

To: Marlborough District Council
PO Box 443
Blenheim 7240



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SUBMISSION ON APPLICATION FOR A RESOURCE CONSENT

1. Submitter Details

Name of Submitter(s) in full Environmental & Human Health Aotearoa

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Postal Address for Service (*or alternative method of service under section 352 of the Act*) 50 Craigleith Street
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New Zealand

Primary Address for Service (*must tick one*)

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Contact Person (*name and designation, if applicable*) Dr Rye Senjen,
Scientific Advisor, EHH Aotearoa

2. Application Details

Application Number U 171035

Name of Applicant (*state full name*) Waste Transformation LTd

Application Site Address 341 Taylors Pass Road, Blenheim

Description of Proposal
To discharge contaminants into air from a pyrolysis plant and diesel combustion on Lot 2 DP 9569. To operate a pyrolysis plant in a Rural Zone, dispensation for a loading space and to change the land use pursuant to Regulation 11 of the National Environmental Standards for Assessing and Managing Contaminants in Soil to Protect Human Health, on Lot 2 DP 9569.

3. Submission Details (*please tick one*)

I/we support all or part of the application

I/we oppose all or part of the application

I/we are neutral to all or part of the application

- I am a trade competitor for the purposes of section 308B of the Resource Management Act 1991
- I am directly affected by an effect of the subject matter of the submission that:
 - a) adversely affects the environment; and
 - b) does not to relate to trade competition or the effects of trade competition
- I am NOT directly affected by an effect of the subject matter of the submission that:
 - a) adversely affects the environment; and
 - b) does not to relate to trade competition or the effects of trade competition
- I am NOT a trade competitor for the purposes of section 308B of the Resource Management Act 1991

The specific parts of the application that my/our submission relates to are *(give details, using additional pages if required)*

[To discharge contaminants into air from a pyrolysis plant and diesel combustion on Lot 2 DP 9569.](#)

[To operate a pyrolysis plant in a Rural Zone, dispensation for a loading space and to change the land use pursuant to Regulation 11 of the National Environmental Standards for Assessing and Managing Contaminants in Soil to Protect Human Health, on Lot 2 DP 9569.](#)

The reasons for my/our submission are *(use additional pages if required)*

[please see attached document](#)

The decision I/we would like the Council to make is *(give details including, if relevant, the parts of the application you wish to have amended and the general nature of any conditions sought. Use additional pages if required)*

[oppose the application in full](#)

[please see attached document](#)

4. Heard in Support of Submission at the Hearing

I/we wish to speak in support of my/our submission

I/we do not wish to speak in support of my/our submission

OPTIONAL: Pursuant to section 100A of the Resource Management Act 1991 I/we request that the Council delegate its functions, powers, and duties required to hear and decide the application to one or more hearings commissioners who are not members of the Council. *(Please note that if you make such a request you may be liable to meet or contribute to the costs of commissioner(s). Requests can also be made separately in writing no later than 5 working days after the close of submissions.)*

5. Signature

Signature Dr. Rye Senjen Date 15th April 2018
Signature _____ Date _____

6. Important Information

- Council must receive this completed submission before the closing date and time for receiving submissions for this application. The completed submission may be emailed to mdc@marlborough.govt.nz.
- The closing date for serving submissions on the consent authority is the 20th working day after the date on which public or limited notification is given. If the application is subject to limited notification, the consent authority may adopt an earlier closing date for submissions once the consent authority receives responses from all affected persons.
- You must serve a copy of your submission on the applicant as soon as is reasonably practicable after you have served your submission on the consent authority.
- Only those submitters who indicate that they wish to speak at the hearing will be sent a copy of the section 42A hearing report.
- If you are making a submission to the Environmental Protection Authority, you should use form 16B.
- If you are a trade competitor, your right to make a submission may be limited by the trade competition provisions in Part 11A of the Resource Management Act 1991.
- If you make a request under section 100A of the Resource Management Act 1991, you must do so in writing no later than 5 working days after the close of submissions and you may be liable to meet or contribute to the costs of the hearings commissioner or commissioners. You may not make a request under section 100A of the Resource Management Act 1991 in relation to an application for a coastal permit to carry out an activity that a regional coastal plan describes as a restricted coastal activity.
- Please note that your submission (or part of your submission) may be struck out if the authority is satisfied that at least 1 of the following applies to the submission (or part of the submission):
 - it is frivolous or vexatious;
 - it discloses no reasonable or relevant case;
 - it would be an abuse of the hearing process to allow the submission (or the part) to be taken further;
 - it contains offensive language;
 - it is supported only by material that purports to be independent expert evidence, but has been prepared by a person who is not independent or who does not have sufficient specialised knowledge or skill to give expert advice on the matter.

