gasses removal
Sulphur Dioxide and other acid gasses that include hydrogen chloride (HCl) and Hydrogen Fluoride (HF) are absorbed using in-duct injection of hydrated lime ($\text{Ca}(\text{OH})_2$) that reduces SO_2 by about 80% as well as some of the nitrogen dioxide (NO_2).
3. High molecular weight hydrocarbon and heavy metal removal
Activated carbon is also added as an in-duct injection to remove higher molecular weight hydrocarbons eg. dioxins and furans (PCDD/PCDF) as well as heavy metals such as mercury (Hg).
4. Particulate removal
Particulate material in flue gasses, including fine particulate is firstly removed in twin high efficiency pre-cleaning cyclones that remove large particles using centrifugal action followed by high performance fabric filters in a reverse pulse jet baghouse.

4.9 Air Quality Assessment

Treated flue gas is then expelled to air. Mr Terry Brady in his accompanying Air Quality report assesses the various components of the discharges to air against relevant identified standards, and concludes as below. The discharge parameters are set out at Table 3-1 and repeated below.

| Parameter | Value | Units |
|-----------------------------|-------|-----------------------------------|
| Stack Height | 38 | m |
| Exit Diameter ID | 1150 | mm |
| Fuel LHV | 10 | MJ kg ⁻¹ |
| Flue Gas O ₂ | 6 | % |
| Heat Release | 23.3 | MW |
| Fuel Consumption | 8385 | kg hr ⁻¹ |
| Exit Temperature | 175 | °C |
| Flue Gas Flow Rate (actual) | 62580 | Am ³ sec ⁻¹ |
| Flue Gas Flow Rate (at NTP) | 31122 | Nm ³ sec ⁻¹ |
| Exit Velocity | 16.7 | m sec ⁻¹ |

Table 4: Discharge parameters

It should be noted that the parameters apply to each furnace and line. Stack height is shown at 38m, 3m above the roof of Furnace and Boiler Hall, which is the minimum required for adequate dispersal and on which discharge modelling is based, and is therefore conservative.

Fuel consumption is based on 10MJ kg⁻¹ which again is a conservative lower fuel LHV; under normal operating conditions fuel with an energy rating of 12 MJ kg⁻¹ is more likely to be used, with a consequential lower fuel consumption and mirrors the fuel consumption assumptions used across all other reports.

Exit velocity has been factored into the baseline assumptions for calculation of predicted noise from the stacks, along with flow rates.

4.9.1 Particulate PM₁₀ and PM_{2.5}

The effect of particulate matter in air depends on particle size and concentration. PM₁₀ refers to particles in air that are less than 10 microns in aerodynamic diameter and PM_{2.5} has a diameter less than 2.5 microns. PM₁₀ is that fraction of particulate matter that can be inhaled and reach the upper parts of the respiratory system, and PM_{2.5} can reach deeper into the alveoli of the lungs and is becoming better understood as having more significant impact on human health than PM₁₀. People most susceptible to the effects of particles includes the elderly, those with existing respiratory disease,

those with cardiovascular disease, those with infections such as pneumonia and children. As Mr Brady notes evidence is emerging that health impacts derive primarily from $PM_{2.5}$ not PM_{10} .

Assessment is carried out against several measures.

24 hour PM_{10} - maximum predicted PM_{10} contribution from the subject plant predicted to be between 2 and 4 $\mu g m^{-3}$, compared to the National Environmental Standard (NES) maximum of 50 $\mu g m^{-3}$.

24 hour cumulative effect – the effect of the subject plant is assessed in combination with other existing source of PM_{10} in the vicinity, such as the Fonterra plant, residential home heating and motor vehicle sources. The contribution of the subject plant is ca. 1 $\mu g m^{-3}$ added to a conservatively estimated existing background of 30 $\mu g m^{-3}$ and remaining below the NES maximum of 50 $\mu g m^{-3}$.

This is demonstrated spatially in the diagram below.

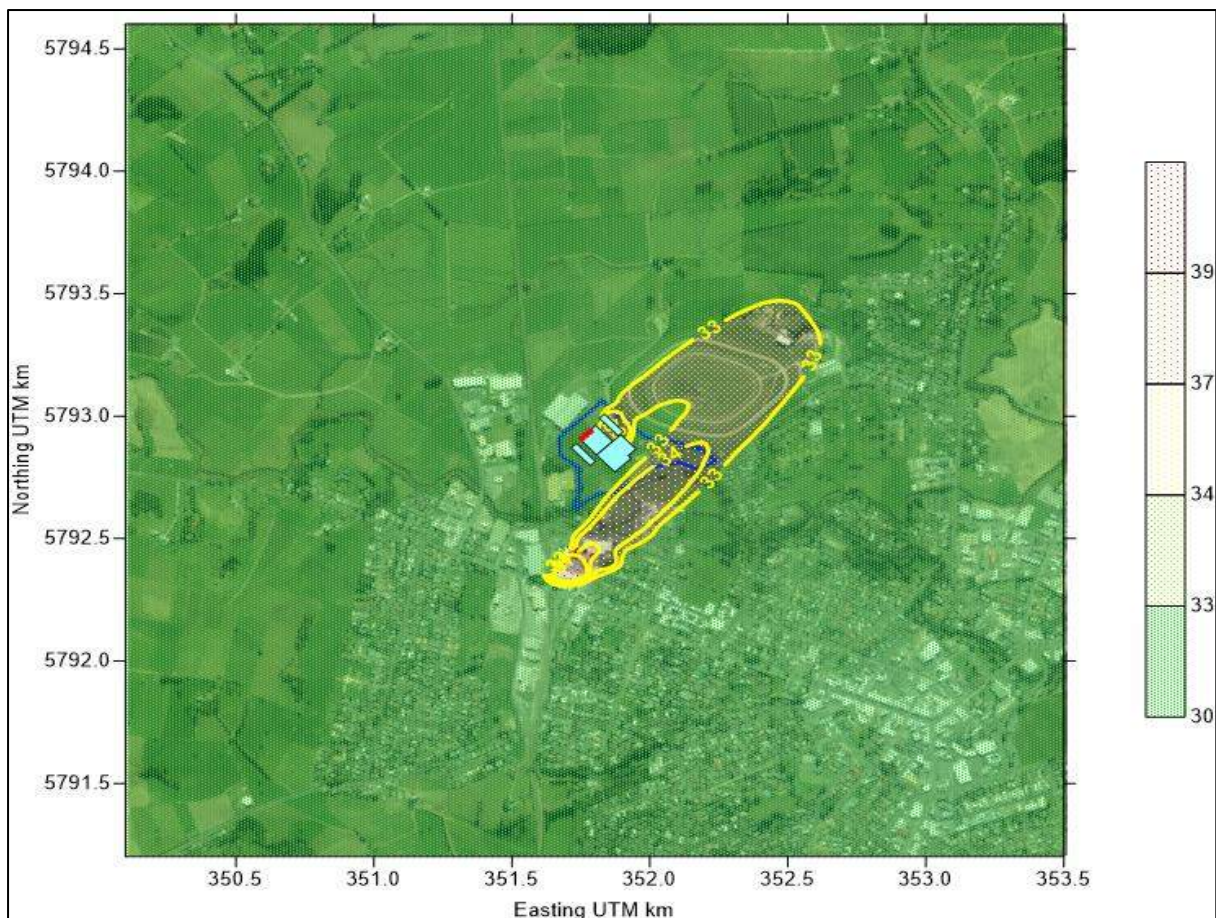


Figure 28: Maximum Cumulative 24-hr PM_{10} $\mu g m^{-3}$. Combined RDF sources plus Fonterra including existing background

Annual PM_{10} - annual PM_{10} contribution from the plan alone predicted at between 0.2 and 0.6 $\mu g m^{-3}$, compared to the NES maximum of 20 $\mu g m^{-3}$.

Annual cumulative effect PM_{10} – subject plant added to existing contribution from Fonterra and other background contributors - predicted at 1 $\mu g m^{-3}$, and are negligible against the background of 13 $\mu g m^{-3}$, and comfortably compliant with the NES maximum of 20 $\mu g m^{-3}$.

24 hour $PM_{2.5}$ - highest off-site levels to the east are $2 - 4 \mu g m^{-3}$, compared to a NES maximum of 25.

24 hour cumulative effect $PM_{2.5} - 20 \mu g m^{-3}$, compared to a NES maximum of 25.

Annual $PM_{2.5} - 0.75 - 0.5 \mu g m^{-3}$ compared to a NES maximum of $10 \mu g m^{-3}$.

Annual cumulative effect $PM_{2.5} - xxx$, compared to a NES maximum of $10 \mu g m^{-3}$.

4.9.2 Sulphur Dioxide SO_2

SO_2 is highly soluble in the aqueous surfaces of the respiratory airways adversely affecting function, particularly for those with asthma and children.

Maximum 1 hour sulphur dioxide levels are predicted to be $35 \mu g m^{-3}$, compared to the NES maximum of $350 \mu g m^{-3}$.

Maximum 24 hour average predicted to be $30 \mu g m^{-3}$, well below the relevant guideline of $120 \mu g m^{-3}$.

4.9.3 Hydrogen Chloride & Hydrogen Fluoride

Both acid gases which at high concentrations can have adverse respiratory effects.

Stack concentration of hydrogen chloride predicted to be $15 \mu g m^{-3}$, and concentration at the site boundary $6 \mu g m^{-3}$, compared to a relevant criterion of maximum $140 \mu g m^{-3}$.

Stack concentration of hydrogen fluoride predicted to be $1.5 \mu g m^{-3}$, and concentration at the site boundary $0.6 \mu g m^{-3}$, compared to a relevant criterion of maximum $240 \mu g m^{-3}$.

4.9.4 Nitrogen Oxides

Exposure to NO_2 has been shown to cause reversible effects on lung function and airway responsiveness, and may also increase reactivity to natural allergens. Studies have shown a relationship between ambient NO_2 exposure and increases in daily mortality and hospital admissions for respiratory disease, and has also been shown to potentiate effects of exposure of other known irritants.

NO_x 1 Hour predicted $100 \mu g m^{-3}$, 1 hour cumulative predicted at $100 - 400 m^{-3}$. Equates to NO_2 concentrations $82 \mu g m^{-3}$, and $149 \mu g m^{-3}$, and is compliant with the NES of $200 \mu g m^{-3}$. Standard only available for NO_2 .

4.9.5 Mercury

Exposure to high levels of mercury can result in damage to the respiratory system and central nervous system, and long term exposure effects include memory deficit, speech problems and blurred vision.

1 hour levels predicted at $0.01 - 0.015 \mu g m^{-3}$, compared to the relevant maximum of $0.6 \mu g m^{-3}$.

Maximum 8 hour level predicted at 0.01, compared to the relevant maximum of $0.06 \mu g m^{-3}$.

Annual level predicted at $0.0005 - 0.002 0.06 \mu g m^{-3}$, compared to a NES maximum of $0.33 \mu g m^{-3}$.

4.9.6 Dioxins & Furans

Long term exposure causes a range of toxicity, developmental and neurodevelopmental effects, effects of thyroid and steroid hormones and reproductive function. Particularly vulnerable are the foetus or neonate.

24 hour average predicted at 50 fg I-TEQm⁻³, compared to a relevant standard maximum of 100 fg I-TEQm⁻³

Annual average predicted at 15 fg I-TEQm⁻³, compared to a relevant standard maximum of 600 fg I-TEQm⁻³

4.9.7 Carbon Monoxide CO

High exposures to CO can cause acute poisoning coma and collapse, and adverse cardiovascular effects, and adverse neuro-behavioural function.

4.9.8 Summary of Predicted Air Discharges

The assessment of the predicted discharges from the facility against relevant standards is summarised in the table below.

| Discharge component | Averaging time | Identified maximum relevant Value µg m ⁻³ | Predicted additional µg m ⁻³ | Compliance |
|------------------------------------|--------------------|--|---|------------|
| Particulate PM ₁₀ | 24 hour | 50 | 2 – 4 | ✓ |
| | 24 hour cumulative | 50 | 1 (background 30) | ✓ |
| | Annual | 20 | 0.2 – 0.6 | ✓ |
| | Annual cumulative | 20 | 1 (background 13) | ✓ |
| Particulate PM _{2.5} | 24 hour | 25 | 2 – 4 | ✓ |
| | 24 hour cumulative | 25 | 20 (background 18) | ✓ |
| | Annual | 10 | 0.75 – 0.5 | ✓ |
| | Annual cumulative | 10 | 9 (background 8) | ✓ |
| Sulphur Dioxide SO ₂ | 1 hour | 350 | 35 | ✓ |
| | 24 average | 120 | 30 | ✓ |
| Hydrogen Chloride | 1 hour | 140 | 6 | ✓ |
| Hydrogen Fluoride | 1 hour | 240 | 0.6 | ✓ |
| Nitrogen Dioxide | 1 hour | 200 | 82 | ✓ |
| | 1 hour cumulative | 200 | 149 | ✓ |

| | | | | |
|---------------------------------|---------|-------------------------|----------------|---|
| Mercury Hg | 1 hour | 0.6 | 0.01 – 0.015 | ✓ |
| | 8 hour | 0.06 | 0.01 | ✓ |
| | Annual | 0.33 | 0.0005 – 0.002 | ✓ |
| | | fg I-TEQm ⁻³ | | |
| Dioxins & Furans (PCDD/PCDF) | 24 hour | 100 | 50 | ✓ |
| | Annual | 600 | 15 | ✓ |

Table 5: Assessment of air discharge components against identified relevant standards

4.9.9 Dust & Odour

Sections 3.10 and 3.11 of the Air Quality report deal with Dust and Odour.

In terms of Dust the report states:

The main potential sources of dust and light airborne material are:

- *Unloading raw material in the loading bay*
- *Loadout of screened material rejects*
- *Firebox ash handling*
- *Cyclone and bagfilter dust collection*
- *Lime, carbon and urea silo filling*

All of these activities will be carried out within the main building that will operate under a negative pressure due. Each of the boilers will draw approximately 12 m³ sec⁻¹ of air through the building making. Combined with the tilt slab construction, rapid open/close doors the negative pressure generated within the building will be sufficient to contain all dust and airborne material.

In terms of Odour the report states:

*As described in section **Error! Reference source not found.** most of the raw material will be pre-sorted to eliminate putrescible material and will have no odour. Additional checks will be made in the vehicle management area, and loads will be inspected for putrescible or odourous material and rejected if necessary. Combined with the negative pressure in the building and double door isolation, there is very little potential for odour discharge from the proposed operation. There will be no odour from the stack discharges as the combustion of material at temperatures of 850 °C or more in the presence of excess O₂ completely destroys odour.*

The report concludes in respect of dust and odour:

Other effects such as odour and dust or fugitive particulate emissions will be controlled using a 4 tier approach that includes, pre-processing of a large portion of the material off-site, excluding putrescible and odourous material, the use of a double door air lock system and maintaining a slight negative pressure within the building. The first of these means that there will be no significant odour that requires control,

but the remaining three controls ensure that both any slight residual odour and particulate discharges are well controlled.

4.10 Process Additives & Waste Generation

To assist the process of combustion and to effect flue gas cleaning various chemicals and substances are added, with various wastes generated. The following section and tables provide an overview of the inputs and outputs of the thermal generation plant.

| Inputs per fuel line | Rate | Function | |
|--|---------------------------------------|--|--|
| Fuel | 6.9t/hr | | |
| Air | 28,000 Nm ³ /hr | | |
| Ammonia/Urea slurry NH ₃ | 105kg/hour | Reduces NO to N ₂ | |
| Dry sorbent lime CA(OH) ₂ | 120kg/hr | Aids absorption of HCl, HF and reduces SO ₂ and NO ₂ | |
| Active carbon | 2kg/hr | Removes dioxins and furans and heavy metals | |
| NH ₄ OH | 250ml/hr | Water conditioner | |
| N ₂ H ₄ | 2.4 ml/hr | Corrosion inhibitor | |
| NaOH Sodium hydroxide Caustic soda | 170ml/hr | Cleaning agent | |
| NaCl Salt | 1kg/hr | Softening agent | |
| Fresh water | 5.3t/hr 43785 m ³ /year | | |
| Na ₃ PO ₄ Trisodium phosphate | 425ml/hr | Cleaning agent | |
| Diesel | | Supplementary firing, start up. | |

Table 6: Fuel line inputs

| Outputs per fuel line | Rate | Function | |
|--------------------------|--------------------------|--|------------------|
| Grate ash | 185kg/hr | Removed to landfill | |
| Wet de-asher waste water | 200kg/hr | Removed to landfill | |
| Boiler ash | 51kg/hour | Removed to landfill | |
| Fly ash | 85kg/hr | Suitable for low grade concrete | 2 tonnes per day |
| Ash & sorbent product | 167kg/hr | Removed to landfill | |
| Waste water | 2.65 t/hr | Removed for treatment and disposal offsite | |
| Electricity | 15MW el power | | |
| Gland steam | 250kg/hr | | |
| Flue gas | 35900Nm ³ /hr | | |

Table 7: Fuel line outputs

From the table it is noted that a substantial amount of water is recycled through the facility and system. Some water is lost due to evaporation to steam for power generation and other water is removed for treatment off site. Prior to removal wastewater undergoes some treatment on site through screening and softening.

Various types of ash are generated through the combustion process.

A wet de-asher is arranged under each grate, collecting ash and slag falling from the hoppers underneath the grate. The hoppers are immersed into water ensuring dust free discharge.

Ash is also collected from the boiler, and collected by hoppers, connecting screws, twin flap sluice and dropping chute.

Fly ash is collected from the cyclones used as part of the flue gasses cleaning process, and collected by hoppers, ash screws and twin flap sluice.

Bag filters, also used as part of the flue gasses cleaning process, collect ash which is collected by hoppers, ash screw and twin flap sluice.

Fly ash is separated out into its own bunker and all other ash conveyed to separate bunker for collection and removal to landfill.

Approximately total 23 tonnes ash will be generated per day.

4.11 Hazardous Substances

As above ash will be removed to bunkers for processing or disposal off-site.

Substances used as part of the thermal and water recycling processes have been assessed by Terre Nicholson against the relevant Hazardous Facilities Screening Procedures (HFSP) of the District Plan. She confirms all the quantities used comply with the maximum quantities permitted by the District Plan. Attached as Appendix K.

The following substances have been assessed:

- Diesel 5000L storage tank
- Urea, 15m³
- Sodium bicarbonate 15m³ silo
- Trisodium phosphate (500L)
- Ammonium hydroxide (140L)

All substances are not regulated by the HFSP provisions of the District Plan, apart from Diesel. A relatively low amount of diesel will be needed on-site, for start-up and supplementary firing, and a small 5000L tank is proposed. The effects ratio of this quantity of diesel is 0.35, which is less than the permitted threshold of 1, and therefore permitted.

All chemicals and diesel will be stored on site in tanks in compliance with other relevant regulations.

The locations of storage of these substances are shown in the Site Layout Plan in Appendix B.

4.12 Electricity Generation

The purpose of this facility is to burn refuse to generate power. The electricity generation plant will be located next to the furnace and boiler system, from where high-pressure heated steam will be delivered to drive the two generator turbines. Proximity is required to minimise heat and pressure loss. Suspended pipes will deliver the steam from the boiler system to the generator plant across the one way vehicle access.

It is separated via valves to provide inflow for two turbo-generators (a steam turbine connected to an electricity generator is known as a turbo-generator). The energy in the steam is released within the turbine by passing through a series of stages that expand and cool the steam driving the blades it passes through. The blades convert energy into rotary energy as they drive a central shaft. The shaft is connected to the generator which produces electrical energy.

There will be two turbines installed, each with a capacity of 10MW electrical output. Each furnace and boiler line produce approximately 17MW of steam, which when allowing for (conservatively) 33% efficiency equates to ca. 5MW power output per furnace. Or 20MW of total potential power output if the 4th line is brought into use, ensuring that two turbines of together 20 – 22MW of total electrical output will be sufficient for the possible total final power output of the facility. Key characteristics per

turbine are listed below. Steam that has passed the turbines blades is then transferred on to the steam condensers for cooling and recirculation back into the facility.

The electricity will be likely converted from the 11kV generated to 33kV at a sub-station location within the electricity generation building, and transmitted via two 33kV underground cables to the Transpower Te Awamutu substation in Racecourse Rd where it connects to the Waipa Networks distribution network and the national grid. Connecting at this point assists the region by providing more power capacity into the national and local electricity grid. In simple terms, this will support local economic development and defer the need for more transmission networks in the vicinity.

| Turbine data, nominal load case | |
|--|-----------|
| Inlet steam flow | 80t/h |
| Inlet Steam pressure | 40.0 bara |
| Inlet steam Temperature | 400°C |
| Exhaust steam flow | 5.5t/h |
| Exhaust steam pressure | 0.3 bara |
| Exhaust steam temperature | 71°C |
| Turbine noise level | 85dB(A) |

Table 8: Turbine key characteristics

Using three boiler lines, the two turbines will generate 15MW of power, which is enough power to provide for approximately 14,000 average households, or enough to provide for all of the energy needs of approximately one-third of the households in Waipa District. Given the scale of the plant it is not feasible to connect it directly to the local electricity distribution network, owned by Waipa Networks. It will therefore connect to the “grid” at Transpower’s Te Awamutu Grid exit point along Racecourse Road.

After steam has moved passed the turbine blades there is also the possibility of using this heat energy to power a district heating network in the local area, for industrial or domestic use. At this time this has not been fully developed but will be explored once the plant is operational.

The direct monetary benefit of the electricity generation is discussed below, but an additional and important benefit of the electricity generation is the added stability and resilience it provides to the

electricity network in this part of the Waikato. The proposed facility would be located in the middle of Waipa Networks Electricity coverage area but electricity generation for this network is however concentrated at the east at Karapiro and Arapuni, and transmission in the Te Awamutu area is currently under pressure as a result of increasing demand regionally and in the Te Awamutu area as a result of population growth and expanding industrial activity.

The maximum power demand from Te Awamutu varies over the course of a year through a range from a low of approximately 10MW overnight in summer to peak at 41MW during winter. This has grown significantly since 2015 due to regional growth. The Waipa Networks supplied region has in the past 5-years already been experiencing growth in the order of 1.5%. While originally driven by largely residential development, this has recently transitioned to industrial and commercial growth with the expansion of the Waikeria prison facility an example.

Fonterra is currently the single largest customer on each network. The Te Awamutu plant has an embedded steam generator which operates in the 4-5MW range. The steam production was recently converted from a coal boiler to biomass (wood) supply. This reduces the balance of their network supplied energy to 1-2MW.

The WtE plant will likely be connected directly to the Te Awamutu GXP (Te Awamutu Grid eXit Point). The generation plant will supply 10-20MW of output depending on maintenance schedules, fuel supply, etc. On a continuous basis, if an average output of 15MW was assumed, it can be reasonably expected that all output will be utilised within the Te Awamutu GXP supply region. There will also be periods when power is exported, generally overnight.

It is the physical nature of electricity networks that dictates that energy will be consumed through the least path of resistance. So having a generator connected so close to the load means that the majority of the WtE output will go directly to the Te Awamutu load area. The mechanics of the electricity market, with respect to which retailer “supplies” each customer, is a matter of accounting record as opposed to where physically the power comes from.

