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Greenpeace Aotearoa Submission to the Board of Inquiry on GCSL's resource consent applications to build and operate a waste-to-energy incinerator in Te Awamutu

(Resource consent applications LU/0323/21 & APP143988)

SUBMITTER DETAILS

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Summary

This is a submission by Greenpeace Aotearoa Incorporated ("Greenpeace") on the publicly notified application by Global Contracting Solutions Limited (the "Applicant") to establish and operate a waste-to-energy incineration power station (the "Proposal" or the "Application") at 401 Racecourse Road, Te Awamutu (the "Application Site").

The Applicant has lodged resource consent applications to both the Waipa District Council and the Waikato Regional Council.

The Applicant is seeking land use consent from Waipa District Council (LU/0323/21) to build and operate a waste incinerator to generate electricity by burning various types of solid wastes, including hazardous materials, using diesel as the feeder fuel.

The Applicant is seeking resource consent from Waikato Regional Council (APP143988) to undertake activities associated with the establishment and operation of the Proposal, including the ongoing discharge of emissions to air, stormwater discharge to the Mangapiko Stream, and the deposition of clean fill from the building phase. It will also produce ongoing large quantities of hazardous toxic ash which requires safe handling, treatment and disposal.

The Applicant proposes to use technology that is untested in Aotearoa New Zealand and controversial internationally, and would be the first municipal solid waste (MSW) incinerator in the country.

Greenpeace is not a trade competitor.

Greenpeace makes this further submission to the Board of Inquiry in relation to both LU/0323/21 and APP143988, jointly, in their entirety.

Greenpeace submits that the Application is contrary to Part 2 of the RMA and is not sustainable management of natural or physical resources.

Greenpeace submits that the Application should be declined under s 104(6) of the Resource Management Act 1991 (RMA), and for the following reasons (without limitation).



i. It does not promote the sustainable management of natural and physical resources and is contrary to the purpose and principles of the RMA.

ii. It will not sustain the potential of natural and physical resources to meet the reasonably foreseeable needs of future generations.

iii. It does not provide for the health and safety of people and communities.

iv. It does not safeguard the life-supporting capacity of air, water, soil and ecosystems.

v. It does not avoid, remedy or mitigate any adverse effects on the environment.

vi. It does not maintain and enhance the quality of the environment.

vii. It is contrary to the provisions of the Climate Change Response Act 200, national direction on greenhouse gas emissions from industrial process heat, renewable energy, freshwater and air quality.

viii. It is also contrary to the provisions of Waikato regional policy and plan provisions, and the Waipa District Plan.

ix. It will also result in significant adverse or potentially significant adverse effects on air quality, greenhouse gas emissions, climate change, freshwater and natural hazards.

x. Its generation of a tiny amount of electricity will not outweigh those significant adverse effects.

xi. It fails to meet the gateway tests in section 104D of the RMA.

Greenpeace wishes to appear in support of this and its earlier submission and will be represented at the hearings.

Greenpeace will consider presenting a joint case with other submitters with similar submissions at the hearing and intends to call expert witnesses to support its submission.

Introduction

Greenpeace Aotearoa thanks the Board of Inquiry for the opportunity to make a further submission on these applications, in addition to our earlier submission on the original applications (appended). We support the Minister for the Environment's



decision to call-in the Application under the Resource Management Act (RMA) and establish the Board of Inquiry.

The Government's ill-conceived Fast-track Approvals Bill is a travesty of the RMA process.

It is also why it is so important that this Board of Inquiry process is comprehensive and thorough, especially given that a larger waste to energy incineration power station proposal at Waimate in Canterbury could be approved at the stroke of a ministerial pen, disregarding decades of RMA proceedings, considerations and decisions.

About Greenpeace

Greenpeace is a global, independent environmental organisation that acts to protect and conserve the environment and to promote peace. Greenpeace is one of the largest and oldest environmental organisations in the world, operating for over half a century, since 1971, and now works in more than 55 countries. Greenpeace Aotearoa registered as an Incorporated Society in 1974 and has grown to represent more than 30,000 financial donors and many tens of thousands of supporters. Our mission is to ensure Earth's ability to nurture life in all its diversity.