7. Privacy Information

The information you have provided on this form is required so that your submission can be processed under the Resource Management Act 1991. The information will be stored on a public file held by Council. The details may also be available to the public on Council's website. If you wish to request access to, or correction of, your details, please contact Council.

We, Environmental and Human Health Aotearoa oppose the application for four resource consents by Waste Transfer Ltd for their proposed 341 Taylors Road, Blenheim pyrolysis plant (U171035)

We oppose the granting of a discharge permit to discharge contaminants into air from a pyrolysis kiln operation and diesel combustion, for the processing of waste timber into charcoal at Marlborough District Council's Bluegums Landfill, pursuant to Rule 30.4.1 (discretionary activity) of the Wairau Awatere Resource Management Plan (WARMP); and pursuant to Rule 3.6.12 (discretionary activity) of the Proposed Marlborough Environment Plan (PMEP).

We oppose the granting of a land use consent for a pyrolysis plant (industrial) activity which is not otherwise provided for within the Rural 4 Zone, pursuant to Rule 30.5.1 (non-complying activity) of the WARMP.

We oppose a land use consent for the proposed loading space for the site not complying with the relevant standards of the WARMP as being located within a gravel yard, pursuant to Rule 27.2.8.1 (limited discretionary activity) of the WARMP.

We oppose a land use consent for the change in land use at the site, as the preliminary site investigation (PSI) identifies potential risk to human health as a consequence of the proposed development, and where no Detailed Site Investigation (DSI) has been undertaken; pursuant to Regulation 11 (discretionary activity) of the National Environmental Standards for Assessing and Managing Contaminants in Soil to Protect Human Health (NESCS) (New Zealand Government 2011a).

We also oppose any additional land use consent from Marlborough District Council to authorise the proposed activity at the established Bluegums Landfill site.

The RMA section 5 states 2b" safeguarding the life-supporting capacity of air, water, soil, and ecosystems; and 2c "avoiding, remedying, or mitigating any adverse effects of activities on the environment." We regard this application in its entirety to contravene (amongst others) these sections of the RMA, which override any considerations of the RMA part two.

The reasons for our opposition to this consent application are as follows:

Air discharges of pollutants are not minor

While the applicant claims the effect of proposed discharges by the plant to air are minor, we dispute this. The proposed discharges by the plant to air are major and comprise not only PM10, arsenic and NOx but also a number of other toxic chemicals.

The effects on air quality from the pyrolysis plant and the diesel burners needed to operate the plant and their resulting effect on human health are potentially significant and this must be considered under section 104(1)(a). The proposed pyrolysis plant is a non-complying activity under the WARMP, where the industrial type activity is not provided for in the Rural 4 zone. Under section 104D (non-complying activities), consent should not be given because (a) identified adverse effects of the activity on the environment.

The model calculations are unacceptable and actual measurements are required

Firstly, we are not convinced that the model calculating the air emission is correct as it relies on too many unconfirmed assumptions, such as the size and nature of the combustion products, use of EPA emission calculations from 1998, assumptions about the apparent advances in technology, the nature of the timber combusted etc. The only acceptable solution is to performing actual measurements.

Additionally the number of stacks used for calculation purposes are unclear and in our opinion misleading. For instance, the values for emission rates are given per stack i.e. 23 g/s for arsenic (cumulative 0.46g/s) and no cumulative values are provide. The model's assessment of toxic emissions is limited, as it does not include copper, chromium, dioxins (created during pyrolysis) as well as PM2.5 and other potential toxins.

We would also query the numbers for PM10 and NOx, as the numerals are exactly the same with a factor of 10 difference in the actual number. This would seem to indicate that these figures are artefacts of the modelling.

The table 4 provided is not helpful, as the emissions cited in this table cannot be usefully compared with the emissions modelled for the plant.

The applicant correctly states “[t]he guidelines and standards listed are for cumulative concentrations, that is, the total concentration due to emissions from WTL's site, combined with air pollutant concentrations from all other sources (the baseline, or background concentration).”

Accordingly, we would like to point out that combined with the background of <0.0007 pg/m³, the maximum annual average cumulative arsenic GLC is 0.0097 pg/m³, i.e from the two stacks, which is higher than the annual average assessment criteria. Hence the application should be rejected for this reason alone.

We dispute the applicants claim that the cumulative arsenic occurs only in small localized spots. No evidence whatsoever is provided for this assertion, and as it entirely relies on a model, we find the assertion highly unlikely.

Furthermore we question the use of the CALPUFF model or any other model in principal. The CALPUFF model (as well as other models of this type) tends to underestimate concentration of pollutants by up to 60% depending on the pollutant¹.