On a total energy basis, approximately 190GWh of energy is consumed over the course of a year in the Te Awamutu region. Using an average output of 15MW for the WtE plant, a full year of continuous operation will produce 131 GWh’s of energy. While not all of this will be consumed within the region, as described above, a high proportion will. This electricity consumption will be near to source where it will be heavily immunised from disruption such as fallen power lines in the South Island High Country. Further, power supply will be continuous, and also immunised from the vagaries of weather which imposes operation restrictions on South Island hydro production.

The proposed form of electricity generation will also assist in the diversification away from fossil fuels in New Zealand, and will contribute to the stability of the national grid. It presents an alternative form of electricity generation at a cost undercutting production from fossil fuels - \$110 compared to traditional thermal base load options - \$250. “Base-load” electrical production is that providing a continuous energy output rather than only operating during peak periods. Baseload electrical production is traditionally dominated by fossil fuels and hydro, as renewable energy sources are inherently transient in operation relying on the sun to shine or the wind to blow. Transpower, the national grid operator, is anticipating that this transient generation will make the national grid more complex to operate. Baseload plant, like the WtE one, are important as they offer stability to the

national grid. While it is not on a scale equivalent to Huntly or the hydro power stations of the Waikato River, all generating plant contributes.

For the past decade, the large coal-fired Huntly Power Station units have been steadily withdrawn from service or operated in peak demand mode. They are also held in reserve for dry-year situations, although the cost of both operating and refurbishing them is what is driving their removal from service. Plants like the WtE units are important to fill the gap created by the removal of base load units like Huntly, as well as supporting continuous grid stability.

In this situation, the high market prices and increasing peak demand scenarios are factors that led to the power availability problems experienced on 9 August 2021. While the WtE will not alleviate solely, new generation plant is required to meet the growing demand and network balancing challenges.

A resulting benefit is that base-load plant contributes to stabilising the overall wholesale cost of energy by further limiting the periods when higher cost peaking is required or displacing uneconomic units from the market. This stability is the platform on to which additional forms of generation can be added such as solar and wind power.

4.13 Education & Exhibition Centre

An important component of the this proposal is the Education and Exhibition Centre. The centre will be used to showcase the operation and its benefits such as reduced need for landfills and innocuous environmental impact. The involvement and reference back to mana whenua is also an important driver behind this facility, as noted above Global Metal Solutions are a Māori majority business with a primary goal of providing employment to local Māori and this operation is one of a number of initiatives that are boosting the role of Māori in the economy and improving the wellbeing of Māori. The presence of a significant Māori business such as this is also an opportunity for local Māori to reassert some mana whenua in Te Awamutu.

4.14 Building Descriptions

There will be three main buildings at the site:

1. Power generator
2. 'Main Building': Building housing Waste recycling Plan, tipping and manoeuvring area, and furnace and boiler system
3. Education, Exhibition and staff facilities building.

The Architectural Design Statement at Appendix R provides an understanding of the philosophy driving design of the buildings, over and above functional requirements.

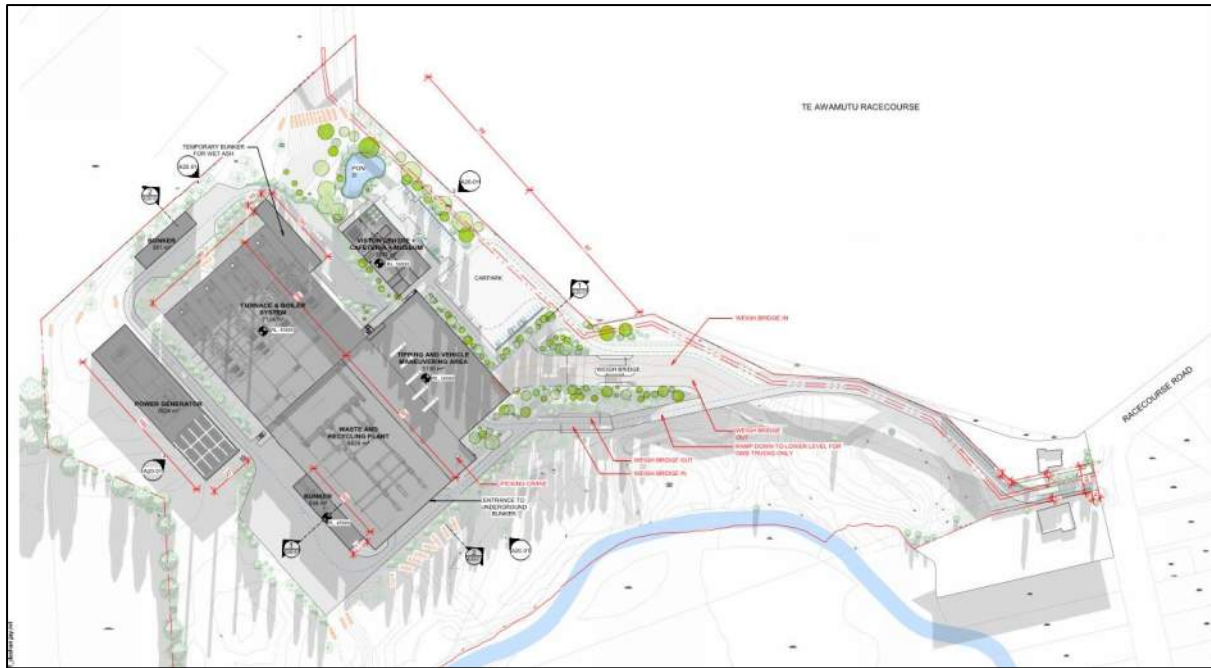


Figure 29: Proposed Site layout

4.14.1 Power Generator

The Power Generating component is an enclosure comprising an internal building housing the two turbines and alternator, and the steam discharge units at the south of enclosure. The building will have a maximum height of 14m, length of 100m and area of 2700m². The turbine housing will be constructed of concrete pre-cast walls, and metal roofing on steel purlins.

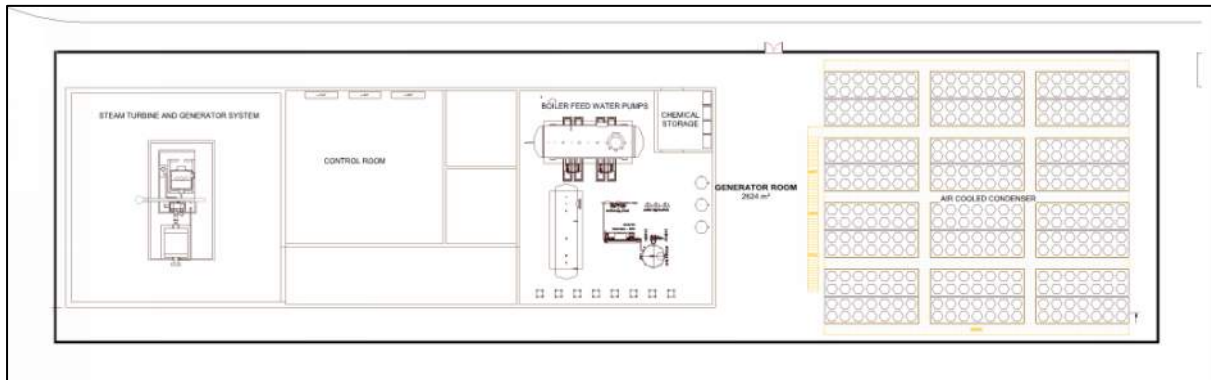


Figure 30: Plan view of generator building

4.14.2 Main Building (Tipping and Manoeuvring centre; Recycling Hall; Furnace & Boiler Hall)

The Main Building is large. Necessarily so as it houses most of the key parts of the facility which require covering and operation unencumbered by building constraint. Sufficient clearance along the horizontal and vertical axes is needed around the recycling plant for the tipping by truck and movement by crane of material from the tipping hall into the recycling centre and along the recycling

lines. Large and high spans across this area uninterrupted by columns aid visibility, facilitate smoother operation and reduce the potential for accidents.

Height around the furnace and boiler systems is driven more by the height of the furnace and boiler machinery and the need for sufficient clearance. Sufficient height also facilitates movement of material from the recycling plant into the storage bins and on to the fuel dosing chutes through the fuel dosing system.

Gas from each of the furnace and boiler lines will be discharged to separate chimney stack, with three chimneys proposed for the three lines proposed to operate. For adequate gas dispersal to air chimneys extend beyond the roof by 3m. Therefore the total height of the chimney stacks from ground level will be 38m.

The stacks will each be of steel construction, designed for temperatures of 220°C with flue gas temperature anticipated to be 180°C, and will be insulated with internal sleeve lining ensuring the maximum surface temperature is 50°C. Access ladders and platforms will be fitted for maintenance and lights fitted for aeronautical safety. The stacks will have a maximum height of 38m. 3m clearance from the roof is required, maximum ridge height of the furnace hall roof is 35m.

The Main Building is one continuous building but can be separated into three distinct parts.

The Tipping and vehicle manoeuvring Area has an area of 3,200m², and has a height at eave of 12m, extending to a maximum ridge height of 14m where it meets the Waste and Recycling Hall.

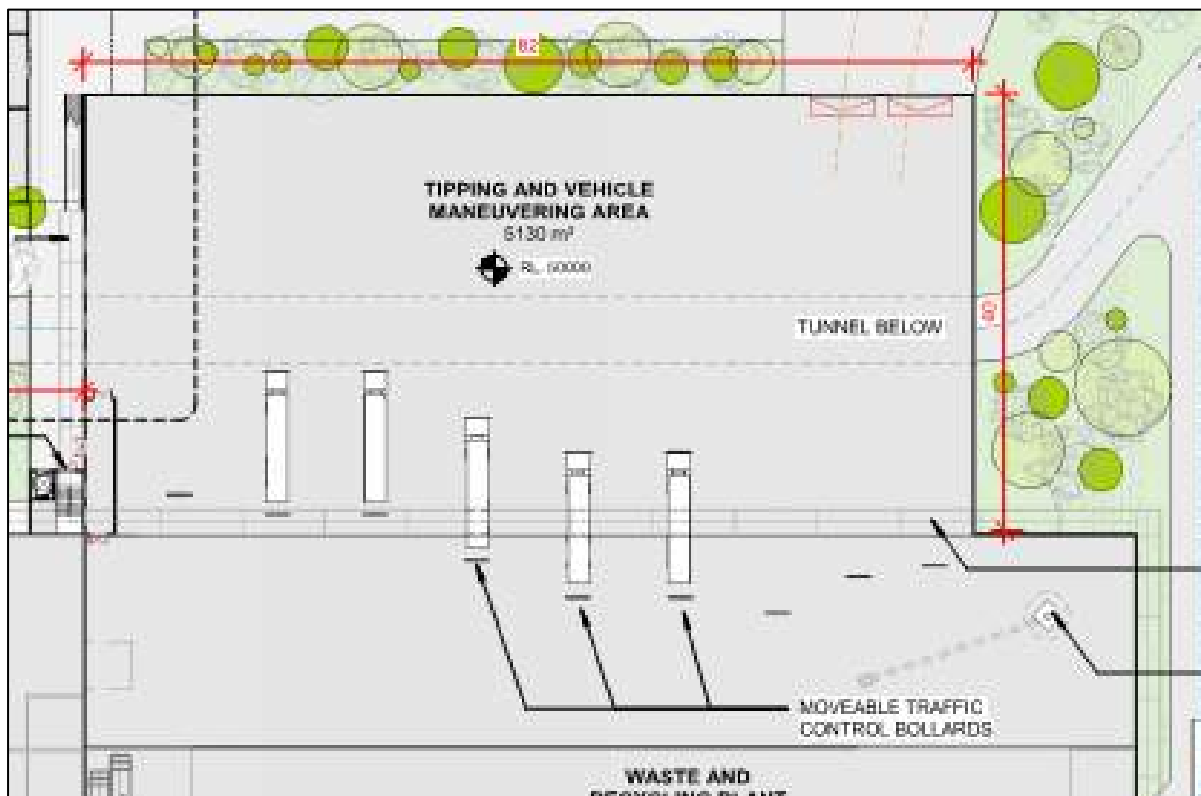


Figure 31: Tipping Hall close up

The Waste and Recycling Hall has an area of 7,760m² and has a height at eave of 18m, extending to a maximum height of 21m at roof ridge.

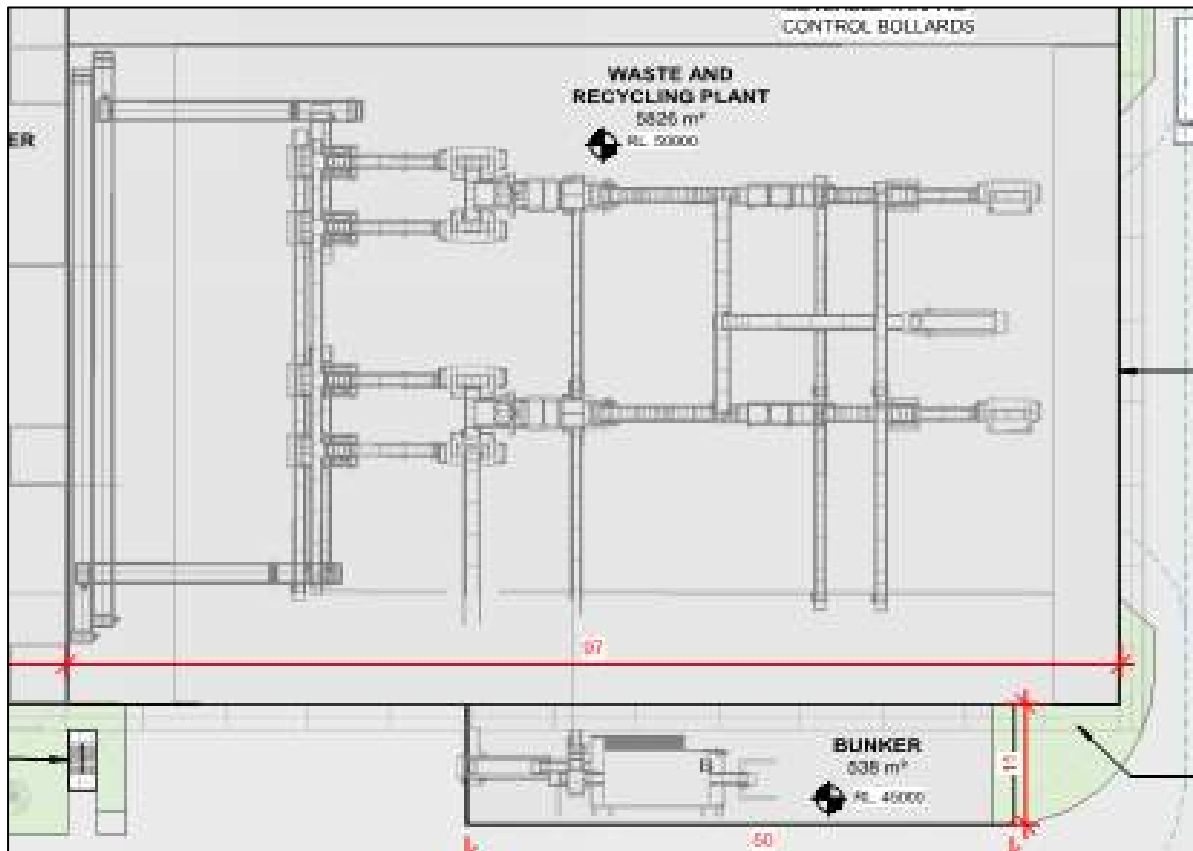


Figure 32: Waste & Recycling Hall close up

That is eclipsed by the Furnace and Boiler system Hall, which has a roof height at eave of 30m rising to 35m at the roof ridge, and contains an area of 7040m².

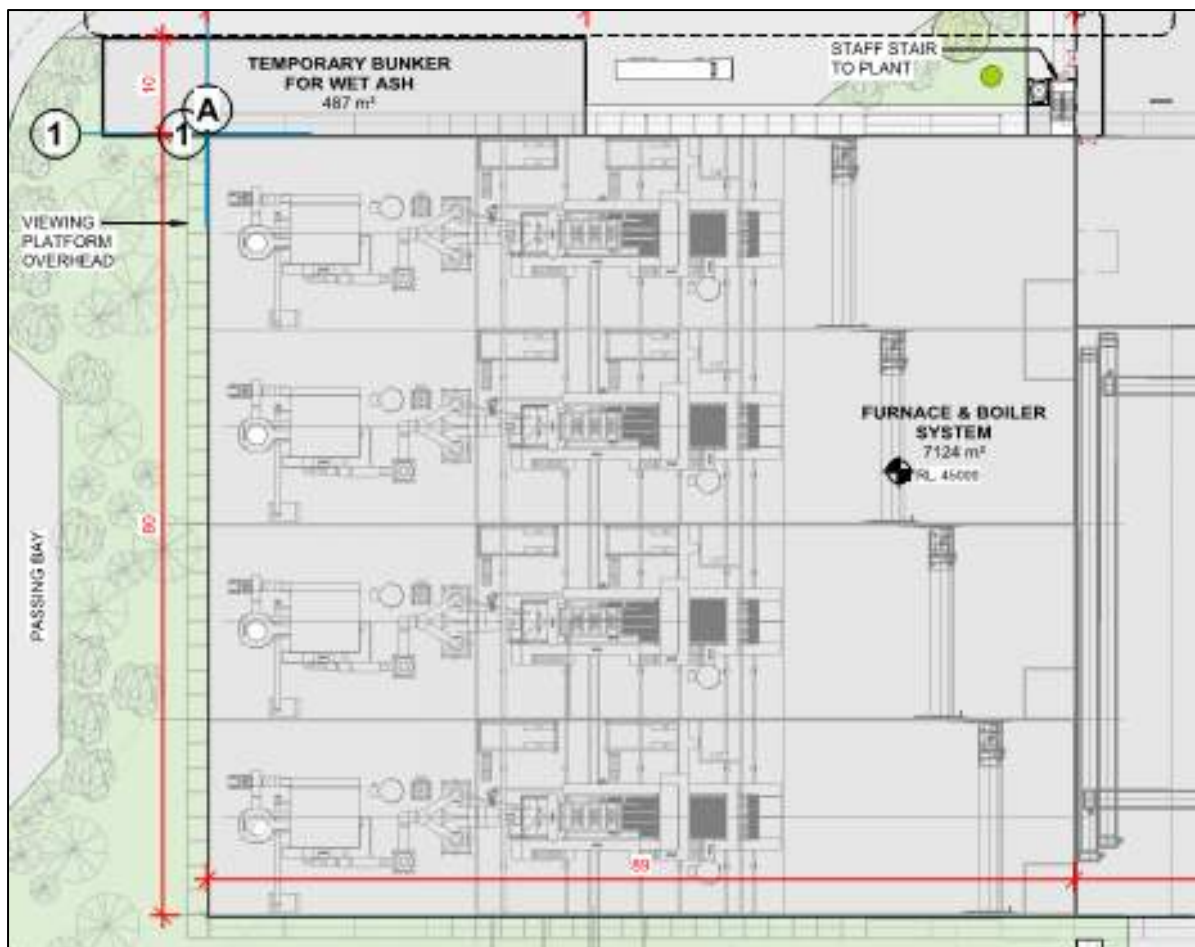


Figure 33: Furnace & Boiler Hall close up

Together these three parts of the Main Building contain an overall area of 18,000m². Sample elevations are shown below.

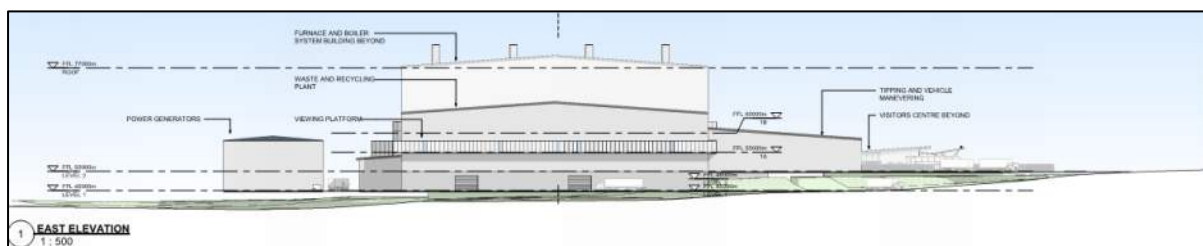


Figure 34: Eastern elevation

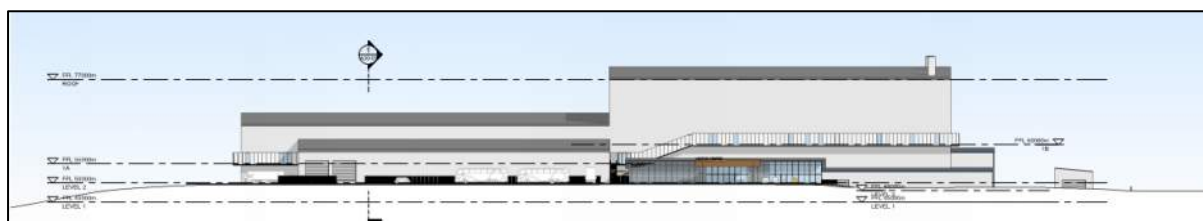


Figure 35: Northern elevation



Figure 36: Western aerial view

Additional operation capacity is provided beneath the waste recycling plant in the main building by an underground bunker to which recycled materials extracted out of the waste refinement process will be deposited for uplift and removal for further processing off-site. This bunker will have an area of 2,520m² and a height of 5m.

Three other external bunkers are located around the exterior of the main building, for the deposition of the two separate types of ash (waste and reusable fly ash), and storage.

The bunker off to the south of the Waste Recycling Plant will have an area of around 400m² and a maximum height of 12m, and will be used for larger recyclable materials and tyres that will be manually processed first and then added to the recycling and fuel lines.

The bunker off the north-east of the furnace and boiler system building will have an area of 400m² and a height of 10m and will be used for the storage of ash. The bunker off to the west of the Boiler and furnace building will similarly have an area of 400m² and a height of 10m, and will be used for general storage.

Cladding of the Main Building will be concrete pre-cast walls and metal roof on steel purlins. It is noted the Acoustic Assessment assumes profile metal cladding for the Tipping Hall, therefore the noise levels from this element are conservative. Building roof is assumed for noise assessment purposes to be profile metal secured to 0.55 BMT stud, with fibrous insulation and lined with 10mm standard density plasterboard.

A pedestrian access and viewing deck will be added around the exterior perimeter of the building for maintenance and viewing by visitors. Windows will be inserted along the sides of the building from which views into the building will be possible from the viewing decks. Windows will also be placed on the outer side of the viewing deck for natural light.

A close up of the viewing deck and chimney stacks is shown below. Note four stacks are shown, when this application is for the operation of three furnaces. The additional stack is included at this point to give a clearer view of final visual outcomes, but will not be operational until consent is obtained for operation of the additional furnace, at some future point.



Figure 37: Close up of viewing deck and chimney stacks

4.14.3 Education, Exhibition and Staff Facilities Building

This building will have an area of 1250m² and a maximum height of 7m. It will be used for exhibition and education comprising theatre and display rooms, toilets and meeting room. Separately this building will also house office facilities for the facility operation, including meeting rooms and staff cafeteria. The main entrance will be announced by two trestle beams supporting the roof overhang that extend out into the carpark.



Figure 38: Education, Exhibition and Staff Facilities Building

Construction will be pre-cast walls and metal roof, with glass curtain wall system and horizontal louvres. Generous glazing will be inserted on the north-eastern elevation for light and amenity, highlighted in the render below.