Greenpeace Aotearoa recognises Te Tiriti o Waitangi signed in Te Reo Māori on 6 February 1840 as the foundation for the relationship between the Crown (and so the New Zealand Government) and the indigenous hapū of Aotearoa. Greenpeace Aotearoa recognises that Te Tiriti o Waitangi affirmed the sovereignty of the tangata whenua, which has never been relinquished despite the violent colonisation of Aotearoa.

Greenpeace and the RMA

Greenpeace Aotearoa has a three decades long track record of involvement in the Resource Management Act on matters relevant to these applications, including carbon emissions and emissions of toxic contaminants, including dioxins.

Greenpeace and dioxins

Greenpeace publicly warned about the dangers of dioxins in 1984 at the time of a large fire involving toxic chemicals at the ICI site in Mt Wellington, Auckland. As a result of that fire an ICI employee died.



More than 50 tonnes of chemicals burned in the fire including Chlorine and 245-T. The combination of these chemicals and their combustion in the fire produced dioxins meant that the atmosphere and water in the building were both toxic, as was the thick smoke spread across Auckland's southern suburbs. The 400 tonnes of contaminated water that was discharged into the adjacent Tamaki Estuary killed fish and aquatic life.

Many fire fighters and others who came in contact with this toxic cocktail of chemicals and smoke, including those who breathed in the fumes at the periphery of the fire site, suffered long-term health effects.

When Greenpeace learned that fire fighters attending the fire had not been issued with the proper protective clothing, campaigners contacted the New Zealand Fire Fighters Union, advising them about the toxic effects of dioxins, and that those attending the site following the fire needed to wear protective clothing.

The ICI fire led to an inquiry which recommended tighter controls of hazardous materials and revised fire service operations, which were later instituted.

At the same time, Greenpeace publicly warned about the presence of dioxins in the herbicide 245-T which was still being manufactured at the Ivan Watkins Dow factory in New Plymouth. The company claimed that its production process did not produce dioxins as a by-product, but Greenpeace pointed out that it did at public meetings held in New Plymouth. A few months later the company was forced to concede that dioxin wastes were stored at its New Plymouth premises.

A few years later the company ceased manufacture of 245-T but continued to incinerate dioxin contaminated manufacturing residues and wastes on-site, which led to the discharge in air emissions and the production of dioxin contaminated ash. Dioxin contaminated wastes were also discharged down on-site drains into stormwater pipes, contaminating the pipes, and the local public beach area where the run-off was discharged into the open.

Greenpeace played an important environmental watchdog role in helping to document these problems and holding the companies to account so they had to concede the presence of dioxins in their products and emissions.

During the 1990s the United Nations' International Agency for Research on Cancer and the US Environmental Protection Agency (EPA) assessed and classified dioxin as a human carcinogen.



The IARC classified dioxin (2,3,7,8-TCDD) as a Group I carcinogen, indicating there is no safe dose for dioxin exposure (IARC Monographs on the Evaluation of Carcinogenic Risks to Humans Polychlorinated Dibenzo-para-Dioxins and Polychlorinated Dibenzofurans; International Agency for Research on Cancer (IARC): Lyon, France, February 1997; Volume 69.)

Greenpeace continued to publicly warn about the dangers of dioxins and closely related furans. As part of its Toxics Campaign, *Rainbow Warrior II* toured Aotearoa extensively to publicise toxic pollution including from dioxins in 1991 and 1996, and campaigners toured the country multiple times in the 1990s and 2000s.

One of the places the *Rainbow Warrior II* targeted with protest in 1991 was the Tasman Pulp and Paper Company's use of Chlorine to bleach pulp and paper, which was discharging 150,000 litres of dioxin contaminated effluent into the Tarawera River every day.

Later that year, the company announced it would close its Chlorine plant and move to a less polluting bleaching method.

Greenpeace Aotearoa also made submissions on RMA consent applications for pulp and paper factories to discharge pollutants including dioxins and other organochlorines into the Tarawera River and Waikato River later in the 1990s.

At the same time, Greenpeace publicly advocated for a clean-up of toxic contaminated sites such as PCP contaminated timber treatment sites and the dioxin contaminated Mapua NZ Fruitgrowers site near Nelson.

Greenpeace also publicly advocated against waste incineration and for waste reduction, re-use and recycling systems, and closed loop circular production systems.

In 1997-98, Greenpeace successfully campaigned for the closure of the East Tamaki medical waste incinerator, which was replaced by a safer enclosed autoclaving (steam sterilisation) system. Following that, the Toxics Campaign targeted the Evans Bay medical waste incinerator in Wellington which closed shortly after, and both the Auckland and Christchurch airport medical and quarantine waste incinerators.