Health effects from PM10 are serious

We quote here in full from a 2013 report by the WHO “Health effect of particulate matter”²

Particulate Matter is a mixture with physical and chemical characteristics varying by location. Common chemical constituents of PM include sulfates, nitrates, ammonium, other inorganic ions such as ions of sodium, potassium, calcium, magnesium and chloride, organic and elemental carbon, crustal material, particle-bound water, metals (including cadmium, copper, nickel, vanadium and zinc) and polycyclic aromatic hydrocarbons (PAH). In addition, biological components such as allergens and microbial compounds are found in PM.

PM 10 and PM 2.5 include inhalable particles that are small enough to penetrate the thoracic region of the respiratory system. The health effects of inhalable PM are well documented. They are due to exposure over both the short term (hours, days) and long term (months, years) and include:

- *respiratory and cardiovascular morbidity, such as aggravation of asthma, respiratory symptoms and an increase in hospital admissions;*
- *mortality from cardiovascular and respiratory diseases and from lung cancer.*

There is good evidence of the effects of short-term exposure to PM10 on respiratory health, but for mortality, and especially as a consequence of long-term exposure, PM 2.5 is a stronger risk factor

¹ See: https://journal.gnest.org/sites/default/files/Submissions/gnest_01901/gnest_01901_published.pdf

² http://www.euro.who.int/__data/assets/pdf_file/0006/189051/Health-effects-of-particulate-matter-final-Eng.pdf

than the coarse part of PM10 (particles in the 2.5–10 µm range). All-cause daily mortality is estimated to increase by 0.2–0.6% per 10 µg/m³ of PM10. Long-term exposure to PM2.5 is associated with an increase in the long-term risk of cardiopulmonary mortality by 6–13% per 10 µg/m³ of PM2.5. Susceptible groups with pre-existing lung or heart disease, as well as elderly people and children, are particularly vulnerable. For example, exposure to PM affects lung development in children, including reversible deficits in lung function as well as chronically reduced lung growth rate and a deficit in long-term lung function.

There is no evidence of a safe level of exposure or a threshold below which no adverse health effects occur. The exposure is ubiquitous and involuntary, increasing the significance of this determinant of health.

It should be noted, however, that the evidence for the hazardous nature of combustion-related PM (from both mobile and stationary sources) is more consistent than that for PM from other sources. The black carbon part of PM2.5, which results from incomplete combustion, has attracted the attention of the air quality community owing to the evidence for its contribution to detrimental effects on health as well as on climate. Many components of PM attached to black carbon are currently seen as responsible for health effects, for instance organics such as PAHs that are known carcinogens and directly toxic to the cells, as well as metals and inorganic salts. **Recently, the exhaust from diesel engines (consisting mostly of particles) was classified by the International Agency for Research on Cancer as carcinogenic (Group 1) to humans.**

We note that the cumulative modelled average is very close to the acceptable limit for PM10 and given the uncertainty inherent in any model may well be reached and or exceeded. We can simply not accept the output of the model and contend that only actual measurements will give correct data.

The submission lack any information on other air pollutants, including dioxins

We would like to note that the inevitable effect of PM 2.5 has been entirely omitted from the study. It should have been included. We also consider that PM2.5 data is urgently required.

We also note that no monitoring program is proposed for particulates, as must be required to ensure air quality standards.

We also note that absolutely no mention has been made of the formation of dioxins during the pyrolysis process. This is a serious and concerning omission.

The term 'dioxins' comprises up to three distinct classes of poly-chlorinated aromatic compounds, namely 75 polychlorinated dibenzo-p-dioxins (PCDDs), 135 polychlorinated dibenzofurans (PCDFs) and (rarely) 209 polychlorinated biphenyls (PCBs). Dioxins are formed during the burning of biomass, including wood. Two temperature windows have been reported for fast dioxins formation: between 500 and 800°C and between 200 and 400°C. Any additives and coatings (e.g., wood preservatives, paint, pesticides, etc.) present in biomass raise dioxin emissions to levels several orders of magnitude over those from combustion of pure biomass.³ Accordingly, the low temperature pyrolysis of treated timber is likely to produce significant amounts of dioxins.

Dioxins are persistent organic pollutants (POPs), meaning they will never break down or disappear from the environment. In 2004, New Zealand ratified the Stockholm Convention on Persistent Organic-Pollutants (POPs) the aim of which is to eliminate dioxins, where possible, from the environment.

³ Mengmei Zhang, Alfons Buekens, Xiaodong Li(2016). Dioxins from Biomass Combustion: An Overview. Waste Biomass Valor. DOI 10.1007/s12649-016-9744-5 available at <http://www.soliftec.com/dioxins.pdf>

If buried in the soil they are likely to remain there for a very long time. Once in the body dioxins accumulate in fat and persist for many years. Dioxin was classified as a human carcinogen (cancer causing agent) by the International Agency for Research on Cancer (IARC) in 1997. The conditions that have been accepted in the sufficient evidence of health effects category by the Institute of Medicine, are Hodgkin's disease, non-Hodgkin's lymphoma, soft tissue sarcoma, chronic lymphocytic leukaemia and chloracne.