Figure 39: Render of entry to Education building

4.15 Landscaping

A landscaping plan accompanies the application setting out extensive landscaping proposed around the site. As noted in this report the majority of the site will not be developed - around 55% leaving ample scope for insertion of various landscaping elements to soften and mitigate effects of the activity. The theme is indigenous planting aligning with the cultural motivations behind the proposal, and begins at the site proper in extensive planting either side of the access roads. Plantings then disperse around the buildings partially enveloping them to create a pleasant transition from the grassland that will be retained over most of the site to the hard built forms that will dominate the site.

The pond in the northern corner of the site will double for stormwater attenuation and amenity for the adjoining Exhibition building which will be enhanced by surrounding plantings.

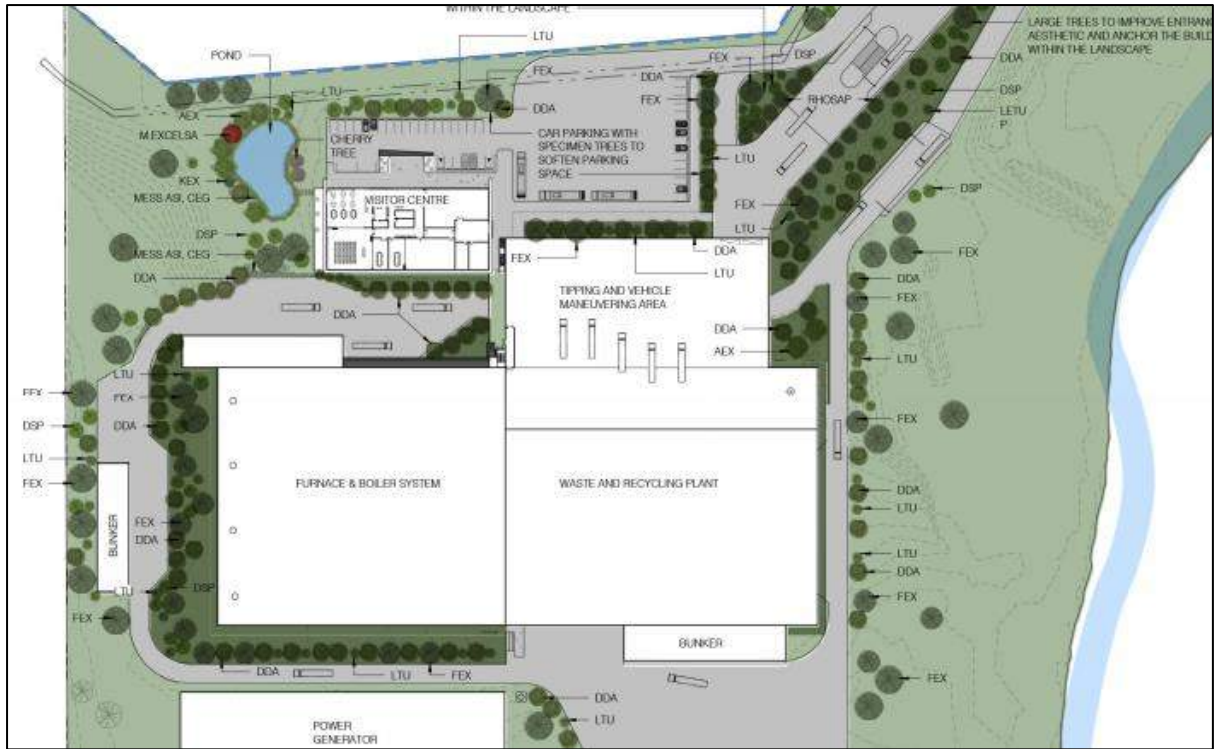


Figure 40: Proposed Landscaping around main buildings



Figure 41: Planting schedule

Particular care is taken around the vehicle entrance to the site, to mitigate any visual effects of the more intensive use of the accessway. Plantings will be concentrated between the formed access and the northern boundary and acoustic screen comprising tussocks and specimen trees such as kowhai.

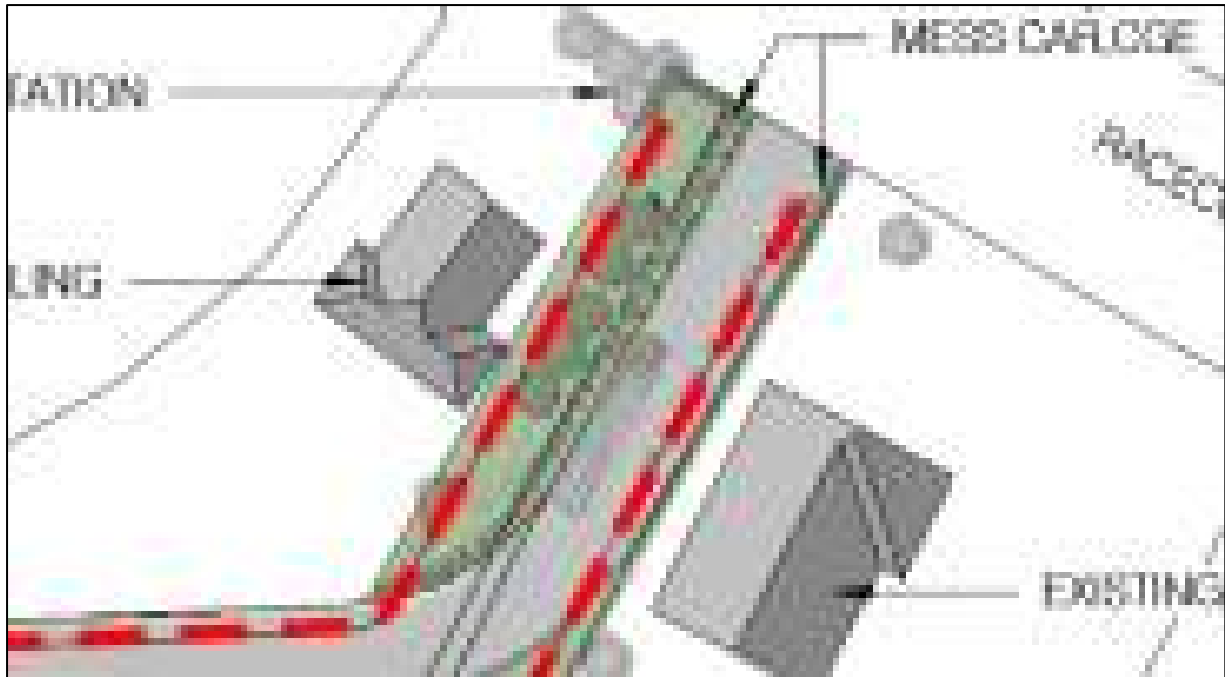


Figure 42: Access plantings close up

There is significant opportunity not shown on the landscaping plan for major restoration of the site's Mangapiko Stream margins. Figure 43 below shows the current situation, with grazing finishing just before or at the stream edge, with the effects on water quality that brings. Figure 44 shows the possibility, of the restoration carried out on the other side of Mangapiko Stream. Restoration seems to have been restricted on the southern reach by the necessity of flood control works with no such restrictions probable on the northern banks.



Figures 43 & 44: Existing streambank edge of site (left); Streambank potential (right)

It is anticipated agreement can be negotiated with Council on the form that landscaping will take along the Stream through the s.92 process that will ensue following lodgement.

4.16 Circulation & Transportation

All vehicles to the site enter the site from Racecourse Road. The access road will have a formed width of 8m. About 400m in to the site it splits off between vehicle access for the plant, and for the Exhibition Centre. There is a further split about 100m further west between those vehicles depositing material at the tipping hall, and those vehicle continuing on to deposit materials at the underground bunker, or for vehicles uplifting waste from the other bunkers, or for service vehicles including maintenance and access of the power generation plant.

Vehicles continue around the building in one way direction only circulating around the entire main building, and entering a tunnel under the tipping and vehicle manoeuvring building to emerge just to the east and re-joining the second access into the plant as two way flow.

The majority of heavy vehicles will however head towards the tipping and vehicle manoeuvring area, deposit material and exist the same way by median divided road. A weighbridge will be installed across this part of the access.

Vehicles heading towards the Exhibition centre will comprises busses, private cars for visitors and staff. A visitor carpark including bus carparking will be located just to the north east of the tipping hall, and staff carparking will be located further west adjacent the Exhibition centre.

Vehicle access for material is summarised in the diagram below.

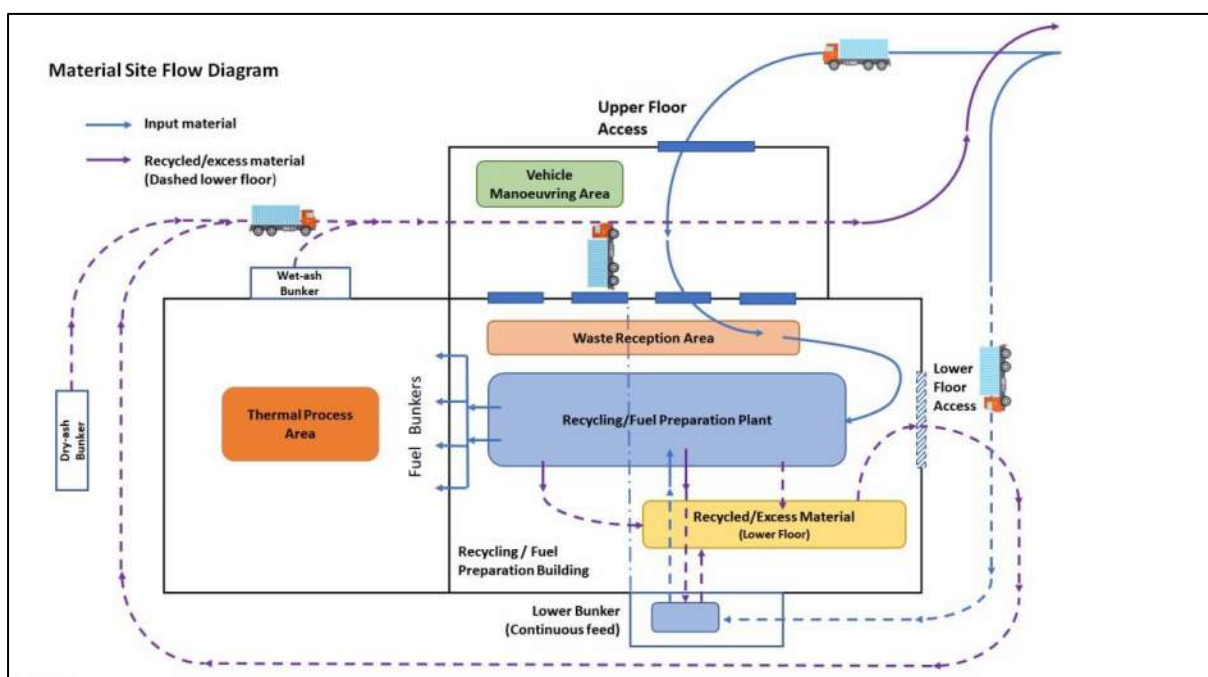


Figure 45: Vehicle access & circulation

Pedestrian access around the facility will be strictly controlled for safety, and visitors will be limited by fencing to the visitor carpark and exhibition centre.

The Transportation Assessment Report provides a full assessment of the transportation impacts of the proposal, and assesses the following:

- A description of the site and its surrounding transport environment;

- A description of the key transport-related aspects of the proposed development;
- The expected traffic volumes likely to be generated by the development;
- The expected impact of the additional traffic flows on the surrounding road network;
- The acceptability of the proposed parking provision in relation to anticipated parking demands;
- The adequacy of the proposed servicing arrangements;
- The proposed access arrangements for vehicles and pedestrians;
- Compliance with relevant regulatory controls.

The proposal is predicted to generate the following numbers of vehicle movements based on the quantities of materials imported and exported to and from the site.

| Vehicle type | Number | Movements per day | Peak Movement per hour |
|---|-------------|--------------------|------------------------|
| HPMV | 30 per day | 60 per day | 6 per hour |
| Single unit truck | 100 per day | 200 per day | 20 per hour |
| Waste water | 4 per day | 8 per day | 2 per hour |
| Ash removal | 3 per day | 6 per day | 2 per hour |
| Chemical delivery | 1 per day | 2 per day | 2 per hour* |
| Diesel | 1 per day | 2 per day | 2 per hour* |
| Staff cars | 50 per day | 100 per hour | 50 per hour |
| TOTAL | | 378 per day | 84 per hour |
| <i>* Assumes worst case of the one vehicle per day in the peak hour</i> | | | |

Table 9: Vehicle generation

Among the matters assessed is the nature of the existing vehicle crossing, and whether any alteration is required for the type and expected volume of vehicles. The report recommends that widening is provided on the entrance to ensure there is minimal queuing on Racecourse Road, and is illustrated in the Figure below.

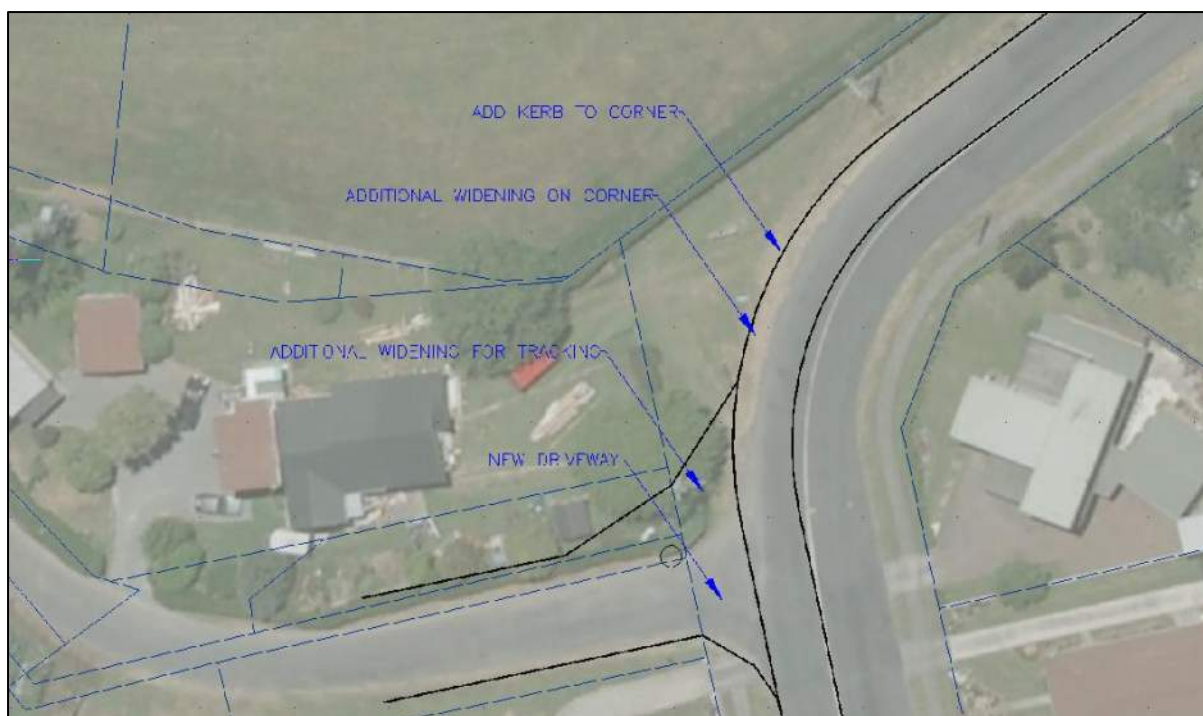


Figure 46: Proposed access widening

All widening will occur on land owned by the applicant, as demonstrated at section 2.5 and figures 4 & 5.

The Traffic report notes in respect of parking:

New developments are no longer required to provide minimum carparks following District Plan update from central government. The District Plan states 'the carparking removal is one of a number of provisions identified through the National Policy Statement on Urban Developments (NPSUD) which came into effect on 23 July 2020. The removal of carparking minimum requirements applies across the whole District Plan and in all zones, whether urban or rural'.

4.17 Geotechnical & Site Suitability

HD Geo have carried out a preliminary geotechnical investigations of the existing ground conditions at the site (described above), bearing capacity, identifies potential hazards and responses to those hazards including mitigation and foundation types (Appendix H).

- Ground conditions were consistent with the mapped geology
- The near surface soils are generally loose or low strength up to 1.9m below surface ground level.
- ground water was dipped at between 0.5 and 2.8 m below the ground level
- the Mangapiko Stream is about 3 m lower than the low lying areas of the site
- there are areas of uncontrolled fill on the site

The overall assessment is as follows:

- the degree of liquefaction induced ground damage is likely to be 'minor to moderate expression of liquefaction in a large earthquake using the ground water conditions we encountered
- static settlement from between 50 to 200mm is expected under large buildings with high loads
- preloading the site to induce settlement prior to construction should be considered and could require up to 4 m of additional fill (preload) to be placed
- an ultimate bearing capacity of at least 300 kPa is generally achievable over the site
- liquefied bearing capacity is low at between 30 and 40 kPa depending on the footing type
- the slopes are qualitatively assessed to be stable however some of the development will affect the slopes and mitigation will be needed to ensure stability is maintained
- further investigation and assessment will be required during the detailed design stage of the development

The site has several geotechnical hazards that will require mitigation through further investigation, assessment and design. HDGeo believes these hazards are at a level that they can be effectively mitigated, allowing for the successful development and operation of the site as proposed by the applicant.

The report concludes in terms of foundations the following.

Industrial Buildings

Due to the liquefaction risk, risk of static settlement under high loads, and low liquefied bearing capacity, we expect that parts or all the industrial development will require ground improvement or deepened foundations such as piles.

We have completed a pile screening assessment to provide preliminary results for the expected bearing that could be achieved for a single pile and the expected depth. Our preliminary assessment shows that deep piles are a suitable solution for mitigating the risk from liquefaction and static settlement for the site. The optimal details of the piles (sizes, type and spacings) will be determined during the detailed design of the project. We expect the founding depth of piles to be between 12 m to 19 m below the existing ground level.

A detailed foundation assessment will be required once the plans and loads have been developed and finalised.

Light weight buildings

Light weight timber frame buildings (possibly the exhibition and educational building in Area 1) are unlikely to cause the deep static settlement or be as vulnerable during a liquefaction event. However, the strength requirements of 'good ground' according to NZS 3604:2011 were not met across the site up to a depth of between 0.4 and 1.9 m as the near surface soils were generally loose or low strength. For a concrete floor, light timber framed building, we expect TC2 type raft foundations with ground improvements (to between 0.4 and 1.9 m bgl) to be suitable.

Ground improvements would include excavation to remove topsoil and any soft, loose or unsuitable material. Any excavation would be backfilled with compacted hardfill. Our preliminary testing indicates excavation depth would vary depending on the location.

A specific design for low strength soils and liquefaction risk may prove more economic than the ground improvement option with generic foundation solutions.

4.18 Economic

Formative Limited have carried out an assessment of the economic role of the proposal, providing an understanding of:

- operational activities as a result of the proposed infrastructure, and any subsequent change in supply chain effects; and,
- the facilitated effects due to changing waste handling patterns facilitated by the proposed WtE plant, and the effects associated with productivity gains from the activity for the wider economy.

Formative reviews the outputs of the facility which will be used in the economy, and quantifies the monetary values of the following:

- Construction Activity
- Direct Operation Activity
- Extraction of recyclable materials, pre and post-incineration
- Generation of electrical power

The construction of the facility will be a major undertaking, with costs mapped broadly into four industries:

- Machinery manufacturing (\$70)
- Non-residential building construction (\$72 million),
- Construction services (\$18 million) and
- Other professional services (\$7 million)

It is noted these figures are conservative and pre-date the recent escalation of construction costs experienced across New Zealand.

The economic activity that would be generated by the construction of the facility is summarised at Figure 4.2 of the Economic Report, and repeated below:

| Capital Activity | Direct (\$m) | Value Added (\$m) | Employment (AW) |
|----------------------|-----------------|-------------------|-----------------|
| Waipa District | \$ 25.1 | \$ 14.1 | 140 |
| Rest of Waikato | \$ 92.1 | \$ 61.7 | 620 |
| Total Waikato | \$ 117.2 | \$ 75.7 | 760 |

Table 10: Capital Expenditure Economic Activity

Total direct contribution to regional economic activity by the construction of the facility would be \$117 million.

Direct operation activity assesses the ongoing contribution to economic activity the operation of the facility would have. The Economic report estimates that \$18.9 million in GDP could accrue to the local Waipa economy, which would be equivalent to over 210 jobs or 1% of the employment in the district. The regional economy including the Waipa District contribution would receive economic activity of \$37.6 million GDP and a total of 420 jobs. This economic activity will occur in every year of operation, starting in 2024.

| Operational Activity | Direct (\$m) | Value Added (\$m) | Employment (AW) |
|----------------------|--------------|-------------------|-----------------|
| Waipa District | conf | \$ 18.9 | 210 |
| Rest of Waikato | | \$ 18.7 | 210 |
| Total Waikato | | \$ 37.6 | 420 |

Table 11: Operational Expenditure Economic Activity

The proposed WtE plant is expected to handle waste more efficiently than landfill, which enables the plant to charge a lower price for waste handling than the existing alternatives. Based on GCS gate rates and their market research, Formative considers it likely that community and businesses will benefit from reduction in waste management costs, in the order of \$24 million per annum. The cost savings are distributed to businesses and residential consumers across the region, pro rata according to how much the business relies upon waste management services for their operation. This will mean that businesses in the region can operate more efficiently, and households will have additional disposable income.

The ELM assessment shows that the direct efficiency gain can be expected to result in an increase of \$19.1 million GDP and a further 240 jobs for the region. A small share of this benefit will accrue to Waipa District economy (4.2.3 Formative Report).

In terms of recycling the report states:

The proposed WtE plant is expected to produce 8,000 tonnes of metal and 20,000 tonnes of recyclables, which would have otherwise gone into landfill. In the context of the market, at current national waste levels, the plant would output approximately 0.4% of New Zealand’s total recycling. Alternatively, the plant would increase recycling in Waikato Region by around 4% each year.

In terms of power generation the report notes that:

The proposed WtE plant will produce 15MW of power, which will feed into the local and national grids. Currently, there is 9,342MW of installed power generators in New Zealand, which means that the WtE plant would represent less than 0.2% of the entire energy market.

Locally, the energy output would represent less than 0.5% of the regional installed power capacity, or 49% of the power that would be demanded by the households in Waipa District.

In terms of quantified economic contribution from electrical generation:

The proposed WtE plant will generate electricity that is expected to be about half the price of the alternative baseload plants [\$110 versus \$250]. At a network level the cost of providing power to customers is expected to be improved as a result of the proposed WtE plant. This means that the retail price is also likely to be improved by the plant, albeit a marginal improvement, as this plant is relatively

small compared to the entire market. The national level benefit may be in the order of several million dollars per annum, however this is yet to be confirmed.

While contribution to national power output is negligible, in the local context it becomes much more significant, and highlights the significance of the generation in this part of the Waikato. The plant could potentially supply power for half the households in the Waipa District.

The Formative report also reviewed various other benefits of the proposal, not quantified at this stage:

Circular economy: *“...the proposed WtE plant will result in a greater proportion of resources being recovered from waste and recycled back into the economy. The proposed WtE plant includes filtering steps before and after the power generation process, which will yield up to 60,000 tonnes of metals and other recyclables.*

This recapture and recovery of resources will benefit the New Zealand economy by reducing the reliance on imports of resources or the production of new resources. The increase in circular use of resources may generate additional benefits in the economy.”