Between 1997 and 2001 Greenpeace was successful in advocating against a proposed large waste to energy incinerator at Meremere in the Waikato that planned to burn hundreds of thousands of tonnes of municipal solid waste (MSW) per year. The applicant (Olivine) proposed a \$223 million coal-fired waste to energy incinerator at the site of the moth-balled 210 MW (megawatt) Meremere coal-fired power station in the Waikato. The proposed incinerator would have involved unproven technology.

A coalition including local farmers and residents, North Waikato Environmental Group, River Watch, the Recycling Organisations of New Zealand (RONZ), Friends of the Earth NZ, and Greenpeace Aotearoa all publicly opposed it.

The proposal was also opposed by the Tainui Corporation, Huakina Development Trust, Ministry for the Environment, Auckland Regional Council, Manukau City Council, and Waitakere City Council.

That proposed location was near dairy farms, residential housing, and the Waikato River and associated wetlands.

That proposal was met with widespread public opposition and Olivine failed to gain consent approval from the Waikato Regional Council.

If it had been consented and built, it would have discharged hundreds of thousands of tonnes of carbon emissions and generated very large quantities of dioxin-contaminated ash that would have required disposal (Olivine plan involves unproven technology, NZ Herald, 28 October 1997; Plant faces new battle, Waikato Times, 7 March 1998; Company drops Meremere plan, The Dominion, 1 October 1999).

At the same time, during the late 1990s and early 2000s, Greenpeace Aotearoa was also successful in advocating for the New Zealand Government to sign the Stockholm Convention which has the aim to eliminate or restrict the production and use of Persistent Organic Pollutants (POPs). The government signed the Convention in 2001 and ratified it into law in 2004.

In August 2002, The Mangere People's Centre, Waste Wise Trust, Pukaki Worm Farm, and Greenpeace delivered a letter to the Auckland Airport's quarantine waste incinerator operator Waste Resources Ltd urging the company to close the waste incinerator and replace it with a clean technology such as enclosed autoclaving (steam sterilisation).



Nga Manga, the Mangere community group network of South Auckland groups, had also passed a unanimous resolution opposing the waste incinerator on 25 July 2002 which called on the Manukau City Council and the Auckland Regional Council to urgently replace the Auckland International Airport incinerator with a cleaner process (Greenpeace joins with South Auckland community groups to demand closure of waste incinerator, 5 August 2002, Greenpeace news release; Greenpeace magazine, Issue 93, Summer 2002).

On 26 February 2003, The Nuplex Medismart company announced that it would be closing its quarantine waste incinerator at Christchurch Airport and move to a safer steam sterilisation process, after an open letter was published in The Press and hundreds of emails were received from Greenpeace supporters urging them to close it down and switch to the cleaner alternative.

By then, other major medical and quarantine waste incinerators in South Auckland, Dunedin and Wellington had switched to safer non-toxic steam sterilisation treatment systems.

On 29 April 2003 Greenpeace blocked trucks of quarantine and medical waste from entering the waste incinerator site at Auckland International Airport (AIAL) and hung a banner on the incinerator building that read, "Stop Poisoning Us - Stop Incineration".

This was now the largest waste incinerator in the country and potentially the nation's largest single dioxin source at the time.

In November 2003, Greenpeace supported the government's proposed ban on new high temperature hazardous waste incinerators (Government's incineration ban - first step in right direction, 17 November 2003, Greenpeace Aotearoa news release).

Then in May 2004, the Ministry for the Environment published a Proposed National Environmental Standards for Air Quality report which stated:

"This dioxin standard applies to any new high-temperature incinerators burning wastes that are considered to be hazardous as defined in the Ministry for the Environment's proposed draft definition of hazardous waste (Ministry for the Environment, 2002b). The draft New Zealand hazardous waste definition is similar to that used by Environment Australia to enforce the Basel Convention. 'High



temperature' is considered to include incinerators typically operating above 850 degrees Celsius.

The Ministry for the Environment originally proposed an emission limit standard for high-temperature incineration of 0.1 ng/m3 (Ministry for the Environment, 2001a). However, even this low standard is not a guarantee of protection. The remaining ash residue is also highly toxic and difficult to dispose of. Incineration is an obsolete technology for disposing of hazardous wastes and more environmentally friendly technologies are available. The Ministry considers that a more direct and efficient method of reducing emissions of dioxins is to control the activities that cause them, which is why we have put forward this proposal to ban new high-temperature incineration of hazardous waste."