Exposure to dioxins may also be associated with respiratory cancers (lung, bronchus, larynx and trachea), prostate cancer, multiple myeloma, early onset transient peripheral neuropathy, porphyria cutanea tarda, Type II diabetes, hypertension, AL amyloidosis, Parkinson's disease, ischaemic heart disease, and spina bifida in offspring.

A recent IPEN report outlined that the amount of dioxins released (contained) in waste incineration fly ash is highly underestimated (its content is 3 to 10 times as much as previously estimated). Applying fly ash and other wastes containing levels of dioxin over 0.05 ppb in agriculture and other land based application can lead to contamination of the local food chain, and free range poultry eggs in particular at critical levels over currently used WHO safety limits by several fold, with some cases revealing a 10 fold exceedance⁴.

Given the above information we see it as imperative that dioxin testing, as well as testing for other airborne toxins be performed.

Arsenic is carcinogenic

We note that

“Arsenic has been classified as carcinogenic to humans by the International Agency for Research on Cancer (IARC) (Group 1) and by the US EPA (Group A), (IARC, 1987; US EPA, 2001). Lung cancer in particular is implicated in arsenic exposure by inhalation and is considered to be the critical effect. This conclusion is supported by various investigations involving smelter workers in the USA, Sweden, and Japan. There is also evidence for an increased risk of lung cancer in people living near industries where arsenic is emitted.... These studies indicated an increased risk of respiratory cancers in workers exposed to arsenic over time, and unit risk estimates for increased lung cancer per 1µg/m3 air exposure to arsenic have been calculated and updated with time....”⁵

We also note that while a monitoring program for arsenic is proposed, nothing is said about what happens when guideline values are exceeded.

In summary, the air pollution modelling and proposed monitoring by the applicant is completely insufficient and inadequate.

The use of toxic charcoal as an “industrial product” is questionable

A substantial amount of toxic substances (see p 62 of the applicant's report), including copper, chrome and arsenic (600g approx), will be contained in the approximately 900 tons of char as well as the tar produced by the pyrolysis process. Nothing has been said about how these products will be handled, apart from the mention of industrial uses of the char and how they will be disposed. We think it is essential to consider the so-called industrial uses of the char and whether they are at all appropriate and environmentally responsible. It is mentioned that the tar will be disposed off-site, but no information on how or where. Both products are highly hazardous for humans and the environment and the proposal of selling the char is likely to result in environmental contamination via air pollution and ground pollution (via ash). The tar will be very toxic and information should be provided on its disposal.

⁴ Jindrich Petrlik and Lee Bell (2017). Toxic ash poisons our food chains. IPEN. Available at http://ipen.org/sites/default/files/documents/ipen-toxic-fly-ash-in-food-v1_4a-en-web.pdf

⁵ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/290739/sch00508bodr-e-e.pdf

The charcoal produced will include very high levels of arsenic, copper and chrome, amongst other toxic chemicals). If this toxic charcoal is used as fuel, this will result in further air pollution, as well as the possibility of soil contamination (for example, through spreading of ashes onto soil – a very common New Zealand gardening practice).

Dangers inherent in the plant

In addition to the issues outlined above, the proposed plant also has the following hazards, that must be considered:

There is a distinct potential for the ignition of the plant during operation due to gas migration from the adjacent landfill. This may result in endangering workers, visitors to the landfill site and nearby residents. We consider the suggested mitigation measures (daily monitoring prior to start-up of methane at the WTL site) insufficient.

There is a further risk of contamination of the environment due to the accidental release of stored diesel fuel. While the release is claimed to be unlikely, it is possible. The storage must be considered when assessing the actual and potential effects on the environment of allowing the activity (section 104(1)(a)).

The noise from the diesel burners, each with a maximum capacity of 105 kW and noise level of 68.5 Db (10 diesel burners, each with a maximum capacity of 300 kW and noise level of 71.5 dB) will have an adverse effect on environmental and human health.

Other issues

The applicant quotes the RMA as follows “Clause 6(1)(a) of Schedule 4 of the RMA states that where it is likely that an activity will result in a significant adverse effect on the environment, the application is to describe any possible alternative location or methods for undertaking the activity.” (P18). But completely fails to describe these alternatives, instead describes the proposed pyrolysis plant as the alternative.

The experimental nature of the plant and failures of such plants worldwide has not been addressed. We note the lack of consideration of an alternative site.