Transport Efficiency: the location of the proposed WtE plant in the central North Island near a main road and rail lines, means that the Site is potentially more accessible than existing landfills.

The landfills in the region are located in rural areas to the north and eastern edges of the region, which are further away from the transfer stations, populations and businesses in the region. This means that the costs associated with transporting waste are expected to be lower if the proposed plant handles some of the regional waste. The potential improvement in transport efficiency is expected to generate additional benefits in the economy.

Competition: The applicant is considering alternative methods for waste collection, both MSW (via efficient single truck) and/or using a network of existing scrap metal dealers to establish efficient waste collection.

At the moment there is a duopoly of waste management companies, which control most of the market. If GCS entered the waste collection market it would increase competition, which may generate benefits for the community and businesses.

Opportunity Benefits: the proposed WtE plant will reduce the amount of waste going to landfill. This reduction in demand may result in less land being needed for landfills in the future, which opens opportunity for other activities to occur on this land.

Education and Tourism: the plant will include an education and information centre, which will be used by the local community and some visitors. This drawing of people to the area is expected to generate some additional benefits in the local economy.

Discussed above under Electrical Generation, the proposal will also have the following, as yet unquantified, positive economic benefits in terms of the following:

- Local network stability and resilience

- Introduction of additional baseload capacity to national grid
- Contributes to the creation of a platform on to which additional forms of generation can be added such as solar and wind power, therefore assisting in the move away from fossil fuels.

The Formative report also makes special mention of the use of tyres at the plant. Currently end of life tyres present a quandary, while some are used on farms for silage pits, road roading as a sub base or concrete production, the majority of tyres are either stockpiled or sent to landfill. In the context of the market, at current national waste levels, the proposed WtE plant would absorb approximately half of New Zealand's total annual output of end-of-life tyres. Alternatively, the proposed WtE plant would absorb less than 0.1% of end-of-life tyres held in stockpiles in the country. At the regional level the proposed WtE plant would be equivalent to 470% of the annual output of end-of-life tyres that is expected to be generated by the region in the year 2023, indicating the plant will import tyres from outside the region.

The Formative report briefly explores other secondary benefits of the plant:

- Possibility of using excess or waste heat to power a district heating system, for industrial or domestic use
- Use of fly ash as part of construction of low grade concrete for use in for example barriers

A district heating system is not part of this application, but waste heat from the boilers and recirculated heat from power generation can be used for domestic heating through a reticulated network, as is done in Europe. That would form part of future works and cannot be quantified at this point, but does speak to the significant ongoing potential of this facility.

As noted above fly ash from the furnace operation can be used as a base component in the construction of low grade concrete, such as road barriers, comprising around 23 tonnes a day.

4.19 Flooding

As noted above much of the site is subject to a flooding hazard. The potential impact of the proposal on flooding, and how to mitigate against the hazard have been assessed in the Floodplain assessment report by Dr Steven Joynes of Golovin Consulting.

The objectives of Dr Joynes' work were:

1. Determination of the extent of floodplain at the site
2. Examination of the impact of the proposed structures on floodplain levels and extent
3. Mitigation
4. Nomination of proposed finished flood levels for various facility structures
5. Identification of the duration of flooding
6. Determination of High Risk Flood Hazard

The following are outcomes in terms of these six objectives.

1. The following figure shows the extent of floodplain at the site.

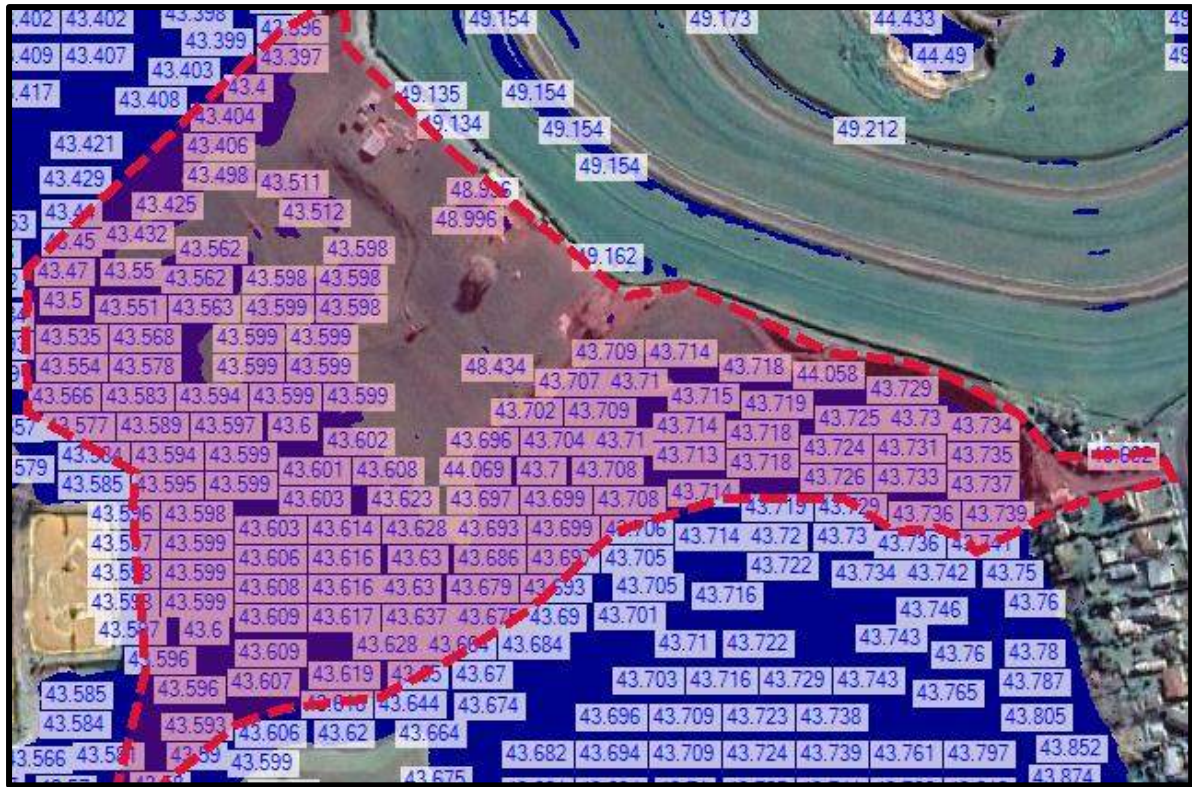


Figure 47: Floodplain extent

2. The impact of new structures is to increase floodplain levels by about 120mm in isolated areas. A flood spread of 2m in a 350m wide floodplain has been determined but is within the accuracy of the 2D model grid size. This flood spread is shown in the figure below in red.

Affected areas mainly include land on the opposite side of the Mangapiko Stream on land that is zoned Industrial but is used as open space or playing fields. There is also some spread on the southern side of Factory Road in the Fonterra factory complex, and further to the east also to the south of Factory Road for some of the residential properties No.s 331 – 467 Factory Road.

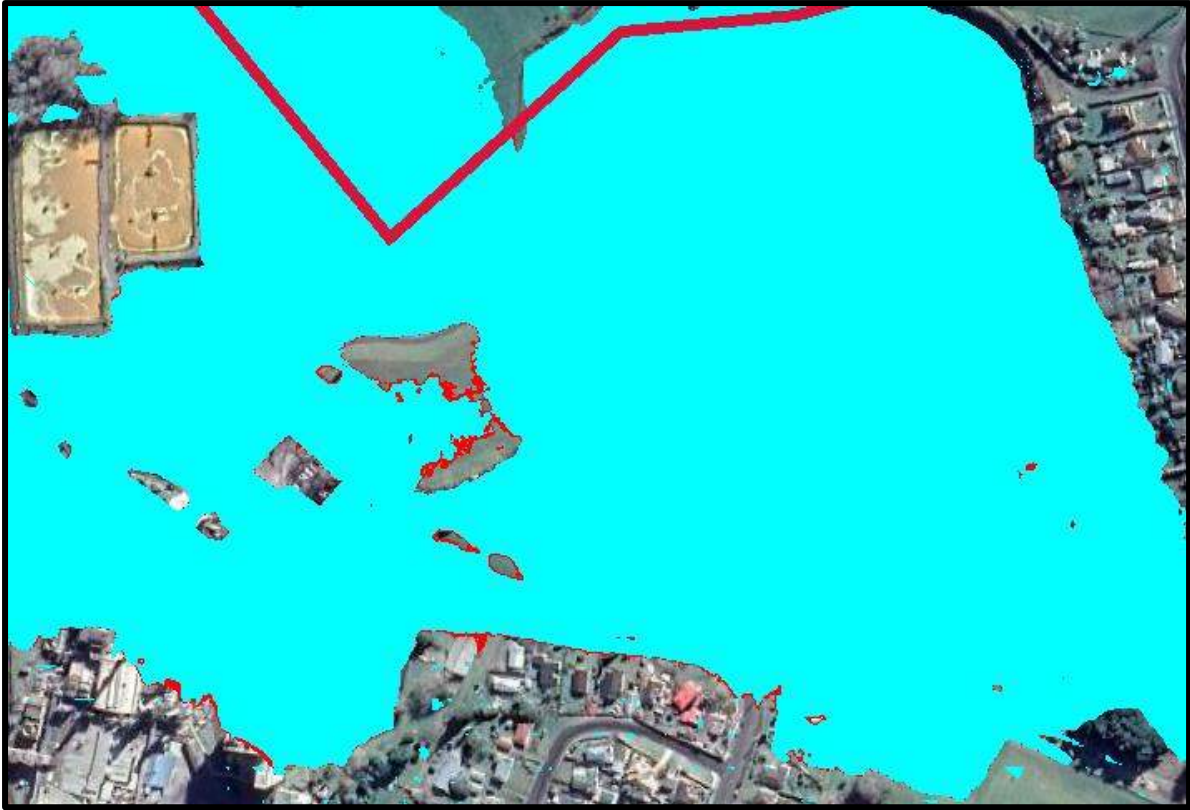


Figure 48: Extra flood spread indicated in red

3. Mitigation is not considered necessary given the scale of the floodplain.

4. Finished floor levels (FFLs) are 300mm freeboard for industrial zones resulting in FFLs ranging from RL43.9 to RL44.60 Moturiki datum 1953. Finished flood levels of the facility have been based on these recommended levels.

5. The duration of flooding at the base of the earthworks for greater than 1m deep is about 10 hours.

6. The Report also identified those parts of the site that are subject to a High Flood Risk as per the District Plan's definition:

'High risk flood zone' means land that is subject to RIVER or surface flooding during an event with an ANNUAL EXCEEDENCE PROBABILITY of no more than one percent, and during such an event:

- *The depth of flood waters exceeds 1m; or*
- *The speed of flood waters exceeds 2m per second;*
- *or The flood depth multiplied by the flood speed exceeds one*

The report notes that the first criterion dominates with the latter two as minor subsets. This results in identification as per the figure below.



Figure 49: High Risk Flood Zone

There are two nearby bridges across the Mangapiko Stream at Racecourse Road to the east and Factory Road to the west. The proposal could potentially have an effect on the flooding levels at these bridges, and their existing formation in relation to the stream could alter the way in which any impact on flood levels generated by the development interacts with the surrounding areas. Detailed survey information about the bridges, in terms of deck profile, walls, soffit, piers and cross sections of the immediately adjacent stream were not available at time of preparation of the application due to COVID therefore it is not possible at this point to accurately quantify the extent of effect, if any. However, it is understood that the Racecourse Road bridge impedes floodwaters to some extent, but the Factory Road bridge offers no impediment. In that scenario floodwaters from further up the catchment to the west would be delayed reaching the site, which would likely mitigate the additional impact on flood levels generated by the proposal. Hence the extent of additional flooding anticipated is conservative and worst case, but unlikely to eventuate.

4.20 Utilities

Utilities are assessed in the Infrastructure Assessment Report (Appendix M).

4.20.1 Wastewater

The proposed development is proposed to discharge wastewater via two separate systems. The Waipa public wastewater pipeline located in Racecourse road will be utilised to cater for the office administration building, daily visitors and any service areas within the recycling building (toilets/handbasins/showers). The daily use by staff and visitors will cater for approx. 52 staff and 30-

40 visitors twice daily. The site system to cater for administration/staff flows shall be discharge via a gravity system to a small private low pressure pump/s station. This will then pump daily waste via a low pressure rising main to the public connection point on Racecourse Road.

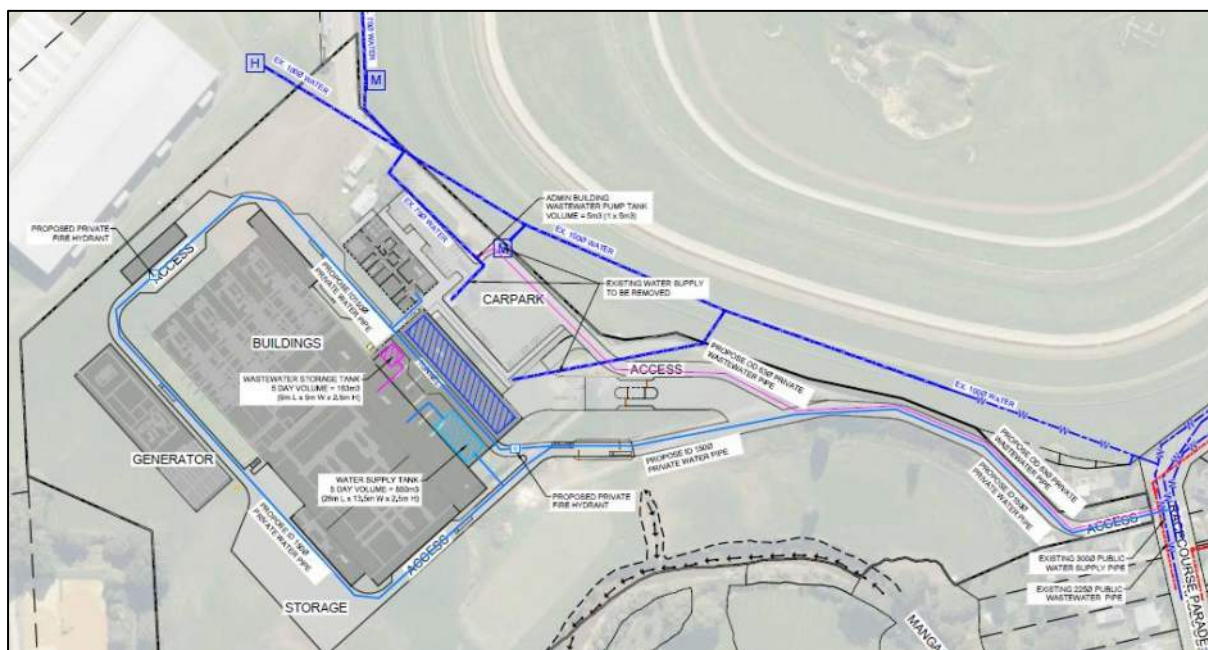


Figure 50: Proposed Domestic Wastewater & Water Supply layout

All wastewater from the recycling process within the recycling building and washdown areas is proposed to be pumped from the building and stored onsite in waste storage tanks, located within a specified tank farm area. The wastewater from the recycling building is wastewater is not considered suitable for the existing Waipa treatment facility. The waste discharge will be removed from site in sealed trucks and disposed of at a managed waste facility. The daily liquid process waste volume is estimated at 36.7m³ per day plus approx. 120m³ of daily washdown water. This is based on operational flow information provide by plant suppliers Lambion and allowance of 5mm washdown over 50% of inside building area.. Onsite storage tanks will cater for a 5 day period of backup storage, min 183m³ and 600m³ respectively.

4.20.2 Water Supply

A proposed new 150mm dia. connection and a bulk water meter will be constructed from the existing public 300mm diameter watermain to service the site as shown above in Figure 49. The operational water supply is based on daily use demand calculations for the plant as provided by the supplier . The daily operational demand volume is calculated at approximately 170m³ over 24hrs. Supply continuity provision will be catered for by the provision of onsite backup storage of a minimum of 5 days storage of 850m³. The supply of potable water is considered to be supported by rain water harvesting via the 25,000m² of building roof areas plus as necessary overnight refilling of storage tanks by the public system network.

Fire supply, power and telecommunications

It is proposed to install a fire sprinkler system for the main recycling building plus a new fire hydrant system within the site to meet the firefighting requirements. It is anticipated that the firefighting requirements will be adequate. However, Fire hydrant flow testing will be undertaken at a later stage to confirm FW1 and 7 standard has been met.

Power and telecommunication services are available on Racecourse Road plus additionally the new plant will produce electricity to be fed into the national network. The power and telecommunication services will be extended into the site to serve all proposed buildings. All overhead power services will be redirected underground.

4.20.3 Stormwater

The strategy for the stormwater runoff management is summarized as:

- rainfall runoff from the various roof areas will be stored in tanks/ponds
- retention volume will be used by the facility as the water demands of the activity are high
- detention volume will fluctuate and be located in the upper parts of the storage
- high contaminant internal building wash areas require treatment by a proprietary product and discharging to the wastewater system.
- general access and carpark areas will be treated by water sensitive design measures such as swales and raingardens.
- Swales and check dams will also provide stormwater detention.
- The site will discharge to the stream using existing outfalls to Mangapiko River

4.20.3.1 Discharge Outfalls

In terms of outfalls the report notes there are no public stormwater assets on site. There are two existing discharge points into the Mangapiko River. The outfalls are located along the site's south eastern boundary. These are referenced as location A and B as shown in Figure 51.

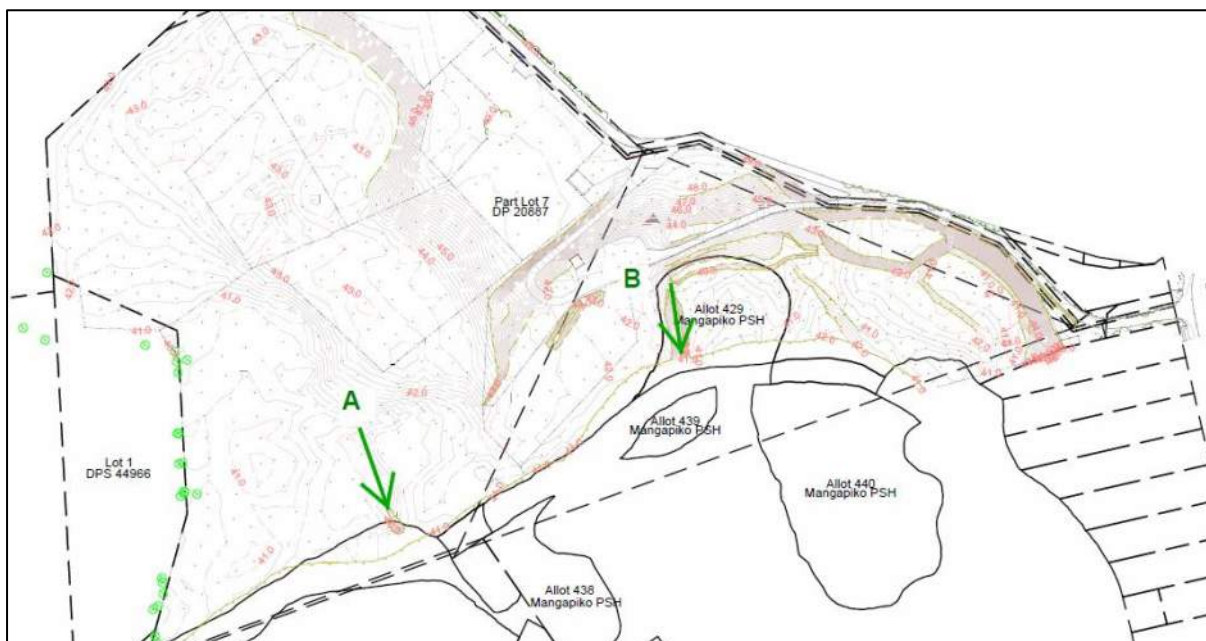


Figure 51: Existing outfall locations

Location A will discharge the roof overflow catchment and the western part of the road catchment. Location B will discharge the balance of the road catchment.

As described in the above quantity and quality sections, the stormwater runoff leaving the site in the post development scenario has been appropriately treated or attenuated. Runoff leaving the site in a 10 year storm event will not scour the outlet or increase downstream flooding concerns or create any contamination.

4.20.3.2 Quality

In terms of quality, the report notes there are four distinct types of catchment on this project, namely the roof, roading, wash areas, and grass. In terms of stormwater runoff quality, a combination of passive and active treatment methods is proposed to ensure the water quality leaving the Site meets the requirements of the council. Treatment of the four catchments is described below.

Roof

The roof catchment occupies 25,000m² or 22.7% of the site. This catchment is considered low risk.

The roof catchment of the Site is considered clean. Inert, non-contaminant yielding materials will be used for roof, spouting, cladding construction (such as tiles or colour steel). No more than 25m² of exposed unpainted roofing, guttering, or cladding made by galvanised steel (zinc) is allowed. Downpipes are to have leaf separators if trees are present. Therefore, stormwater contamination from roofs will be minimal and additional stormwater treatment will not be required for stormwater runoff from the roof. This clean water will be kept separate from other un-treated water by ensuring the duplicate stormwater pipe systems are proposed. Details are to be confirmed at the building consent stage.

Roading

The roading catchment occupies 25,000m² or 22.7% of the site. This catchment is considered low risk. The general access and carpark areas will be predominately treated by water sensitive design measures such as swales and raingardens.

Due to site and level restrictions, some catchpits and manholes will be required instead of low impact design measures. Depending on the catchment size these are either proposed to have

- gross pollutant traps/sumps, filter bags, and siphon outlets in catchpits
- manholes with cartridge filter systems.

This proposal will prevent the 'first flush' gross pollutants from entering the pipes.

All stormwater management devices are to be installed under supervision of a qualified civil engineer and complying with any manufacturer's specifications.

Wash areas

Areas with higher risk for generating contaminants are proposed within the buildings. Proprietary products will be selected at the building consent stage to ensure that the discharged water is of

acceptable quality. The wash water (once treated) will discharge to the wastewater system and not the stormwater system.

Grass areas

The balance of the site, some 60,000m² or 54.6% will be covered with grass or landscaping. No water quality treatment is required for this area.

4.20.3.3 Quantity

In terms of quantity, the report notes the following.

The design proposed has considered the post development stormwater runoff flow and volume values for a 10 year rainfall event. The catchments for roof and roading have been considered separately. The proposed grass catchment has been disregarded as there is no increased runoff.

Roof runoff

Runoff from the generator, reception block, and bunker buildings will be captured in the downpipe and guttering system. This water will be directed to a stormwater pond near the reception block.

Roof catchment to tank system

Runoff from the main building will be directed to an internal tank system on the lower level of the building and will be available for re-use. This can be considered retention volume. Shortfall in water supply in between periods of rain can be supplemented by town supply.

The daily water usage from the list of water consumption items provided by Lambion Energy is 170m³/day. This can be supplied by the council system subject to capacity checks on their network.

For commercial viability, it is proposed to provide 5 days of water storage on site. Therefore, 850m³ of water is proposed to act as retention volume.

Roading catchment

It is not possible to provide underground stormwater storage for the carparking areas because this would be below the 10 year flood level. Therefore, it is proposed check dams be included in all swales to slow down the water flow. There is 820m of swales proposed.

Each catchment will have stormwater management devices that allow stormwater detention during a 10 year storm event. Held water will be released slowly over a 24 hour period by low flow or orifice control. Final details will be supplied as part of a future building consent.