(4.2.7 High-temperature hazardous waste incineration, page 30, Proposed National Environmental Standards for Air Quality, Ministry for the Environment, May 2004). A few months later, on 8 October 2004, the Government announced that nationwide bans on toxic burning and incineration that released dioxins into the air had come into effect. Minister for the Environment Marion Hobbs issued a statement saying that:

"The bans have been introduced under the Resource Management Act as national environmental standards, aimed at preventing the release of dioxins and other toxics into the air.

They prohibit the open burning of tyres, coated wire and oil; road seal burning (bitumen burn-off), and any landfill fires. New high temperature hazardous waste incinerators are also banned, and from October 2006, all school and hospital incinerators will be banned unless they have resource consent."

(Toxic burning banned to prevent dioxins, 8 October 2004, Minister for the Environment, Marion Hobbs: <u>https://www.beehive.govt.nz/release/toxic-burning-banned-prevent-dioxins</u>).

Finally, on 14 July 2005, Greenpeace welcomed the news that Auckland International Airport Ltd (AIAL) had signed an agreement to replace the airport company's quarantine waste incinerator in 2006 with a safer state-of-the-art steam sterilisation unit.



Greenpeace commended the company for finally listening to the views of the local people, local community groups, and Greenpeace (Auckland Airport incinerator to be replaced, AIAL news release, 14 July 2005).

This is the history of why there are no waste to energy waste incineration factories in Aotearoa today. It also helps to explain why the national inventory of dioxin sources has greatly reduced from anthropogenic sources such as waste incineration, pulp and paper production, agricultural chemical production and use, and steel recycling since the 1990s, in line with New Zealand's commitments within the Stockholm Convention.

From 1995 to 1999, Greenpeace was represented on the Ministry for the Environment's Hazardous Waste Advisory Group and Organochlorines Programme Consultative Group. These groups advised the Minister for the Environment on the clean-up of toxic site contamination, the effects of organochlorines such as Persistent Organic Pollutants (POPs) on the environment and human health, and helped identify the main sources of POPs including dioxins and furans in New Zealand such as PCP site contamination, waste incineration, pulp and paper bleaching, and selected metals manufacturing and processing activities.

One of the main tasks of the Organochlorines Programme was to develop a safe method for the remediation of soil contaminated with dioxins and other organochlorines. Following soil remediation field trials funded by the Organochlorines Programme, the Ministry for the Environment allocated funding for a remediation programme to clean up the Mapua site in 1999, with "on-site" processing selected as the preferred remediation option using a process called Base Catalysed Dechlorination.

After resource consents for these remedial works were issued by Tasman District Council, Greenpeace Aotearoa and Forest & Bird lodged an appeal in 2003. The consents were eventually granted with new amendments by the Environment Court and the Crown ended up paying for most of the multi-million dollar clean-up, which was finalised in 2007.

Greenpeace and carbon emissions

Greenpeace Aotearoa also has a long history of publicly advocating for reducing and phasing out carbon emissions, transitioning to genuine zero and low carbon renewable energy sources such as wind and solar, and hydro 'battery' storage. As part of that advocacy Greenpeace has been an active participant in the RMA process.



In early 1993 Greenpeace wrote to Minister for the Environment Simon Upton and requested that he use the RMA to call-in the proposed 400 MW (megawatt) Stratford power station consent applications based on its carbon emissions and the resulting impact on the global climate.

A few months later the Minister did so and set up a Board of Inquiry. Greenpeace submitted in opposition to the consents being issued and participated at the Board of Inquiry's hearings.

In February 1995, following the hearings held in Stratford, the board of inquiry concluded that the power station's operation would significantly increase New Zealand's emissions of carbon dioxide and make it more difficult for the Government to meet its obligation to reduce the emission of greenhouse gases to their 1990 levels as committed to under the UN Framework Convention on Climate Change.

The Board of Inquiry recommended that Electricorp must establish a carbon sink "sufficient to eventually store in perpetuity the equivalent quantity of carbon emitted from the site over the term of the permit" (Stratford power station given qualified go-ahead, New Zealand Press Association, 19 February 1995).