4.21 Earthworks

Earthworks for the development are set out in the Infrastructure Assessment Report (IAR). The earthworks will consist of a cut to fill operation on the site covering approximately 7ha. The volumes are expected to consist of approximately 41,000m³ of cut to fill with onsite materials and 60,000m³ of fill materials required to be imported. Earthworks associated with preloading is approx. 60,000m³ which shall be imported and removed post settlement monitoring. The preload materials are expected to be completely removed from site 12-18 months post placement and upon certification. All materials

imported to site shall be certified clean fill only. Total earthworks – cut, fill and pre-load are estimated at ca. 292,000m³. Earthworks are summarised in the figure below extracted from the relevant section of the IAR.

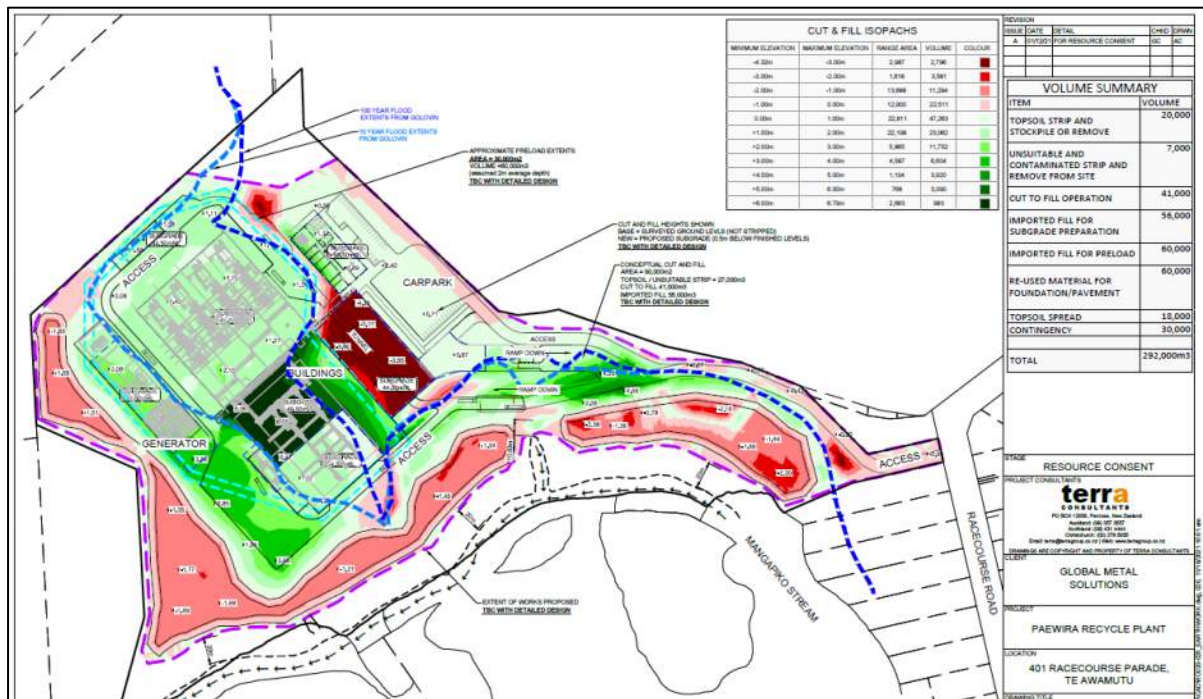


Figure 52: Overall Earthworks Plan

The IAR specifies a Construction Management Plan and Sediment Control Plan for the management of effects from earthworks. Erosion and sediment controls including the following and are summarised spatially in the figure below.

- A stabilised construction entrance will be constructed at the site entrance to minimise sediment being tracked onto the public road and the already completed private way.
- Super silt fences shall be installed along the boundary of the site or earthworks for capturing and filtering any sediment laden runoff.
- Three decanting earth bunds will treat runoff from the northern and eastern sides of site. The decanting earth bund will be constructed with an emergency spillway to allow passage of runoff in larger storm events.
- Dirty water diversion bund will be installed along the boundaries of catchment areas to convey sediment laden runoff to the decanting earth bunds.

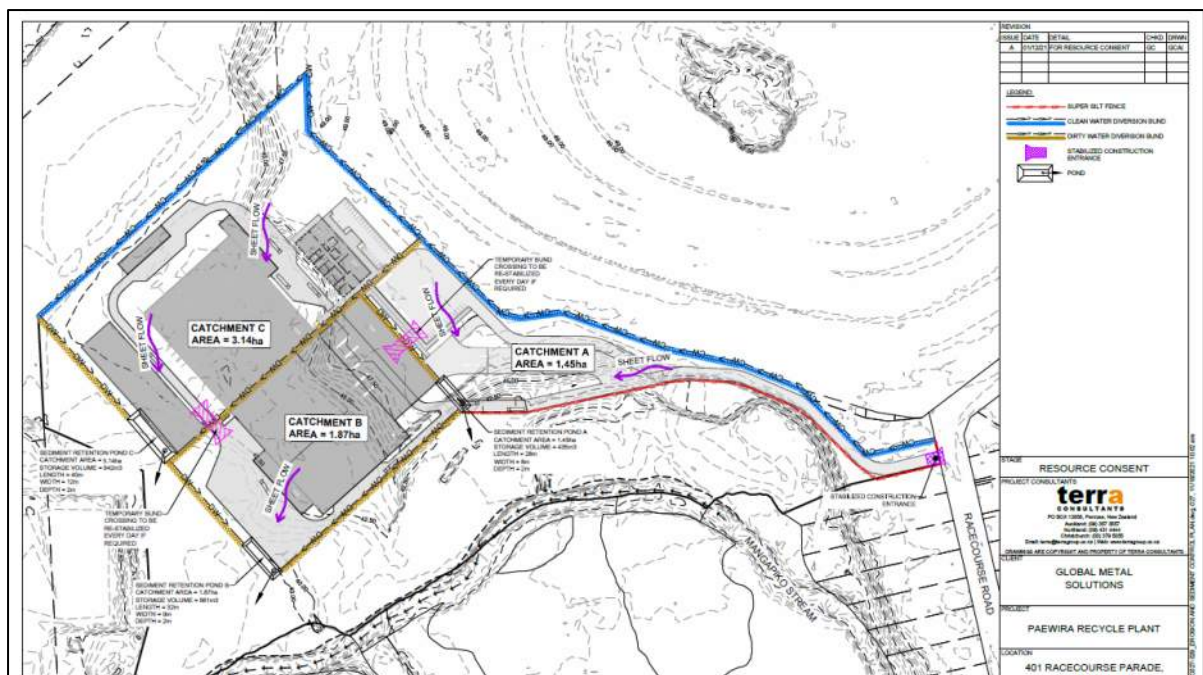


Figure 53: Erosion and sediment control plan

4.22 Noise

An assessment of the acoustic effects of the construction and operation of the facility has been prepared by SLR Consulting (Appendix Q).

The assessment evaluates the noise effects from the proposed facility against the relevant noise rules set out in the Waipa District Plan; outlines the existing ambient background noise levels near the site; and predicts the noise levels likely to be generated by the construction and operation of the facility. Appropriate noise control measures to achieve compliance are recommended where required.

The report identifies main receivers for assessment, as indicated in the figure below.

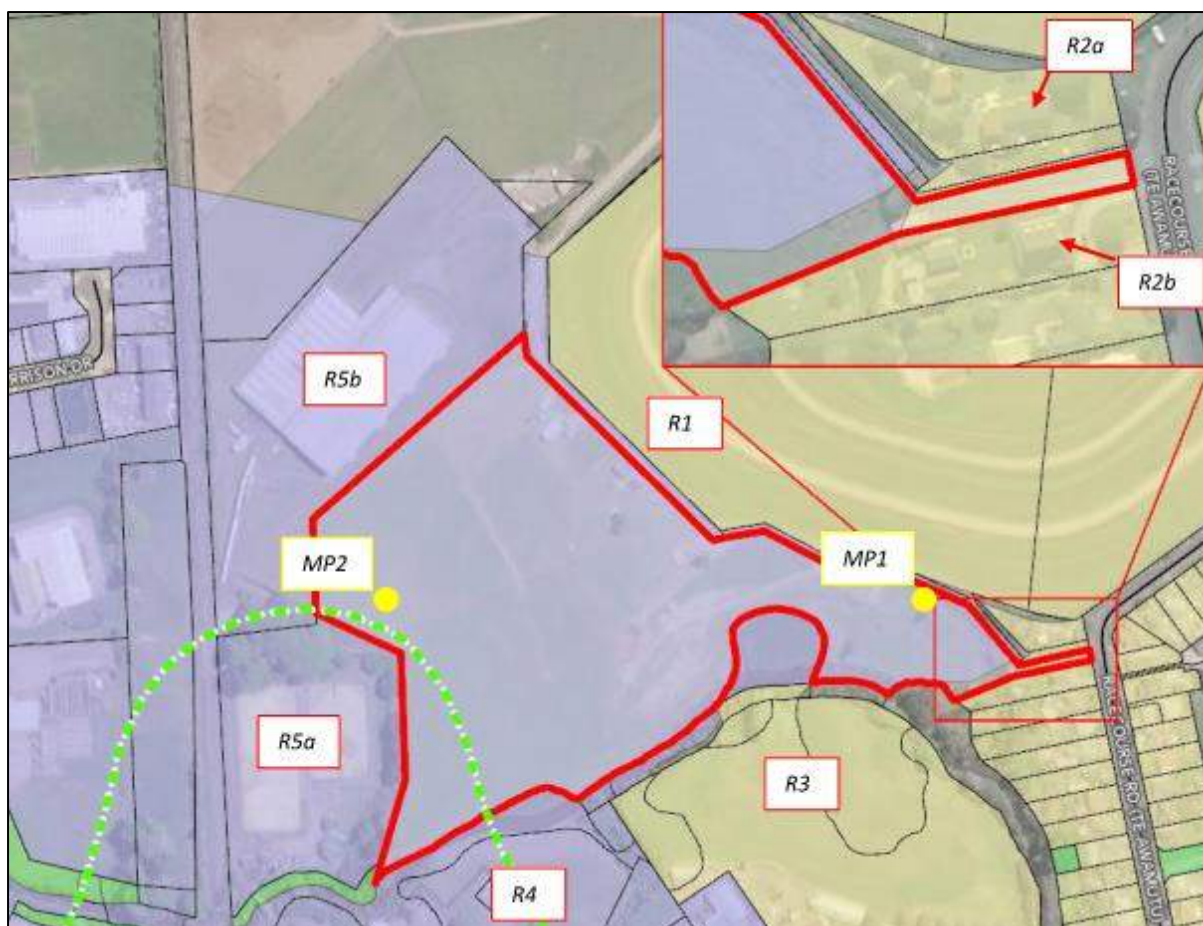


Figure 54: Acoustic Assessment Identified Receivers

The report comments that at both measurement locations, MP1 and MP2 ambient noise levels were noted to be controlled by the operations from the dairy factory located to the south-west of the subject site, and additionally in the case of MP2 noise from the wastewater plant when the aerators were operating. Importantly the report describes the existing measured noise levels for the closest residential land as:

“...3 dB higher than the permitted activity noise limits at residential receivers during the day (an average of 53 dB LAeq vs a limit of 50 dB LAeq). The existing night-time measured noise levels were up to 20 dB higher than the permitted activity noise limits at residential receivers during the night (highest 15-minute noise levels of up to 62 dB LAeq(15min) vs a limit of 40 dB LAeq), this is four as subjectively loud as the permitted night-time limit at residential receivers.”

Construction noise is assessed, as is vibration. In terms of construction noise the report states:

“Compliance with the 70 dB LAeq construction noise limit is expected at approximately 60 m from the noisiest activity (impact piling) without mitigation measures. The nearest existing dwelling is over 350 m from the works, therefore the construction of the facility is expected to comply with the relevant limits of NZS 6803.

Vehicle trips (trucks on and off the site), during the construction of the facility, would generate short-term and temporary noise levels at the receivers either side of the access road. SLR anticipates that compliance with the limits would be achieved at these receivers given the limited duration of such events – if needed acoustic screening along the access road would assist reduce noise levels for the two immediately adjoining receivers.”

In terms of vibration from construction, the report notes from discussions with Council that the German Standard DIN4150 is preferred to the cited standard for the measurement of vibration included in the District Plan.

| Type of Works | Plant Item | Distance to achieve DIN 4105-3 Guideline PPV in mm/s of vibration in horizontal plane at Residential dwellings highest floor at all frequencies – 5 mm/s PPV |
|----------------------|---|--|
| Impact Driven Piling | 5 tonnes hammer weight with up to 1 m drop height | 18 m |
| Excavation | Large Tracked Excavator (20-40 tonnes) | 5 m |
| Compaction | Vibratory Compaction Roller (≤20 tonnes) | 15 m |
| | Non-vibratory Compaction Roller (<5 tonnes) | <1 m |

Table 12: Plant items and indicative distance for compliance with applicable vibration limits

As noted in the Geotechnical report from HDGeo piling will be needed for the foundations of the main building. This building is sufficiently distant from the nearest residential receptors at the racecourse to ensure any vibration effect from piling will be less than minor. Further, it is very likely construction and associated piling will be carried out well before any residential occupation of the racecourse site. The nearest existing residential properties that could be affected by the piling are situated at Racecourse Road half a kilometre from the proposed main building and will not be affected.

Two main sources of operational noise are assessed – that from the facility itself, and from vehicle movements. Particular care was given to the assessment of noise at the entrance of the site from Racecourse Road given the zoning of this part of the site and the proximity of the two adjoining residential properties.

Various mitigation measures were factored into the assessment calculations:

- No heavy vehicle movements at night . Light vehicle movements permitted at all hours.
- Sealing and maintaining the access road
- Acoustic screens at various locations around the site, as shown in the following two diagrams

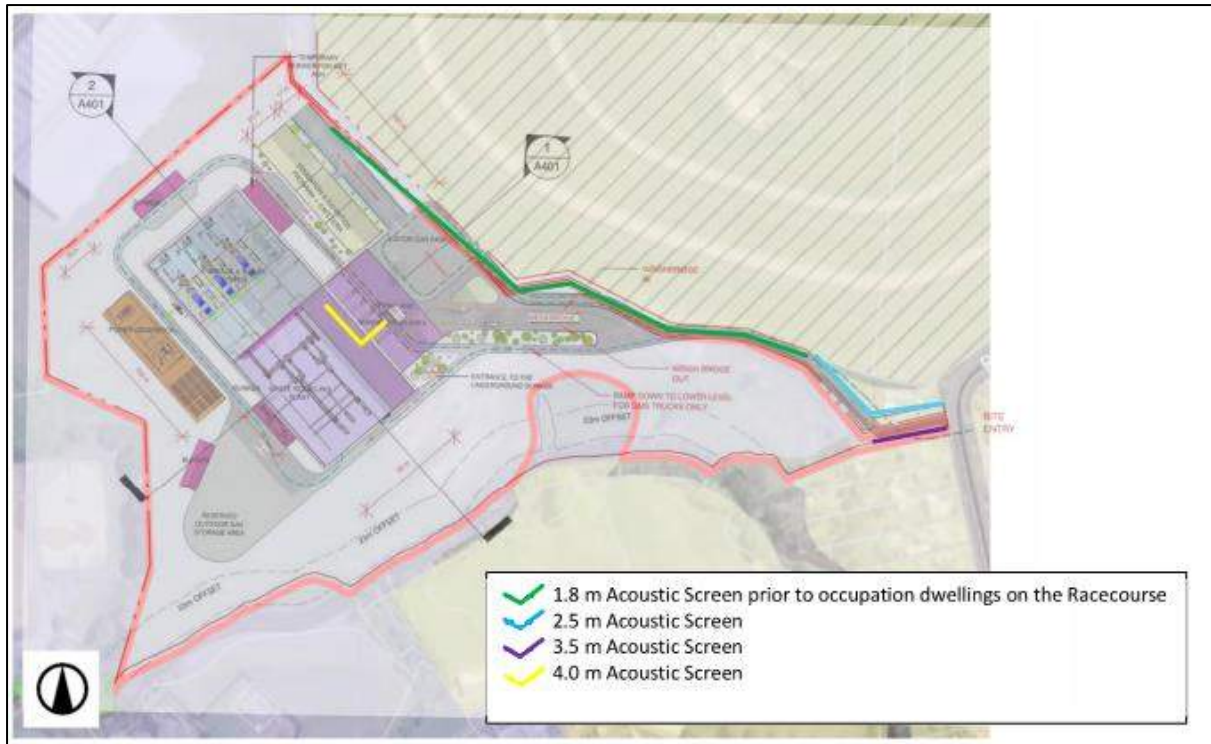


Figure 55: Location of proposed screens across site



Figure 56: Location of proposed screens at site entrance

It should be noted that the proposed acoustic screens at the entrance to the site are considered buildings and are set back the requisite 4m from the front boundary, and 2m from both side boundaries. As is demonstrated in the above Figure, and for clarity at Appendix X, the higher 3.5m

screen adjacent the boundary with No. 381 Racecourse Road also complies with the recession plane from this boundary. Further the locations of the barriers are consistent with the revised entrance layout recommended by the Integrated Transportation Assessment.

The acoustic screen adjacent the boundary of the racecourse site is based on a setback of any future residential development at this site of 50m, which is considered conservative and it is more likely a setback of 100m would be imposed, as argued elsewhere in this report.

The predicted operational noise levels are summarised in the table below.

| Receiver Number and Address | | | Predicted Rating Level | | | | Comment |
|-----------------------------|---|----|-----------------------------|----------|--------------------------------|----------|----------------------|
| | | | Daytime Period (dB LAeq) | | Night-time period (dB LAeq) | | |
| | | | Predicted | Criteria | Predicted | Criteria | |
| R1 | 1025 Racecourse Road at 50m set back from boundary (Waipa Racing Club) | GF | 45 | 50 | 39 | 40 | Compliance |
| R2a | 417 Racecourse Road | GF | 51 | 50 | 36 | 40 | See discussion below |
| R2b | 381 Racecourse Road | GF | 45 | 50 | 33 | 40 | Compliance |
| | | 1F | 53 | 50 | 37 | 40 | See discussion below |
| R3 | 190 Factory Road (School's Sport Grounds) | GF | 45 | 50 | 35 | 40 | Compliance |
| | | 1F | 45 | 50 | 35 | 40 | Compliance |
| R4 | 1498 Alexandra Street (Te Awamutu Dairy Factory) | GF | 43 | 60 | 41 | 45 | Compliance |
| R5a | Racecourse Road (Wastewater treatment plant) | GF | 45 | 60 | 45 | 45 | Compliance |
| R5b | Racecourse Road (Storage building) | GF | 45 | 60 | 44 | 45 | Compliance |

Table 13: Summarised Operational Noise levels

Where compliance is not achieved, for the two properties at 381 and 417 Racecourse Road, the report states:

‘During the daytime, the two residential receivers adjacent to the accessway to the site (417 and the upper floor of 381 Racecourse Road) could experience noise levels 1-3 dB above the Plan noise limit of 50 dB LAeq. These infringements are controlled by heavy vehicles accessing the site via the access road, which passes between the two dwellings.’

The report includes a detailed assessment of effects on those two properties and recommends conditions that can be attached to any consent.

2. PRE-APPLICATION MEETING

In February 2021 a meeting was held with Council staff to obtain feedback on another site at Paterangi Road, just to the west of the current site. Following the selection of the current site further feedback was obtained and is discussed as relevant below (Appendix V).

- Noted the site is subject to a number of policy overlays: flood hazard area; Cultural Landscape Area; Dairy Manufacturing Noise Contour and Airport Main Strip Approach – *all are identified and assessed within this report.*
- The site is located within the Dairy Industrial Policy Overlay Area (sub zone) with the proposed activity not fitting with the list of permitted activities, and defaulting to a Restricted Discretionary Activity, with a matter for consideration reverse sensitivity effects – *addressed fully in this report.*
- Performance standards of Industrial Zone, District Wide provisions and District Wide Natural and Cultural Heritage noted as relevant – *addressed fully in this report.*
- Iwi engagement – *discussed in the section below.*
- Impacts on adjoining non-industrial activities – *addressed fully in this report.*
- Flooding – *addressed fully in this and the attached Flooding report.*
- Access and transportation – *addressed fully in this and the attached Integrated Transportation Assessment*
- Neighbourhood Consultation – *discussed in the section below.*
- Servicing – *Noted and addressed.*

Interaction with the Waipa District Council at all levels has been positive, and it is understood in principle the Council is supportive of the project.

3. CONSULTATION

The applicant has consulted with Waipa District Council at elected councillor and official levels.

Letters of support have been obtained from Ngāti Apakura Rūnanga and Waipa Networks, and Transpower NZ Limited (Appendix W). It is understood the rohe of Ngāti Apakura Rūnanga extends south-east from Pirongia over Te Awamutu and the includes the subject site. The indicative support from Waipa Networks underlines the stated benefits of the proposal to the local transmission network.

Transpower states in their attached letter that they provide an open access network to accommodate all demand and generation options wishing to connect. Transpower estimates energy demand will grow from 493MW currently to 652MW over the next 15 years, a 32% increase, which will in crease demand on their already loaded network and

“...we highlight the benefits [in their reports] of embedded generation like your proposal in enabling the more effective management of our existing assets to extract a longer more productive life before large investments are required to be made for additional capacity.”

Transpower finishes by stating:

“Your proposed generation, like other proposals would defer the timing of future transmission grid upgrades to meet Te Awamutu’s growing demand.”

Discussions have also been held with Waikato Tainui and Fonterra. Both organisations are also understood to be receptive to the proposal. The proposal represents major economic advancement for local Māori, and there is strong compatibility with Fonterra’s operation. However both Tainui and Fonterra have said they cannot provide formal confirmation of support until they have considered the

entire application, which cannot occur prior to lodgement. Upon lodgement the application will be provided to these two key parties and it is anticipated letters of support will follow, and be appended to the application post-lodgement.

4. PLANNING FRAMEWORK

4.1. District Plan Status

The Waipa District Plan was made fully operative on the both 14 August 2017. The zoning of the adjoining land at the Te Awamutu Racecourse has recently been the subject of Plan Change 13 (PC13) to the Waipa District Plan. The deferred zoning that applied to the racecourse has just about been uplifted through PC13. Among the decisions on PC13 released in September 2021 was the removal of the Deferred Zone from all pre-2035 Growth Cells. The racecourse is identified as Growth Cell site T13, which was identified for development prior to 2035. The Deferred zoning has been replaced with a Residential zone at this site.

Prior to uplift the site was zoned Deferred Residential, however effectively the underlying zone was Rural as those were the provisions to which the Deferred Residential Zone deferred to.

The appeal process was meant to have finished 21.10.21, but was extended to 1.11.21 following re-notification of the decision with corrections. One appeal has been received so far, relating to a site in the C4 growth cell.

It is understood no appeals have been received against the uplifting of the Deferred zoning across the racecourse site, and other appeals are deemed to not have wider relevance, therefore the zoning as Residential could be treated as beyond challenge and operative.

5. REASONS FOR CONSENT

A thorough assessment of the proposal against the relevant rules of the Operative District Plan has been included as Appendix C. In summary, this proposal triggers resource consent under the following rules:

Section 2 Residential Zone (for that part of the accessway to the site that is zoned Residential)

- Rule 2.4.1.5 (i) - The proposal is for an industrial activity and is not listed as a Permitted, Restricted Discretionary or Discretionary activity, nor a prohibited activity (only fortified sites) – **Non Complying activity**
- Rule 2.4.2.26 – Noise – Noise received at the two residential properties adjoining the site entranceway exceed that permitted during the day – **Discretionary Activity**
- Rule 2.4.1.35 - The maximum permitted earthworks volume of 25m³ will be exceeded for the formation of the accessway – **Restricted Discretionary activity**

Section 7 Industrial zone

- Rule 7.4.1.3(d) – The proposal is for an ‘activity’ not permitted by rule 7.4.1.1(t) in the Specialised Dairy Industrial zone - **Restricted Discretionary Activity**
- Rule 7.4.2.2 – Minimum building setback from boundaries – The acoustic screen proposed adjoining the boundary with the racecourse is 2.5m high and situated at the boundary – **Discretionary activity**
- Rule 7.4.2.6 – Height – Maximum permitted height of 20m exceeded: furnace hall has a maximum height of 35m, and chimney stacks a total height of 38m – **Discretionary Activity**
- Rule 7.4.2.13 – Landscaping and screening – required depth of 3m not achievable along racecourse boundary - **Discretionary Activity**
- Rule 7.4.2.32 – Earthworks – Maximum permitted volume of 1000m³ exceeded - **Discretionary Activity**
- Rule 7.4.2.34 – Temporary construction buildings – Construction duration will exceed one year - **Restricted Discretionary Activity**

Section 15 Infrastructure, Hazards, Development and Subdivision

- Rule 15.4.2.14 – Site suitability – within or adjoining a flood hazard area, free-board – a minimum free board of 500mm is required whereas 300mm is proposed – **Non complying activity**
- Rule 15.4.2.15 – Site suitability – within or adjoining a flood hazard area, High risk flood zone – parts of the site proposed to be developed will occur within what can be considered High Risk Flood Zone – **Non complying activity**
- Rule 15.4.2.18 – Infrastructure within the urban limits – the facility will be connected to water supply for industrial activity and fire-fighting, but not wastewater reticulation – **Non complying activity**

Section 16 Transportation

- Rule 16.4.2.5 – Vehicle crossing separation distances – the existing vehicle crossing at No. 381 Racecourse Road is located 7.5m from the edge of the proposed vehicle crossing, whereas a minimum separation distance of under 4m or greater than 11m is required - **Discretionary activity**
- Rule 16.4.2.22 – ITA – Racecourse road is a collector road and the activity will generate over 250 vpd Simple ITA required - **Restricted Discretionary Activity**

Section 26 – Lakes and water bodies

- Rule 26.4.2.1 – 23m setback from lakes and water bodies - Earthworks will be undertaken within 23m of the Mangapiko Stream - **Restricted Discretionary Activity**

Overall, the application is classified as a **Non-Complying Activity** under the ODP, being the highest activity status indicated by the rules above.

6. ACTUAL AND POTENTIAL EFFECTS (SECTIONS 104(1)(A) & 106)

6.1. Statutory Matters

When considering an application for a non-complying activity the consent authority must have regard to Part 2 of the RMA (“Purposes and Principles” – sections 5 to 8), and sections 104, and 104D, where relevant, sections 106 and 108 of the RMA.

Subject to Part 2 of the RMA, when considering an application for resource consent and any submissions received a council must, in accordance with s104(1) of the RMA have regard to:

- any actual and potential effects on the environment of allowing the activity;
- any relevant provisions of a NES, other regulations, national policy statement, a regional policy statement or proposed regional policy statement; a plan or proposed plan; and
- any other matter a council considers relevant and reasonably necessary to determine the application.

The following assessment fulfils the requirements set out in section 104 and includes an analysis pertaining to the statutory requirements to give effect to the relevant plans and assess the environmental effects of the activity.

6.2. Assessment of Actual and Potential Effects on the Environment

Section 104(1)(a) of the Act requires that the Council have regard to any actual and potential effects on the environment of allowing the activity. It is anticipated that any effects that may arise from the proposal would fall into the following categories:

- Social, economic and cultural
- Air Quality, Dust & Odour
- Visual Impacts
- Noise & Vibration
- Residential Character and Amenity
- Infrastructure
- Industrial zone and Specialised Dairy Industrial Zone functioning and viability, and reverse sensitivity
- Transportation
- Flooding
- Site Suitability
- Contamination and Hazardous substances
- Earthworks and Construction

6.2.1. Overview

The resource consent application is proposed as a Non-Complying activity overall. Assessment against assessment criteria for Restricted Discretionary and Discretionary activities are carried out later in this report which the discussion below references, as a guide to decision makers. The general and specific assessment criteria relevant to the specific nature of the application are assessed specifically in Appendix D, while the proposal justification in respect of effects is outlined in the sections below.

6.2.2. Social, Economic & Cultural

The Social, Economic and Cultural Effects of the project are severally and more so together, profound. Motivations by the principals of the Applicant span a wide arc of benefit that usher a compelling case and have a strong focus on local and regional social, economic and cultural benefits.

6.2.2.1 Social Benefits

Employment at the facility will be targeted at the local population, particularly Māori, providing good wages, steady employment and training and upskilling opportunities. One of the principals of the applicant, himself Māori is keenly aware of the challenges facing Māori youth and sees this facility as a chance to make a further contribution to the advancement of Māori society, building on the employment generated at his other businesses throughout the Waikato and Auckland.

6.2.2.2 Economic Benefits

The Economic effects are abundant and amply demonstrated in the Economic Impacts Assessment (Appendix T). The facility is a sizable undertaking and construction alone will likely result in direct contribution of \$117 million to the Waipa and Waikato regional economies. On-going contribution from the operation of the facility is conservatively estimated at \$37 million annually, including 210 jobs in the Waipa District, or about 1% of the local employment. The regional economy including Waipa would benefit from a total of 420 additional jobs. To put that in context, that can be taken to be the economic equivalent of building a new small town in Waipa District, somewhat larger than Pirongia, assuming a household size of 4 occupants for every employed person.

Other economic benefits that have been quantified in the Economic report are the efficiency gains the proposal represents compared to landfill, enabling waste handling charges to be set lower resulting in lower operating costs for businesses, in the order of \$24 million per annum. This will mean that businesses in the region can operate more efficiently, and households will have additional disposable income.

Electricity Generation is the primary purpose of this facility and it is that aspect that is set to deliver substantial ongoing economic benefit, over and above the benefits listed above.

- The plant will generate electricity that is expected to be about half the price of the alternative thermal baseload plants, \$110 versus \$250
- Overall retail price improved, albeit marginally
- This electricity will be transmitted to the local network capable of supplying just about 50% of local households

- The demand for electricity is growing in the Te Awamutu area as a result of increasing population growth and expanding industrial production, with this generation proposed close to where local demand is. Consumption near to source will be heavily immunised from disruption and continuous, and better protected from the vagaries of weather which imposes operation restrictions on South Island hydro production (See also Letter of Support from Transpower, Appendix W).
- Added stability and resilience to the wider network. Greater reliance on renewable energy creates complexities for continuous and balanced spread across the transmission network – renewable generation from wind or sun only happens when the wind is blowing or sun is shining. The benefit from this plant is that base-load plant contributes to stabilising the overall wholesale cost of energy and reducing transmission complexity by limiting the periods when higher cost peaking is required or displacing uneconomic units from the market. This stability is the platform on to which additional forms of generation can be added such as solar and wind power. The fragility of the existing transmission network was exposed recently on 9 August 2021. (See also Letter of Support from Transpower, Appendix W).
- As a platform for expansion of renewables, the proposal assists in the move away from use of fossil fuels. Their higher energy rating output per kilojoule and stability has guaranteed them some level of protection despite their inherent drawbacks. The subject proposal is part of contemplation of serious displacement.

Other economic benefits of the proposal perused are:

- Encouragement of circular economy through the enhanced extraction of recyclables that would otherwise be sent to landfill
- Enhanced transport efficiency. The facility is located better to where the fuel for the plant is generated, and will therefore reduce the transportation of waste from generation to disposal sites. This is demonstrated at Figure 3.5 of the Economic Report which highlights the scarcity and isolation of the current landfills in the Waikato Region.
- The proposal introduces competition into a market dominated by a duopoly. As in many parts of New Zealand's economy the much-vaunted competition heralded by the deregulation of the 1980's never happened which is part of the reason why New Zealand is an expensive place to live. This proposal will ease that burden in its own small way.
- The proposal will have a significant, albeit unquantified opportunity benefit in terms of reduced pressure on landfills, which will ultimately reduce the need for further landfills. Many landfills have been closed in the Waikato as they have filled up, with current capacity concentrated at 4 landfills, Hampton Downs, Tirohia, Waitomo District and Broadlands Road. The search for new landfills, and particularly the larger landfills currently favoured for their benefits of scale, will become harder as the scrutiny of their negative impacts is sharpened.
- Education and Tourism. The plant will include an education and information centre, which will be used by the local community and some visitors. This drawing of people to the area is expected to generate some additional benefits in the local economy. The Exhibition Centre is a neat segue into the next major tranche of benefits.

6.2.2.3 Cultural effects

The involvement and reference back to mana whenua is also an important driver behind this facility. The presence of a significant Māori business such as this is an opportunity for local Māori to reassert some mana whenua in Te Awamutu, which will be showcased at the exhibition centre, and depicted across various facades of buildings. At a future time Council will be presented with designs for Māori motifs that will tell the story of the journey of local iwi in this area. The attached written letters of support underline the support of local iwi to the proposal. It is understood a further letter of support from Tainui is also forthcoming.

Part of the site adjacent the Mangapiko Stream is subject to the Mangapiko Cultural Alert Overlay of the District Plan. Earthworks are proposed within this area for stormwater and flood displacement mitigation, but as above any effects will be more than offset by the streambank restoration intended for this area now that the site will be retired from farming. Therefore any cultural impact will be positive, or less than minor if adverse.

6.2.3. Air Quality, Dust & Odour

The effect of the proposal on Air Quality is not specifically addressed within this report since it's assessment comes within the remit of the Regional Council. As noted above an application to the Waikato Regional Council has been made in parallel with this application for those consent matters over which the Regional Council exercises control. It is noted however that the assessment carried out for air quality in the Regional Council application concludes the air quality impacts of the proposal safely and are well within the required maximums, with this section of the conclusion of that report bearing repeating:

The species of most interest in this application were particulate matter PM₁₀ and PM_{2.5}, sulphur dioxide, nitrogen dioxide, carbon monoxide, mercury, and dioxins, and each of these has been assessed against a number of ambient standards with the predicted effects ranging from less than minor (trivial) to no more than minor. As the modelling is considered to be conservative, the effects are expected to be even less than those predicted. (Section 8, Conclusion, Air Quality Assessment, Appendix P).

6.2.3.1. Dust

Dust has been assessed in the Air Quality Report. The report notes the main potential sources of dust from this facility are:

- Unloading raw material in the loading bay
- Loadout of screened metal rejects
- Firebox ash handling
- Cyclone and bag filter dust collection
- Lime, carbon and urea silo filling

The main potential source for dust from the facility is at the point of material arrival. Material arriving at the upper main tipping hall level will have controlled door access to the initial manoeuvring area. Once inside this manoeuvring area, vehicles will reverse through an interior door to dump within the

internal bunker located next to the recycling hall. As the Report notes this double door system effectively provides double isolation for wind-blown material.

Dust from Firebox ash will be minimised through the application of water and collection through a wet ash sluice beneath the furnace grates which is then conveyed to the wastewater handling system as a slurry.

Dust is collected through a baghouse system. At prescribed intervals it is transferred from the baghouse hopper to a covered skip via a chute that exits inside the skip. Further the baghouses and cyclones will be housed within the main building.

Silos will be installed around the plant within the main building for lime, carbon and urea, and will be fitted with quick coupling for truck connection and pneumatic gate valves for loading, ensuring dust from these silos will be negligible.

6.2.3.2. Odour

Odour is acknowledged as potentially significant for a facility that will process substantial quantities of refuse. However the elimination of putrescibles from the waste stream, as described in the Air Quality Report at Section 2.1 will ensure that the facility will not generate significant odour effects. Putrescible waste is solid waste that contains organic matter which rots and generally comprise food scraps, manure, animal waste and disposable nappies. Putrescibles will be extracted from the waste stream at another site, from which 'filtered' material will be delivered to the subject site.

It is important to note that putrescibles have a low calorific value and therefore overall detract from combustion efficiency. Due to their higher water content a higher amount of energy is required to combust them relative to the energy obtained. Further, water and organic compounds can adversely affect components in the furnace and boiler systems, and for these reasons it is in the operator's interests to exclude putrescibles from the waste stream.

To further ensure any putrescibles entering the site are captured, on reception in the vehicle management area vehicles will be inspected for putrescibles and odourous materials and rejected if necessary. The double door system will also substantially assist in limiting the potential for any residual odour effects.

Finally, air movement direction within the series of halls will be conducive to elimination of residual odours. The air volume demanded by the furnaces for combustion ensures that air movement direction is from the tipping halls through the recycling hall, into the furnace hall and through the furnaces. This effectively prevents odour leakage and then ensures any residual odours' destruction through the furnace system.

6.2.3.3. Dust and Odour conclusion

The relevant section of the Air Quality report on dust and odour should have the final word:

Other effects such as odour and dust or fugitive particulate emissions will be controlled using a 4 tier approach that includes, pre-processing of a large portion of the material off-site, excluding putrescible and odourous material, the use of a double door air lock system and maintaining a slight negative pressure within the building. The first of these means that there will be no significant odour that requires control,

but the remaining three controls ensure that both any slight residual odour and particulate discharges are well controlled. (Section 8 Conclusion, Appendix P).

6.2.4. Visual Impacts

There are two sets of visual impacts to be assessed from this proposal:

- Visual impacts on residential character and amenity at the front entrance of the site, where that part of the site is zoned Residential;
- Impact of the furnace hall – the height to the ridge is maximum 35m, with the stacks extending an additional minimum 3m above the roof at the point they penetrate. A maximum height of 20m is permitted inside the Industrial Zone.

Visual impact of the proposed activity at the front entrance will not be a significant change from the existing. The existing entrance comprises solely a formed accessway and grassed berm with no non-access activity carried out – the only existing purpose of this part of the site is for vehicle access to the rest of the site. That will not change in broad visual terms and this part of the site will continue to be used for vehicle access to the rest of the site, albeit considerably more intensively. The minimal additional effect on visual residential character will be mitigated by enhanced landscaping around the entrance, as detailed in the Landscaping Plan.

At a total height of 35m the visual effect of the furnace hall could be ventured as significant. That is nearly double the maximum height permitted in the Industrial Zone and combined with the horizontal expanse results in an overall substantial bulk of building. The potential effect of this non-compliance falls largely on future residential development at the racecourse.

There will be some visual impact of the facility on the racecourse. This will however be mitigated in the following ways.

Setback of the largest element at the subject site from the boundary: The Furnace hall is the highest and largest built element proposed, and at a maximum height of 35m nearly double that permitted in the industrial zone could potentially impact on views from the racecourse. This impact could be exacerbated by its location near the top of the terrace. However the furnace hall will be setback 90m from the racecourse boundary and will be viewed in conjunction with other proposed elements, particularly the vehicle tipping hall and exhibition centre which create a stepping effect, gradually introducing views to the facility reducing impact. Any impact will be further reduced by the proposed extensive landscaping and designs that will eventually be laid over the facades of buildings. The Recycling and tipping halls are compliant in height therefore their impact on visual amenity is considered consistent with that anticipated by the Plan.

Setback of residential development at the racecourse from the boundary with the subject site is discussed at section 6.2.6.2 above. If the closest residential development to the furnace hall is separated by a minimum of 200m, any visual impacts begin to dissipate, and proposed development viewed as part of the wider background of which the Fonterra complex forms the dominant backdrop. Against this the proposal is not considered incompatible or overly intrusive into future views.

The backdrop of the Fonterra complex and the accommodation this creates for the proposal is demonstrated in the following photos. These photos were taken from the vantage point marked as 'X' in the figure below, from a vacant section near the end of George Melrose Drive.

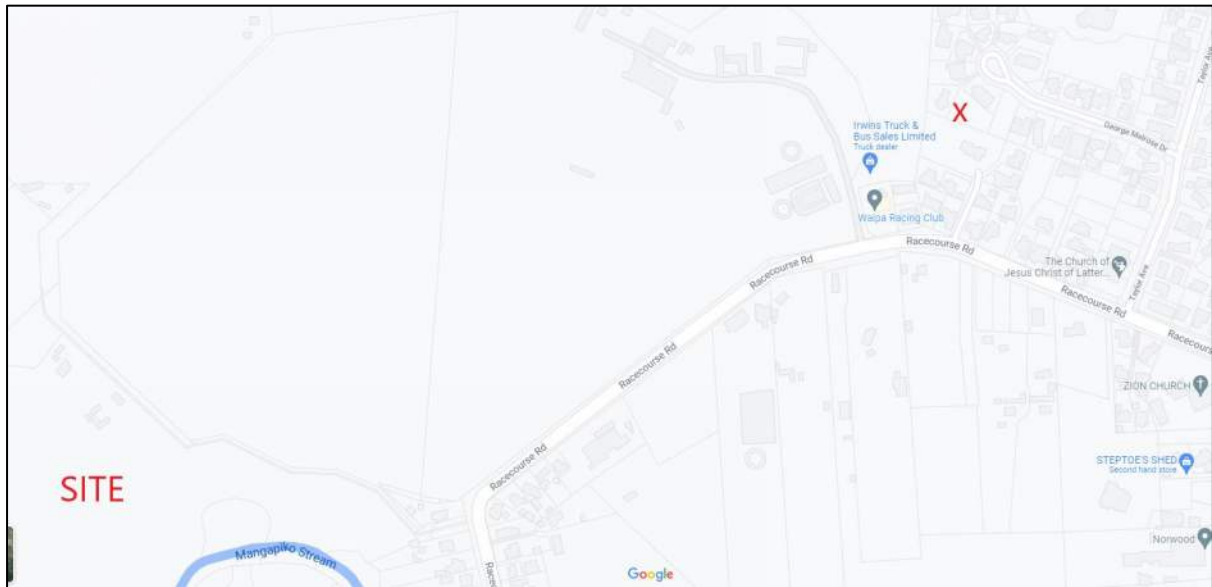


Figure 56: Photos Vantage Point



Figure 57: View across racecourse with Fonterra complex to left



Figure 58: *View down Racecourse Road with Fonterra complex at centre*

The photos highlight the presence elements of the Fonterra complex have on the existing visual character of the area. The introduction of the furnace hall into this context is therefore prepared by these existing elements and will not be perceived as incongruent or jarring.



Figure 59: *Fonterra Dry Goods Store*

Figure 59 above highlights from another vantage point the scale of other buildings in the vicinity, in this case the Fonterra Dry Goods Store, taken from the south side of the Mangapiko Stream looking across the subject site. At this distance the Dry Goods Store is still substantial and creates an additional primer for the introduction of similarly large industrial buildings.

The proposed chimneys will rise above the furnace hall roof by 3m. Any visual impact will be mitigated when viewed against the furnace hall building, the Fonterra buildings and the existing Fonterra chimney stack on Factory Road, seen prominently in Figure 58.

Finally, further mitigation is provided by the development of only part of the site. The overall extent of buildings is restrained relative to the overall permissible development area. No maximum site coverage is set for the Industrial zone. Total development is proposed of around 45% of which half is road and manoeuvring areas, and over half the site continuing to be retained as open grass land. Therefore the site could be developed at a permitted height but over a much greater extent with what are considered significantly greater impacts on visual amenity than what is proposed.

Dr Terry Brady in his Air Quality Report at section 6.9 has assessed the visual effects of the emissions plumes from the chimney stacks, as below.

At a maximum particulate concentration of 15 mg Nm⁻³ (dry gas 6% O₂) there should be no significant visible plume from the boiler stack under normal operating conditions and the discharge should be clear. However at times during cold weather and high relative humidity a visible water vapour plume that forms after discharge may be evident.

A stack opacity monitor will be fitted to each of the boiler stacks and a maximum opacity of 20% is proposed that is more stringent than the historical limit of 40% applied to most boilers, but is appropriate for modern solid fuel boilers with better combustion control systems. This limit is normally excluded for short times during startup from cold and during soot blowing, but in this case the boilers will employ mechanical cleaning so the traditional soot blowing is not required. However the exclusion will still apply for start-up.

Boiler steam drum blowdown is often accompanied by a visible steam plume close to boiler plants that use intermittent blowdown to manage mineral content of the steam feedwater. The proposed boilers will use a continuous blowdown method that does not create a visible steam plume.

For the above reasons the visual impacts of the proposal on local, and wider visual amenity are considered to be no more than minor.

6.2.5. Noise and Vibration

The Acoustic Assessment by SLR at Appendix Q confirms there is general accord of the proposal with the noise-related requirements of the District Plan. Noise from Construction will comply with the relevant standard, vibration from construction will comply with the proxy standard deferred to by Council, by virtue of the distance of piling from any current and future sensitive receptors.

Operational noise levels are summarised at Table 13 of the SLR report. Two properties, 381 and 417 Racecourse Road, those properties either side of the entranceway, are predicted to experience noise levels greater than permitted. SLR assesses the exceedances against the relevant assessment criteria of the District Plan (21.1.7.13).

For both the absence of night time heavy vehicle movements is a mitigating factor, ensuring disturbance is minimised when people are at their most sensitive. The intermittent nature of truck movements also lessens impact somewhat, compared to an ongoing or continuous noise source.

Adverse impacts in the case of 417 Racecourse road are mitigated by the negligible degree of exceedance. 1dB above permitted daytime levels is considered imperceptible with effects no different to fully compliant levels. Adverse impact is also mitigated by the absence of any special characteristics of the heavy traffic movements that might heighten impact.

In the case of 381 Racecourse Road the 3dB exceedance is not negligible. The impact falls however on the first floor level only, as the noise levels at ground level will be reduced down to compliant levels by the acoustic screen running parallel to the boundary of this site.

The first floor comprises bedrooms which are less likely to be occupied during the day. At night the sleep of occupants at first floor will be protected by the restriction on heavy vehicle movements. If the windows of the upstairs rooms are closed during the day noise received would comply with limits. Recognising the impracticality of this during summer months and the necessity of keeping open for ventilation the applicant is prepared to accept conditions around the installation of mechanical ventilation at the upper storey of this property, which will give occupants the option of keeping windows closed and maintaining adequate ventilation.

Importantly, the background noise levels in this area are dominated by the dairy factory and existing vehicle traffic on Racecourse Road, creating potentially a higher threshold for effects and therefore lessening the impact of the additional new noise.

All practical means to reduce noise emissions, and the extent to which these mitigation measures reduce noise are set out, and include as discussed above a restriction on the type of vehicle movements in the evening and at night and acoustic barriers along both residential boundaries, and sealing and regular maintenance of the access road. These measures result in significant reductions of noise received at adjoining properties.

The report concludes with the following statement:

On the basis of the above, taking into consideration the mitigation and measures proposed, the noise effects are considered reasonable with reference to Section 16 of the RMA in terms of the proposed operation and considering the proposed mitigation measures, confirming the suitability of the site for the proposed facility.(Section 9, Conclusion, SLR Report Appendix Q).

I concur with the conclusion and based on the mitigation measures outlined and the additional volunteering of installation for mechanical ventilation for the upper storey of 381 Racecourse Road that any effect in terms of noise will be less than minor.