In March 1995, the Minister approved the power station on the condition that forests were planted to create a carbon sink or the effect of emissions was reduced by greater efficiency elsewhere (Trees are a risky strategy, Kirsty Hamilton, Energy-Wise News, Energy Efficiency and Conservation Authority, October 1995).

No trees were planted and in June 2003, a hearing committee of the Taranaki Regional Council granted an application to delete the consent conditions requiring mitigation of carbon dioxide emissions.

Greenpeace also made legal challenges under the RMA that went to the Supreme Court, arguing that climate change could and should be considered by councils in deciding whether or not to allow new coal-fired power stations.

Greenpeace has also opposed new coal mines through the RMA process and made submissions in support of wind farm RMA consent applications at Makara near Wellington, Te Uku near Raglan, Hauauru ma raki near Port Waikato, and elsewhere.



In October 2005 Greenpeace lodged an appeal in the Environment Court against the decision made by Commissioners acting for Northland councils to allow the proposed Marsden B coal-fired power station to go ahead near Ruakaka.

On 12 October 2006, Greenpeace heralded a decision by the High Court to allow climate change to be considered in Greenpeace's appeal against the Mighty River Power company's proposed Marsden B coal-fired power station.

The decision meant the company would no longer be able to ignore climate change when proposing coal-fired power stations and that renewable energy projects would be easier to get through the RMA process than coal-fired projects.

It overturned a previous Environment Court ruling, which Greenpeace had challenged in the High Court the previous month.

Greenpeace had argued that the RMA provided for climate change to be considered through the benefits of renewable energy development in reducing climate change emissions. The new High Court decision confirmed that to be the case (Mighty River Power must face its own inconvenient truth as Greenpeace wins High Court case, Greenpeace news release, 12 October 2006).

On 7 March 2007, Greenpeace heralded the Mighty River Power Company's decision to scrap Marsden B, which would have been the first major coal-fired power station built in New Zealand for over 30 years.

Iwi, local residents, Greenpeace and other environmental NGOs had publicly campaigned against the proposed power station for more than two years.

Reflecting on the company's decision, Greenpeace Legal Counsel Duncan Currie commented that, "Greenpeace uses the law to both oppose fossil fuel power stations, and as part of its campaigns for changes in law that improve protection of the climate."

(Climate the winner as Marsden B is scrapped, 7 March 2007, Greenpeace news release).

No new coal-fired power stations have been consented or built since then.



Location and land use suitability

A Major Hazard Facility (MHF) is one which stores and processes very large quantities of hazardous substances. These are facilities that have the potential to generate catastrophic events which could cause harm to people, the environment and the wider economy.

The Applicant's proposal is for a high-hazard site that would qualify as an MHF. The proposed location is fundamentally unsuited for an industrial-scale waste incinerator that will produce hazardous toxic waste and discharge hazardous toxic emissions to air, especially given its proximity to residential zoned land and housing.

The Te Awamutu urban area has many sensitive receptors. A sensitive receptor is a location where people or their surroundings may be sensitive to the effects of air pollution (ie, residential housing, aged care facilities, healthcare facilities, early childhood education centres, schools, colleges, marae, cemeteries, other cultural facilities, motels or caravan park accommodation, and sensitive ecosystems).

Within a radius of a few kilometres there are pre-schools, schools, care homes, healthcare facilities, workplaces, holiday parks, motels, caravan parks, and farms (with stock). The local environment also includes sensitive freshwater and wetland ecosystems (ie, freshwater streams, lakes, surface water bodies, wetlands, riparian vegetation and associated reserves).

Te Awamutu has a population of 14,000 people and adjacent Kihikihi has another 3,390. There are 12 pre-schools, schools and colleges in Te Awamutu and Kikihi with a combined roll call of over 3,000 children and students.

In addition to several retirement villages, rest homes and primary healthcare providers, Te Awamutu also has a range of specialist healthcare services, including dental care, optometry, physiotherapy, and chiropractors.

Large employers in Te Awamutu include the adjacent Fonterra milk processing factory which produces whole milk powders, skim and buttermilk powder, butter and anhydrous milk fat, and has on-site wastewater settling ponds. More than 330 people are employed there and in peak season the factory processes up to three million litres of milk every day.



Burning waste and discharging toxic contaminants to air has the potential over time to deposit contaminants on the adjacent milk processing plant and other large employers close to the proposed incineration site such as Ballance Agri Nutrients and Manuka Health New Zealand.