The vibration effects of heavy vehicle movements on the two properties adjoining the entrance will be sufficiently mitigated by a flush crossing, smooth sealed surface and restriction on vehicle speeds.

6.2.6. Residential Character & Amenity

There are three areas zoned Residential which could potentially be affected by this proposal:

1. Residential properties either side of the access on Racecourse Road, and other residential properties on this road
2. The Racecourse which is earmarked for residential development
3. Land across the south side of the Mangapiko Stream

6.2.6.1. Racecourse Road

The vehicle access to the site is from Racecourse Road, over land that is zoned Residential. Land either side of this access, at No.s 381 and 417 Racecourse Road is similarly zoned Residential. As noted above it is considered the zoning of the access is anomalous, as the bulk of the site is zoned Industrial and the proposed access is the only practical means by which access can be gained to the site, and it therefore would have been expected that the same Industrial zoning would have been extended across the entire site, and not arbitrarily split. Perhaps this split was made in deference to the residential properties either side to maintain a continuous residential frontage and limit effects of the industrial activity on those properties. This however sets up a planning conundrum of effectively isolating a large area of industrial land. Taking that further if the effects of any industrial activity on the site proper were perceived to be so significant then the Industrial zoning of the site proper is effectively invalidated, and it would then be expected that the land rezoned to something with effects more compatible with maintenance of the Residential zoning at the entrance. Since that has not been done, and Industrial zoning reigns over most of the site, it is inferred that the split zoning at the site entrance is a mistake, and should have been more suitably zoned also as Industrial. It is very likely that a proposed plan change to that effect would be successful.

The proposed use of the residential section of the site for an industrial use renders this aspect of the proposal non-complying. From the foregoing that is considered a technicality since zoning the site's only practical access as Residential inevitably results in non-compliance and highlights the incongruity of such a zoning.

Be that as it may, the residential character and amenity of the sites either side of the main entrance and in the vicinity of the site will not be significantly adversely affected. The only way in which these properties will be affected will be by vehicle movements. The Acoustic Report confirms that provided the acoustic barriers are installed as directed noise received from vehicle movements at these adjoining properties will remain within acceptable levels. Substantial heavy vehicle movements will be limited to daylight hours only. This will significantly reduce any impact. A slow speed limit negotiated with Council will apply to the site access including near the site entrance and smooth pavement will be constructed and maintained within 100m of the entrance.

Further a level crossing will be constructed, and judder bars excluded from the vicinity of the residential properties helping reduce any potential for judder and noise from heavy vehicles, particularly those empty trucks leaving the site.

In terms of impact on the wider character and amenity of the area, the Traffic Report notes that the traffic generated by the development can be accommodated within the local road network, and is not significantly greater than existing levels of vehicle movements, including heavy vehicle movements, on Racecourse Road. As noted in the Landscaping Plan extensive planting will be carried out around the vehicle entrance to mitigate visual impacts. Landscaping will also be inserted adjoining the residential property boundaries helping screen the facility from view of those properties. The distance of the facility from the residential properties at the entrance will effectively mitigate any impacts of the bulk and scale of the facility, which will be further mitigated by the extensive plantings proposed around the facility itself. Visual impacts are discussed further at section 6.2.4.

It has previously been noted that there is a disparity between the legal boundary of the subject site and the occupied boundary of 417 Racecourse Road. This can be rectified by a legal process to regain occupation of the whole of the access end of the subject site. This will enable formation of a compliant accessway and erection of acoustic barriers between the access and the legal boundary to ensure noise effects received within the legal boundary of 417 Racecourse Road comply with permitted maximums.

6.2.6.2. Racecourse

The Racecourse will eventually be converted to residential use, and is identified as such as T13 Growth Cell in the District Plan, for development prior to 2035. Residential occupation of the Racecourse site could potentially be affected by vehicle movements, noise, lighting spill, dust and odour.

Noise, dust and odour are discussed above, and determined as compliant provided various mitigations are put in place in the case of noise. A noise barrier is proposed along part of the boundary between the facility and the racecourse which will ensure noise levels received at the racecourse comply with minimum standards. Dust and odour will both be dealt with at source with no impacts anticipated as crossing the common boundary. Lighting will be controlled so that all lighting will be directed inwards, with any light spill further restricted by the fitting of cowls to all lights within the 50m of the racecourse boundary of the site.

The visual impact of the facility on future racecourse residential development is assessed at section 6.2.4 and found to be no more than minor.

It is likely that the future structure planning of development at the racecourse will include a substantial setback of dwellings from the boundary with the subject site. Such a substantial setback will reduce the potential for a variety of effects that can occur where industrial and residential land adjoin each other. These include light spill, noise, visual impacts and reverse sensitivity effects (pressure from residents against the operation of a legitimately established industrial operation, as discussed further below). In this the Euclidian method of separating uses has been proven to be the most effective in preventing future conflict and is endorsed within the Waikato Regional Policy Statement through the General Development Principles (Section 6A, Appendix N) particularly principle (o):

“not result in incompatible adjacent land uses (including those that may result in reverse sensitivity effects), such as industry, rural activities and existing or planned infrastructure;”

This approach is likely to be a principle of the structure planning for the residential development of the racecourse to recognise the potential effects of proximity of industrial and residential uses, and to reduce any potential for friction to arise in the future. A substantial setback such as 50m or 100m will significantly assist in mitigating impacts of proximity, in visual and other amenity terms.

No impact on the existing equestrian activity at the racecourse is anticipated during the period prior to conversion to residential use.

6.2.6.3. Land across the south side of the Mangapiko Stream

A large area across the south side of the Mangapiko Stream is zoned Residential, but is currently open fields, playing fields and used as a training facility. Impacts of the proposal on any future residential development are however limited for the following.

It is very likely that residential development here would be setback a substantial distance from the stream, recognising the extent of the floodplain is much greater on this side of the stream and to mitigate the impacts of associated potential flooding. The combination of the residential development setback and setback of the proposal within the subject site will ensure effects such as noise are reduced to an acceptable level, as confirmed through the Acoustic Report. Further mitigation is provided by the isolation of the Furnace Hall from this area, and its location behind the other elements such as the tipping and recycling halls. Extensive landscaping will be applied across the site, along with façade treatments which will mitigate visual impacts, and extensive restoration of the stream margin on the subject site will ensure in ecological, landscaping and visual terms at close quarters the proposal will result in a net improvement.

6.2.6.4. Residential Character & Amenity Conclusion

From the above, it is considered the zoning of the vehicle access is anomalous, and results in a technical allocation of non-complying status to this aspect of the activity, which otherwise would not occur if proper recognition was given to the front of the site as the only practical means of access to the site and reflected through a consistent Industrial zoning. Nevertheless the impacts of the activity in this part of the site are consistent with residential amenity. Any impacts on future residential amenity at the Racecourse will be mitigated by setbacks imposed on the subject development and future racecourse development, which are the most effective means of avoiding friction between two potentially incompatible uses.

6.2.7. Infrastructure

Infrastructure issues are identified and discussed in the attached Infrastructure Assessment Report (IAR, Appendix M).

There are three main ways in which stormwater from the proposed development is managed: quality, quantity and point discharge to the Mangapiko Stream.

In terms of quality, stormwater is managed in four different ways depending on the catchment origin. As noted above the roof catchment is considered low risk, and roof runoff will not require additional treatment. Rooding runoff will be treated predominantly by waster sensitive design measures such as rain gardens and swales but also including catch-pits and manholes. Wash areas will carry a higher risk of contaminants with special design detailed at building consent stage for treatment, and will be discharged to the wastewater system. Th rest of the site will be left as grass, or near the Mangapiko Stream margins restored with no water quality treatment needed.

The development results in additional runoff volume of 3000m³ (10 year ARI) for which an equivalent storage and detention volume is required. This will be managed in three ways: runoff from some rooves will be directed to directed to a stormwater pond near the Exhibition Centre; runoff from the main building will be directed to an internal tank system for re-se as part of the recycling and furnaces processes, and is considered retention volume. Check dams will be included in all swales adjacent to rooding for the management of runoff from roads.

Two locations are identified for the discharge of runoff not proposed to be detained or reused for facility processes to the Mangapiko Stream, for which consent will be required from the Waikato Regional Council, sought separately.

Wastewater will be managed in two ways: wastewater from offices, toilets and the exhibition centre will be directed via low pressure rising main to a public connection on Racecourse Road. All wastewater from the recycling and furnace halls will be stored on site in waste storage tanks, removed regularly from site in sealed trucks and disposed of at a managed waste facility.

Existing water supply reticulation to and across the site will be upgraded from the connection on Racecourse Road and will provide volume and flow sufficient for the proposal. Additional supply for the proposal will be provided by rain harvesting, backup tanks and overnight filling.

Power and telecommunications are available at the site boundary on Racecourse Road.

Overall I am satisfied that the necessary infrastructure is in place or can be provided on site, and any adverse infrastructure effects can be avoided or mitigated as set out above. In particular, stormwater effects are addressed through the stormwater management strategy and treatment chain set out above. Wastewater is addressed through the trucking out of process wastewater to an off-site facility. It is therefore my opinion that appropriate infrastructure will be available and any actual or potential adverse infrastructure effects will be less than minor.

6.2.8. Industrial Zone and Specialised Dairy Industrial Zone functioning and viability, and reverse sensitivity

This industrial activity is rendered a Restricted Discretionary activity because it is not a listed permitted activity in the Specialised Dairy Industrial Zone, a part of the Industrial zone reserved for activities related to Dairy food production.

It is understood Fonterra will supply confirmation that it is not opposed to the proposal, on the basis that it does not impact its operations. The closest component of that operation is the effluent ponds to the west of the site, which will not be impacted. Similarly the dry goods store to the north-west will not be impacted. Air emissions are well within required limits, dust is contained so that it is not objectionable, and the proposed facility and dry goods store are oriented away from one another. Further compatibility is provided by the electricity generation of the facility which initial indications are could be used by the Fonterra plant and assist them on their path towards use of renewable energy.

The subject site is somewhat anomalous to the Specialised Dairy zone because it is accessed from Racecourse Road and services to it are provided from that road. This limits the potential for integration of this site with established dairy facilities across the rest of the zone. Finally there are many other industrial uses in the zone around the Harrison Drive area that are not directly related to Dairy production but have successfully and compatibly established.

Setting aside the Specialise Dairy Industrial Policy Overlay allocated to this site, the underlying Industrial zone provides substantial support for the proposal through the Works and Utilities chapter of the District Plan. At 17.4.1.6 (i) coal fired generators in the Industrial zone are a controlled activity. The purpose of the proposed facility is to generate electricity through combustion of refuse, not coal,

but is considered to result in significantly lesser effects. Combustion of refuse is, as discussed above, a platform on which progress can be made away from fossil fuels such as coal towards renewable generation. This is a significant positive effect of the proposal. The emission control measures proposed will as confirmed in the Air Quality report result in benign emissions comfortably consistent with minimum standards, which is unlikely to be achieved by a coal-powered generator.

As a controlled activity, a coal powered generator would have to be granted consent in the Industrial zone, subject to conditions. This strongly implies that the proposed generation activity, with lesser effects than a coal powered generating plant, would be considered equally acceptable, very likely more so, under the District Plan.

The proximity of the future residential development at the racecourse has the potential for reverse sensitivity effects to arise in the future. While this application and the application to the Regional Council confirm that the effects of the activity are either no more than minor or able to be mitigated, the proximity may expose the facility to future agitation of the racecourse residential occupants. The chief way in which the potential for reverse sensitivity effects can be avoided, other than minimising effects of this proposal, is to provide for setback of future residential development at the racecourse from the common boundary.

6.2.9. Transportation

The Transport effects of the proposal have been assessed by Mr Leo Hills in his attached Integrated Transport Assessment (Appendix U). He concludes at section 11 of his report:

- No traffic safety issues have been identified which could adversely affect the road network in the vicinity of the proposed development
- The traffic expected to be generated by the proposed development can be accommodated within the existing road network
- The existing access does not comply with the District Plan in terms of separation distances to adjacent crossings and nearby intersections however this is considered acceptable

Overall he concludes that the development is generally in accordance with the District Plan, there are no traffic engineering or transportation planning reasons that would preclude the development of the subject site as proposed.

The proposal triggers consent requirements for two transport-related matters, vehicle crossing separation distance and generation of over 250 vehicles per day needing then a simple Integrated Transportation Assessment. Provided the crossing for the activity is designed as proposed it is concluded that the any impacts of other crossing proximity are mitigated to an acceptable degree.

The property at 417 Racecourse Road currently enjoys vehicle access at two points. As above, this will be rectified by resumption of the correct legal boundaries, and closing the rear access onto the subject site's existing access. That secondary access is an informal arrangement with no legal rights enduring into the future. Access to the site will continue from the front of the site directly onto Racecourse Road.

In relation to the proximity of the site access to the existing access at No. 381 Racecourse Road, it is noted that access to No 381 Racecourse Road is approximately 7.5m distant from the subject driveway (measured from centre of both driveways). This does not comply with the District Plan where a maximum of 4m, or a minimum of 11m is required. In this regard it is noted that this situation is existing, and the driveway at No 381 serves only one house and operates in a one-way nature, and is considered acceptable.

In terms of sight distance it is noted the District Plan contains no explicit requirements regarding minimum sight distances. Using RITS as a proxy, it is found that the available sight distance exceeds the local road requirements but not the collector road requirement. In this regard:

- Speeds on approaching the corner and once at the corner are expected to be significantly less than 50km/hr
- The majority of vehicles (especially trucks) are expected to travel to and from the site from the north. As such when turning left out (to the north) sight distance to the north is not considered critical.

Given the above, the sight distance is considered acceptable.

In terms of internal vehicle circulation and manoeuvring appropriate analysis has been carried out confirming the acceptability of these arrangements

The ITA also considers construction traffic, particularly that for the earthworks which are significant for this site. The ITA considers that the volume of movements generated can be considered within the capacity of Racecourse Road.

The ITA recommends that a Construction Traffic Management Plan (CTMP) be prepared as a condition of consent covering identified matters.

The report also recommends that access be redesigned as per recommendation – incorporated into the Site plan; the area where the lower level ramp, main weight bridge and visitor access meet be carefully considered at detailed design stage; and that bicycle parking spaces be provided – can be accommodated outside the Exhibition Centre.

6.2.10. Flooding

As discussed above Dr Steven Joynes has prepared a detailed assessment of the impact of the proposal on flooding. He concludes the proposal results in an additional flood depth and spread of maximum 120mm in isolated areas and 2m width, summarised above at Figure 47. The effect of this is not considered significant. The additional affected areas adjacent to residential properties on Factory Road are small, and the other affected area comprises open fields. There is also a small additional area adjacent the Fonterra factory complex but this is negligible.

Any impact is also mitigated by the low frequency of the predicted event (analysis incorporates climate change) and the conservatism of the analysis carried out. As noted detailed information on the bridges at Racecourse Road and Factory Road was not able to be obtained at time of report preparation but it is understood that both bridges assist the development – the Racecourse Road detains floodwaters

delaying them reaching the subject site, and the Factory Road bridge presents no impediment, hence the extent of additional flooding anticipated is conservative and worst case, but unlikely to eventuate.

Stormwater management measures will be carried out on site that will also assist in mitigating flooding impact.

The proposal triggers consent as a non-complying activity in respect of two matters, minimum freeboard level, and development within a High Risk Flood Hazard zone.

A minimum freeboard level of 300mm is proposed as adequate, compared to the 500mm freeboard required by the District Plan. 300mm is however considered acceptable for this industrial activity and generally considered acceptable for all industrial activities, with 500mm freeboard considered more acceptable for residential activities where sensitivity to flooding and risk of life are obviously greater.

No built development is proposed within the High Risk Flood Zone identified in Figure 49 however earthworks will be carried out in this zone for Stormwater Management. This will not expose development or life to any significant ongoing risk, and the works will aid stormwater management and likely reduce the flooding risk in the vicinity.

6.2.11. Site Suitability

The HDGeo Report assessing site suitability does not find any major issues with the site for the subject proposal. In response to ground conditions encountered it recommends that parts of the industrial development will require ground improvement or deepened foundations such as piles. Founding depth of piles is expected to be between 12 – 19m below ground level, so loads are transferred below the soils that could liquefy in a major seismic event or consolidate under load. The report notes that a detailed foundation assessment and design will be required once plans and loads are more fully developed.

The report concludes at page 13 under the heading 'Recommendations':

"The site is suitable for the proposed development as long as the identified geotechnical hazards are mitigated. Further investigation, assessment and specific design of foundations will be required for structures proposed on the site. Given the geotechnical hazards, we recommend the geotechnical and structural assessment and design are undertaken with close collaboration."

I concur with the conclusions and final recommendation.

6.2.12. Contamination and Hazardous Substances

As noted above HDGeo have carried out a review of Council records and historical and currently photos for the site to evaluate whether HAIL activities are likely to have occurred at the site (Appendix J). Their conclusion is as above that the site does not appear to be a HAIL site and an environmental investigation is not required prior to development. On that basis I am satisfied the site is not contaminated.

As above HDGeo has also carried out an assessment of the substances to be used at the facility against the Hazardous Facilities Screening Procedures of the District Plan (Appendix K). Various substances will be used as part of the fuel preparation, combustion and cleaning processes:

- Diesel
- Urea
- Sodium bicarbonate
- Trisodium phosphate
- Ammonium hydroxide

Of these only diesel is classified as a hazardous substance and subject to assessment. A maximum storage of diesel of 5000Litres has been nominated which results in an effects ratio of 0.35, which is less than the 1 maximum, and is therefore permitted.

6.2.13. Earthworks and Construction

The Site Suitability Report examines how the foundations of proposed buildings should respond to ground conditions encountered on site, such as pile foundations. Part of preparation will include extensive pre-loading. Detailed design of foundations will be carried out for building consent, but the HDGeo Report is satisfied in conceptual terms at this point that the ground conditions at the site do not present any deterrent to the proposed development.

The Infrastructure Assessment Report (IAR) details the extent of earthworks and the ways in which its effects are proposed to be managed. These include a Construction Management Plan and Erosion and Sediment Controls.

It is estimated that around 3800 truck movements (assuming double units of 20m³ capacity) will be required to transport all of the cut, fill and preload material to and from the site. That equates to sixty work days of earthworks vehicle movements, which then equates to 46 movements a day, over a 10 hour day. That is a lot of movements over an expanded timeframe.

Based on the Integrated Transportation Assessment, this volume of movements along Racecourse Road is within the capacity of this collector road, as the traffic generation assessment carried out for the operation of the activity is satisfied that the predicted 84 movements per hour can be accommodated.

The effects of noise from the movements on the two properties at the site's entrance can be mitigated by the installation of acoustic screens parallel to the boundaries of these two properties, as outlined in the Acoustic Assessment Report (section 5).

During the entirety of the earthworks period, suitable erosion and sediment control measures will be implemented and maintained to ensure their ongoing performance as set out in the Construction Management Plan and Erosion and Sediment Controls section of the IAR. These controls will be maintained until such time as the site is in an erosion resistant state.

It is considered that any effects associated with the construction and earthworks will be accommodated within the background environment, are temporary and can be appropriately mitigated by the installation of acoustic screens and site-specific erosion and sediment control measures.

Overall, it is my opinion relying on the expert report, that the proposed construction and earthworks will result in adverse effects that are less than minor and readily mitigated by site management conditions of consent.

6.2.14. Overall Assessment

Overall, I consider that any actual or potential adverse effects of the proposal are no more than minor. Social, Economic and Cultural impacts are strongly positive. Air quality, dust and odour are contained well within required standards, or avoided. A setback on future residential development at the racecourse ensures visual and noise impacts are avoided for this site, provided an acoustic barrier is erected along the site boundary. Noise impacts on adjoining neighbours at the front entrance will be dealt with by acoustic screens and an undertaking that could be confirmed through appropriate conditions for the acoustic insulation of the upper storey of the property at 381 Racecourse Road.

Impacts on residential character at the street frontage are minimal – the proposed use of this part of the site will remain the same as existing, with any residual impacts mitigated by landscaping. Infrastructure can be comfortably provided to the site, and wastewater from the recycling and furnace components of the facility will be transported off site. The proposal will not generate any significant transportation effects and the local road network has ample capacity for the additional movements generated by the proposal. The proposal will result in some additional flood displacement impacts at the fringes of the Fonterra complex and along Factory Road, but these are considered no more than minor, and do not impact residential dwellings.

7. RELEVANT NATIONAL ENVIRONMENTAL STANDARDS, POLICY STATEMENTS, PLANS OR PROPOSED PLANS (SECTION 104(1)(B))

Section 104(1)(b) of the Act sets out that when considering an application for resource consent, the Council shall have regard to any relevant provisions of national environmental standards, policy statements or plans or proposed plans.

The National Environmental Standard for Air Quality (NESAQ), the National Environmental Standard for Managing Contaminants in Soils to protect Human Health (NESCS), the Waikato Regional Policy Statement, the Waikato Regional Plan, the Waipa District Plan and the Resource Management Act 1991 are considered relevant to the consideration of the proposal. The relevant provisions of these statutory documents are assessed in these sections.

7.1. National Environmental Standard for Air Quality (NESAQ)

Regulation 12 of the NESAQ prohibits the high temperature incineration of 'hazardous waste' as below:

“12 High temperature waste incinerators

(1) The operation of a high temperature hazardous waste incinerator is prohibited.”

High temperature Incineration is defined in the Regulation as:

“High temperature hazardous waste incinerator means an incinerator that is designed and operated principally for burning hazardous waste at a temperature greater than 850°C as measured...”

Hazardous waste is defined in the Regulation as:

*“(a) belongs to one or more of the categories in Annex I of the Basel Convention; and
(b) has one or more of the characteristics in Annex III of that Convention.”*

The issue is whether the boiler that is intended to be used in the proposed process falls within the definition of “high-temperature hazardous waste incinerator”.

The plain meaning of the words “designed and operated principally for burning hazardous waste at a temperature greater than 850°C” refers to an incinerator that has the principal function of burning hazardous waste, and above the specified temperature. If the incinerator is used principally to burn other types of waste or principally to operate at a lower temperature, the activity would fall outside that definition.

It is the intention to burn waste at the proposed facility at a temperature greater than 850°, however it is also the intention to burn mainly non-hazardous waste, therefore the proposal is not for the operation of a high temperature hazardous waste incinerator and therefore is not subject to the prohibition of regulation 12. Legal advice confirmed this interpretation.

The definition of “high temperature hazardous waste incinerator” not only requires the incinerator to be designed and operated for burning hazardous waste at the specified temperature, but to be designed and operated principally for that burning.

The purpose of the regulation must be to avoid material and relevant adverse effects on the air quality, rather than avoiding negligible or immaterial adverse effects. The purpose of the Regulations would not be advanced by prohibiting immaterial or negligible contaminant discharges.

The heading of regulation 12 describes the relevant incinerators as “high temperature hazardous waste incinerators”. The focus is on the temperature and the burning of hazardous waste, rather than the burning of waste generally, but including hazardous waste. The plain meaning of the words “principally for burning hazardous waste” indicates again the critical focus on the burning of hazardous waste as the main or primary use of that incinerator.

If an alternative interpretation was proposed, to the effect that the definition applies to all incinerators designed and operated principally for burning wastes that include any component of hazardous waste, the outcome of that interpretation would be absurd and anomalous:

- Any incinerator would be prohibited that is designed and operated to burn any waste that falls within the Basel Convention Annex I and III categories, regardless of the quantity, strength or proportion of hazardous waste in the fuel that is burned,
- That interpretation would capture incinerators that are intended to burn non-hazardous waste 99% of the time or by volume, and only the very smallest amount of hazardous waste.
- That interpretation would very likely prohibit the burning of substances that are unlikely to produce any materially adverse discharge to air, when the purpose of the standard is to regulate material and relevant adverse discharges.
- The creation of a prohibition against a specified activity in these regulations leaves no method available to allow that activity to occur.
- The RMA provisions for considering resource consent applications include a robust process for evaluation of the potential effects of activities that are not prohibited. A prohibition on the

consenting of an activity should only be used to prevent activities that are likely, by their very nature, to be unacceptable in the RMA context. The availability of those consenting processes for boilers that generally burn non-hazardous fuel is consistent with the prohibition of incinerators that are principally for burning hazardous waste, rather than for the incidental burning of hazardous waste.

Finally and significantly, the purpose of this facility is not incineration per se, but combustion of refuse material for the boiling of water to raise steam, driving turbines which generate electricity. The relevant prohibition at Regulation 12 is directed at incineration of hazardous substances as an end in itself.

For the above reasons it is considered the proposal falls outside the prohibition in the NESAQ.

7.2. National Environmental Standard for Managing Contaminants in Soils to protect Human Health (NESCS)

The subject site is not known to have been occupied by any activities listed on the Ministry for the Environment's Hazardous Activities and Industries List (HAIL). Accordingly, the site is not considered to be a 'piece of land' therefore, the provisions of the NESCS are not considered to be relevant.

7.3. Waikato Regional Policy Statement

The proposal has been assessed against the relevant objectives and policies of the Regional Policy Statement, from which it emerges aligned, attached as Appendix E. Particularly, the proposal will have no more than minor effects on air quality, and represents additional diversification of energy generation that will hasten the move away from fossil fuels and will enhance the resilience of the local transmission network.

7.4. Waikato Regional Plan

As noted above consent is sought separately from the Waikato Regional Council in terms of the proposed discharges to air and stormwater to the Mangapiko Stream.

7.5. Waipa District Plan

The proposal has been assessed against the relevant objectives and policies of the Waipa District Plan, from which it emerges aligned, attached as Appendix F. Particularly, the effects of the proposal on the amenity of adjoining residential properties, both existing and future are no more than minor or able to be mitigated. Notwithstanding that this report considers the zoning of the access as Residential as anomalous, effects of the proposed use of this part of the site are such that the proposal is consistent with the non-residential objective and nested policies. That almost all of the activity will be located well to the rear of the residential area on Racecourse Road isolates the bulk of effects. When the Racecourse is developed it is very likely new residential development would be protected from potential friction through the imposition of setbacks on that development.

All of the Industrial objectives and policies are supportive of the proposal, as are those relevant from the Transportation and Infrastructure chapters. Particular support is found in the Works and Utilities objectives and policies in their explicit favour of independent electricity generation.

8. ANY OTHER MATTER THE CONSENT AUTHORITY CONSIDERS RELEVANT (SECTION 104(1)(B))

In 2019 BERL Economics carried out an assessment of waste to energy in New Zealand including the risk of such projects hindering efforts to transition to a circular economy (Appendix O). The assessment provides a potential counterpoint to some of the assertions made in the subject application and prompts matters that may be contemplated by decision makers. The discussion below responds to main relevant points distilled from the report.

8.1. Use of waste to energy will hinder transition to a circular economy

The obvious concern is that waste to energy will remove incentives to reuse. However the report acknowledges the European Commission (EC) approach where waste cannot be prevented or recycled, recovering its energy content is in most cases preferable to landfilling (section 3.2.1). The EU targets for specific packaging materials at section 3.2 are also noted, which include plastic, 55%, wood 30% and ferrous materials 80%.

Under the subject proposal waste that would otherwise be sent to landfill is first processed for extraction of viable recyclables, with metals a particular target, and material left over becomes feedstock for the furnaces. This process finds considerable alignment with the EU approach –

- Landfilling is avoided and valuable energy value retrieved rather than left to dissipate into the ground, with considerable secondary effects such as leaching etc also avoided.
- A further opportunity is inserted in the process chain for extracting recyclables, that would not happen if sent directly to landfill.
- The target percentages of plastics, metals and wood is comparable to the proposed approach at the plant, which focuses on metals but has a greater acceptance of plastics and wood recognising their decreased value for recycling, both in monetary and practical terms.

8.2. Reduced market for some recyclables and cannibalisation of recycling programmes

The paper highlights recent changes in the global market for recyclables such as the Chinese National Sword Policy, the former absence of which encouraged higher prices. Some financial incentives have disappeared meaning some recyclables are no longer financially viable, and are instead sent to landfill. As above the proposal allows the energy content to be retrieved rather than being left in the ground.

In this context the proposal stands alongside recycling programmes, rather than in competition.

8.3. Emissions

As set out in the report using the proposed technology emissions from the plant will be comfortably within applicable standards, and compares well with lifetime emissions from landfills.

8.4. Consistency of feedstock

Concern is expressed at the ability to source sufficient quantities of feedstock, 'to feed the beast'. The applicant has secured provisional contracts, on which the plant size, throughput and electricity production is based. If contracts cannot be confirmed and sufficient feedstock secured, the plant can reduce production through idling furnace lines. Consent is sought for the operation of three lines, with space set aside for the installation of a fourth if needed, for which consent would be sought through a separate process. In this way the plant can be responsive to changes in feedstock.

The question following this is if electricity contracts bind the applicant into a minimal level of electricity generation, and insufficient feedstock is available, then a poorer substitute will be used resulting in cannibalisation of higher value recycling and worse emissions.

Firstly, it is unlikely that higher value recyclables will be fed into the furnaces, as their value for recyclables will not be matched by their minimal additional energy value.

Secondly, the electricity price contract that will be put in place for this facility will be 'fixed price variable volume', meaning the generator is not committed to a fixed volume of production, and can adjust down or up as need be.

Thirdly, the pollution control technology applied to emissions will adequately capture pollutants regardless of mix, within certain parameters. These parameters will be set by the applicant's own procedures and conditions that will be applied to both the land use and air discharge consents.

8.5. Cost undercutting by landfills

The BERL paper contends that only with significant waste disposal levies through regulatory intervention will a waste to energy plant be competitive. The Formative report attached to this application finds differently. At section 3.3.1 it notes:

"...there have been recent changes in the policy settings around waste management. Since 2009 landfill operators have been charged a levy of \$10 per tonne for each tonne of MSW disposed of in landfill. MfE has recently set a schedule of increases for the levy, with the rate set to increase by \$10 every year between 2021 and 2024. The levy will increase sixfold by 2024, reaching \$60 per tonne.¹ These changes in the levy (and potential for future increases), may impact the competitiveness of some landfills within the region, and may increase the demand for alternative options for waste management."

This is followed up at section 4.2.3 by the following:

"Finally, the proposed WtE plant is expected to handle waste more efficiently than landfill, which enables the plant to charge a lower price for waste handling than the existing alternatives. Based on GCS gate rates and their market research, it is considered likely that community and businesses will benefit from reduction in waste management costs, in the order of \$24 million per annum."

8.6. Conclusion

Overall it is considered the proposal responds well to the main hypothetical drawbacks cited in the BERL report. The proposal is not intended to compete with recycling programmes, rather complement

¹ Ministry for the Environment (2021) Waste Disposal Levy Expansion.

them. In the current and ongoing environment of lower prices for some recyclables, energy is retrieved from waste that would otherwise be lost to landfill and used to generate electricity that creates a wider platform for the expansion of generation from renewables, and enhances the resilience of the local transmission network.

9. PART II OF THE ACT

The purpose of the Resource Management Act (subsequently referred to as ‘the Act’) is stated in Part II of the Act, which includes the following sections:

5. Purpose
6. Matters of national importance
7. Other matters
8. Treaty of Waitangi

Section 5 states that the purpose of the Act is “to promote the sustainable management of natural and physical resources”. Sustainable management is defined as “managing the use, development and protection of natural resources in a way or at a rate which enables people and communities to provide for their social, economic and cultural well-being and for their health and safety.”

This is to be achieved while sustaining the potential of natural and physical resources for future generations, safeguarding the life supporting capacity of air, water, soil, and eco-systems, and avoiding, remedying or mitigating any adverse effects on the environment.

Sections 6 include matters such as:

- the protection of outstanding natural features and landscapes from inappropriate subdivision;
- the protection of significant indigenous vegetation and fauna habitats;
- the relationship of Māori to their ancestral taonga.

Section 7 includes other matters such as:

- Kaitiakitanga
- the efficient use and development of natural and physical resources (i.e. is of sound design)
- the maintenance and enhancement of amenity and quality of the environment (i.e. will have positive environmental effects)
- the protection of natural and cultural heritage
- the benefits to be derived from the use and development of renewable energy

Section 8 states that the Council must also take into account the principles of the Treaty of Waitangi.

In accordance with Section 31 of the Act, it is the function of territorial authorities to give effect to the Act. The Act states that a District Plan must be prepared at all times (s73), and that the purpose of a District Plan is to “*assist territorial authorities to carry out their functions in order to achieve the purpose of the Act.*”

This is a significant application with wide ranging effects. These effects are in the final analysis bundled together, weighed and set against the lodestar of the Act for an overall determination as to whether or not the proposal will promote the sustainable management of natural and physical resources.

The proposal generates many positive effects. It provides employment for local Māori, helps reassert mana whenua and will catalyse significant direct and indirect monetised value for the local and regional economies. Various as-yet unquantified benefits are also articulated such as a reduction of waste going to landfill. Those are even surpassed by the positive impact the proposal has for electricity generation: on the resilience of the local transmission network, assistance in diversifying away from fossil fuels and impact on retail cost. Electricity sustains our modern way of life; weaning off the fossil fuels that underpin it is challenged by the ephemeral nature of some renewable production. The proposal will introduce extra baseload and forms part of a springboard to the next stage of the evolution of electricity generation in New Zealand. This proposal is a tangible step towards realisation of aspirations, and therein lies the one of the proposal's most significant, positive impacts.

Negative effects are relatively constrained for a proposal of this scale, befitting the proposal's alignment with the Industrial zone in which most of it is located. A strong receptiveness to the proposal is indicated by the allocation of controlled status to coal powered generation in the Industrial zone – Council obviously considers the effects of such generation are of a nature where it must grant consent, and the proposal finds some equivalence with this form of production but generally is *more benign*. Air Quality, dust and odour are confirmed as comfortably within required standards, inconsequential and not objectionable, visual impacts mitigated by the scale of the elements and backdrop against which they are viewed. Additional traffic generated is able to be accommodated by the local road network, and local infrastructure has the capacity for additional demand in terms of waste water and water supply. Potential reverse sensitivity is dealt on two fronts, within the site and at the Racecourse site. Flooding impacts are negligible assisted by the additional displacement provided on-site; stormwater is dealt with on-site.

There is some impact on residential amenity at the front of the site. As supporting reports prove these effects can be mitigated.

At section 7(j) the Act directs that particular regard be had to the benefits to be derived from the use and development of renewable energy, which are comprehensively articulated by this application.

When weighed the positive impacts of the proposal outshine residual negatives, and are compelling justification for the conclusion that this proposal will assist in the sustainable management of natural and physical resources.

The proposal will otherwise not affect any matters of national importance or other matters or offend the principles of the Treaty.

10. NOTIFICATION ASSESSMENT (SECTIONS 95A-95E)

Section 95 of the Resource Management Act sets out the notification and affected persons provisions to be considered in relation to applications for resource consent. The below provides an assessment against the notification steps provided under the RMA.

10.1. Public Notification

Pursuant to Section 95A of the RMA Amendment Act, the proposal is precluded from public notification, as per the below:

(1) A consent authority must follow the steps set out in this section, in the order given, to determine whether to publicly notify an application for a resource consent.

Step 1: mandatory public notification in certain circumstances

(2) Determine whether the application meets any of the criteria set out in subsection (3) and, —

(3) The criteria for step 1 are as follows:

(a) the applicant has requested that the application be publicly notified:

(b) public notification is required under section 95C:

(c) the application is made jointly with an application to exchange recreation reserve land under section 15AA of the Reserves Act 1977.

Comment

No rule under District Plan requires the public notification of the resource consent, nor is public notification requested.

Step 2: if not required by step 1, public notification precluded in certain circumstances

(4) Determine whether the application meets either of the criteria set out in subsection (5) and, —

(a) if the answer is yes, go to step 4 (step 3 does not apply); and

(b) if the answer is no, go to step 3.

(5) The criteria for step 2 are as follows:

(a) the application is for a resource consent for 1 or more activities, and each activity is subject to a rule or national environmental standard that precludes public notification:

(b) the application is for a resource consent for 1 or more of the following, but no other, activities:

(i) a controlled activity:

(ii) [Repealed]

(iii) a restricted discretionary, discretionary, or non-complying activity, but only if the activity is a boundary activity:

(iv) [Repealed]

(6) [Repealed]

Comment

The proposal is for a non-complying land use consent application for an industrial activity. As per Step 2(b) the application is not precluded from public notification.

Step 3: if not precluded by step 2, public notification required in certain circumstances

(7) Determine whether the application meets either of the criteria set out in subsection (8) and, —

(a) if the answer is yes, publicly notify the application; and

(b) if the answer is no, go to step 4.

(8) *The criteria for step 3 are as follows:*

- (a) the application is for a resource consent for 1 or more activities, and any of those activities is subject to a rule or national environmental standard that requires public notification:*
- (b) the consent authority decides, in accordance with section 95D, that the activity will have or is likely to have adverse effects on the environment that are more than minor.*

Comment

The proposal is not required to be publicly notified under Step 3 of this notification assessment.

Step 4: public notification in special circumstances

(9) *Determine whether special circumstances exist in relation to the application that warrant the application being publicly notified and, —*

- (a) if the answer is yes, publicly notify the application; and*
- (b) if the answer is no, do not publicly notify the application, but determine whether to give limited notification of the application under section 95B.*

Comment:

This application triggers the non-complying activity status, however the assessment of effects provided in Section 6 of this report, has concluded that the effects on the environment are less than minor. Furthermore, the specific nature of the infringements, and the means by which the associated adverse effects are mitigated, are reasonably anticipated. The proposal is also consistent with the relevant objectives and policies of the relevant national standards, Waikato Regional Policy Statement and Waipa District Plan and therefore satisfies both limbs of the test under section 104B for non-complying activities.

Accordingly, it is my view that there are no elements of this proposal that amount to special circumstances in relation to notification of this proposal.

10.2. Limited Notification

Pursuant to Section 95B of the RMA Amendment Act, the proposal is precluded from public notification, as per the below:

(1) *A consent authority must follow the steps set out in this section, in the order given, to determine whether to give limited notification of an application for a resource consent, if the application is not publicly notified under section 95A.*

Step 1: certain affected groups and affected persons must be notified

(2) *Determine whether there are any—*

- (a) affected protected customary rights groups; or*
- (b) affected customary marine title groups (in the case of an application for a resource consent for an accommodated activity).*

(3) *Determine—*

- (a) whether the proposed activity is on or adjacent to, or may affect, land that is the subject of a statutory acknowledgement made in accordance with an Act specified in Schedule 11; and*
- (b) whether the person to whom the statutory acknowledgement is made is an affected person under section 95E.*

(4) Notify the application to each affected group identified under subsection (2) and each affected person identified under subsection (3).

Comment:

The subject site is not located within the coastal marine area, nor is it subject to any statutory acknowledgement. As such, the proposal does not require the notification to any over the parties identified in Step 1.

Step 2: if not required by step 1, limited notification precluded in certain circumstances

(5) Determine whether the application meets either of the criteria set out in subsection (6) and, —

- (a) if the answer is yes, go to step 4 (step 3 does not apply); and*
- (b) if the answer is no, go to step 3.*

(6) The criteria for step 2 are as follows:

- (a) the application is for a resource consent for 1 or more activities, and each activity is subject to a rule or national environmental standard that precludes limited notification:*
- (b) the application is for a resource consent for either or both of the following, but no other, activities:*
 - (i) a controlled activity that requires consent under a district plan (other than a subdivision of land):*
 - (ii) a prescribed activity (see section 360H(1)(a)(ii)).*

Comment:

The proposal is not precluded from limited notification under any NES, nor is it an application for a controlled or prescribed activity.

Step 3: if not precluded by step 2, certain other affected persons must be notified

(7) Determine whether, in accordance with section 95E, the following persons are affected persons:

- (a) in the case of a boundary activity, an owner of an allotment with an infringed boundary; and*
- (b) in the case of any activity prescribed under section 360H(1)(b), a prescribed person in respect of the proposed activity.*

(8) In the case of any other activity, determine whether a person is an affected person in accordance with section 95E.

(9) Notify each affected person identified under subsections (7) and (8) of the application.

Comment:

The proposal does not meet the definition of a boundary activity, nor are the effects of the proposal deemed to be more than minor as specified under s95E. A thorough assessment of the actual and potential effects of the proposal is detailed in Section 6.2 of this report. In summary, it is my opinion that any actual or potential adverse effects of the proposal will be less than minor. As such, no persons are considered to be adversely affected by the proposal.

10.3. Summary

Overall, in my opinion this application satisfies the relevant provisions of section 95 of the RMA and can lawfully be assessed without notification or the requirement of written approvals from any persons.

10.0 APPLICATIONS FOR NON-COMPLYING ACTIVITIES – SECTION 104B & 104D

Section 104D of the RMA states that a consent authority may grant a resource consent for a Non-Complying Activity if it is satisfied that either the adverse effects of the activity on the environment will be minor or the proposal is not contrary to the objectives and policies of any relevant plan.

Section 104B of the RMA states that a consent authority, when considering an application for resource consent as a Non-Complying Activity, may grant or refuse the application. Should the consent authority decide to grant an application, it may impose conditions under Section 108 of the RMA.

The proposal is rendered a non-complying activity because an industrial activity is proposed within that part of the site zoned Residential, a minimum free board of 500mm is required whereas 300mm is proposed, some development is proposed within the High Risk Flood zone and the industrial component of the activity will not be connected to reticulated wastewater.

This report demonstrates the latter three are technical only – 300mm freeboard is considered sufficient for this industrial activity, no built development will be located within the High Risk Flood zone area, and industrial wastewater will be transported off-site for treatment.

And to a large extent non-complying status in the Residential zone could be considered technical – the access over which a Residential zoning has been allocated is the only practical means of access for the large industrial site behind. A probable unintended but inescapable consequence of realisation of the site's anticipated use is a consent classification that implies strong incongruence. This report has nevertheless demonstrated that through appropriate mitigation the proposal remains congruent even with outcomes sought for the Residential zone.

All matters have been comprehensively dealt with in this and accompanying reports and I have assessed the actual or potential effects of these non-compliances on the environment and concluded that these would be less than minor. Our assessment also concludes that these parts of the proposal are not contrary to any relevant objectives or policies of the relevant standards, Regional Policy Statement or District Plan. The proposal therefore satisfies both of the threshold tests, and Council has the jurisdiction to grant resource consent on this basis.

11. CONCLUSION

This application raises the curtain and the bar for a major shift in how waste is dealt with and power is generated in New Zealand. The climate crisis demands precise action on both and this proposal provides a real and practical step towards a more sustainable future.

Perhaps inevitably the proposal may attract blunt criticism as green-washing – cynically cloaking a refuse incinerator as a stepping stone to sustainability is a thinly-disguised break away from the direction that New Zealand should be heading in. As always the real answer is more nuanced, which this report has sought to demonstrate. Principally, the primary intention of the proposal is not to incinerate waste, but to generate electricity. This electricity is valuable baseload that forms part of the springboard to greater generation from other renewables such as wind and sun. Currently battery technology and transmission networks hamper how that power is generated and distributed in New Zealand. Better baseload encourages greater diversification and uptake creating a virtuous cycle away from fossil fuels.

The receptiveness of the District Plan to this form of power generation is revealed by the Controlled status allocated to coal generation in the Industrial zone. Not exactly a baseline, but not far off, with effects of this proposal demonstrated to be limited to the extent that it can be said to be consistent with what the Plan anticipates for this site.

The usual lightning rod of criticism for a waste to energy plant is air emissions. While not directly within the ambit of District Council Assessment, tangentially it is through the Health and General Amenity chapter. An application is being made to the Waikato Regional Council for a discretionary activity for discharge to air, which is based on the Air Quality report that is appended for reference to this application. This Report provides the required comfort that the activity will not adversely impact on air quality and dust and odour will be well controlled, ensuring rendered as non-objectionable at the boundary.

The effects of the use of the accessway, zoned Residential, for this industrial use have been comprehensively assessed. The starting point is that the use of this part of the site will not fundamentally change. It is and will continue to be used for access, not habitation. The intensity of this use will change and the effects of that can be mitigated for the reasons set out. Standing behind this is the anomaly of such a zoning for the balance Industrial site. The District Plan is in obvious unintended conflict, zoning a large area of land as industrial but then curtailing that use by crimping off the access point. The planning merits of such a zoning are normally the realm of a plan change or a review, but it is the purpose of the resource consent process to depart where justified, which this report concludes as warranted.

Impacts on future residential development of the Racecourse are limited by the constrained nature of effects of the proposal and the setback that will likely be imposed on any residential development coming to the racecourse. Setbacks of proposed development at the subject site, and future development on the racecourse site will also offset any visual impacts, as will the existing backdrop of the Fonterra complex, both from the racecourse site and further afield. It is worth repeating that the majority of the site will remain undeveloped, with the effect of the additional height of the Furnace Hall paling against a compliant height but blanket and permissible development of most of the site.

The proposal is not permitted within the Specialised Dairy Industrial Policy overlay in which it sits, established for the protection of the Fonterra complex. Non-permitted uses are allocated Restricted Discretionary status indicating that departure is contemplated subject to assessment. This report demonstrates that the proposal will not adversely impact the Fonterra operation, will not be adversely affected by the same operation, and is overall complementary.

The Integrated Transportation Assessment accompanying this report confirms the road network has the capacity to accommodate the extra traffic generated by this proposal. Minimal overall effects are anticipated, subject to reformation of the accessway. The proposal will result in additional flood displacement, but this is considered acceptable and will have no more than a minor impact. Stormwater from the facility will be wholly detained on site and will not contribute to displacement, and detained through various measures including rain garden and detention tanks for reuse with the facility processes.

Relevant national standards and objectives and policies from the Waikato Regional Policy Statement (RPS) and Waipa District Plan have been reviewed as part of this report's assessment. The proposal is not a prohibited activity under the National Standards for Air Quality and at times strongly consistent with relevant policy and overall the proposal is not contrary. The proposal finds favour with the RPS where it seeks that alternative sources of electricity generation be made available, and assists in the transition from fossil to renewable fuels. The proposal will not degrade air quality, and creation of a buffer between the racecourse and the facility will minimise the potential for future friction. Residential character will be maintained in the vicinity of the site access, and the District Plan's protection through policy of the Fonterra complex will remain unthreatened.

Overall, it is my opinion that any actual or potential adverse effects on the environment will be less than minor and that no special circumstances exist in relation to this activity. My assessment concludes that this proposal is consistent with the relevant national standards, regional and district objectives and policies and assessment criteria of the ODP.

Pursuant to Section 95 it is my opinion this application should be processed without the need for notification or the written approvals of any persons.

Accordingly, the statutory requirements of Section 104, 104B & 104D of the RMA are satisfied. On this basis, I am of the opinion that consent should be granted for the proposal subject to appropriate conditions.