There are dozens of farms in the Waipa District with the number of cows averaging 183,722 over the year to May 2023.

There are also 19 sites containing 128 beehives registered in the Te Awamutu urban area. Bees travel two to three kilometres to gather nectar.

Some of the contaminants from the proposed waste incinerator will inevitably be breathed in and eaten by cows and bees, which can in turn bioaccumulate in their bodies. This means milk, meat, honey and wax products from them could potentially be contaminated with dioxins and furans. Once consumed by humans, contaminants such as dioxins and furan could potentially cause harm.

Two streams flow adjacent to the site of the proposed waste incinerator, the Mangapiko Stream and the Mangaohoi Stream. The Mangaohoi Stream ends and becomes the tributary of the Mangapiko Stream near Memorial Park. After Te Awamutu, the Mangapiko Stream flows into the Waipa River which flows into the Waikato River which flows into the Tasman Sea.

Lake Ngaroto, Lake Rotopiko, Lake Ruatuna and Lake Rotomanuka and the wetlands located adjacent to the Mangapiko Stream located at 37°59'39.8"S 175°17'27.1"E and at the nearby Mahana Reserve are also located in the vicinity of the Proposal.

These lakes, streams, rivers and wetlands provide habitat for freshwater fish and various bird species, including ōrea New Zealand Longfin Eels, Inanga, Shortjaw Kokopu, Banded Kokupu, Giant Kokupu, Waikaka Black Mudfish, Pōrohe NZ Common Smelt and introduced species such as Carp and Goldfish, and including Weweia New Zealand Dabchick, Karearea New Zealand Falcon, Putangitangi Paradise Shelduck, Tētē-Moroiti Grey Teal, Kuruwhengi Australasian Shoveler, Mallard, Black Swan and Canada Goose (*eBird NZ* and *iNaturalist NZ*). Puha watercress also grows in waterways in Te Awamutu (*iNaturalist*).

These sites will be exposed to toxic contaminants from the waste incinerator via atmospheric deposition. Once in these streams, lakes, wetlands and rivers, toxic contaminants such as dioxins and furans from the incinerator could enter food webs, plants and sediments, and could bioaccumulate and biomagnify.

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They could cause harm to human health and potentially disrupt critical stages in the life cycle of freshwater fish such as spawning and migration and birds such as breeding and embryo development.

They could in turn be consumed by dolphins in coastal waters via eating fish and by humans via eating watercress, fish or waterfowl, and could potentially cause significant harm (Environmental contaminants in New Zealand's endemic, endangered Hector's dolphin (*Cephalorhynchus hectori*): a thesis presented in partial fulfilment of the requirements for the degree of Master of Science in Conservation Biology at Massey University, Albany, New Zealand; Casano-Bally, Déborah, MSc Thesis, Massey University 2023:

https://mro.massey.ac.nz/items/d108a54d-bb84-4aad-8499-68e84958c49a).

For example, recent research undertaken by Déborah Casano-Bally and completed in 2023 found that due to their coastal distribution, the vulnerable Tutumairekurai Hector's Dolphin (*Cephalorhynchus hectori hectori*) and the critically endangered North Island Popoto Māui Dolphin (*C. h. maui*) are exposed to run-off and point source inputs. She states:

"However, little focus has been placed on contaminant burdens, which in the context of increased disease mortality affecting the species, is of concern. Several persistent environmental pollutants are known immunosuppressants, enhancing disease susceptibility. Here I applied generalised linear models to examine the spatiotemporal trends in contaminant burden while accounting for the effects of total body length (TBL) and sex. Polychlorinated biphenyls (PCBs, 45 congeners), multi-residue pesticides (SDDT, HCB, oxychlordane, dieldrin and mirex) and polybrominated diphenyl ethers (PBDEs, 10 congeners) were analysed in the blubber of Hector's and Māui dolphins (n = 66; 30 males and 36 females) stranded or by-caught in New Zealand between 1997 and 2022. For both SPCB and SMRP, sex was the most important predictor, followed by total body length (TBL). In males, PCB and MRP burden increased with increasing TBL, while this trend was less pronounced in females. Dolphins from the east coast of New Zealand recorded the highest overall PCB and MRP burdens. Despite being legacy contaminants banned over 30 years ago, year was the least important predictor, with minimal to no decline observed in concentrations of Σ PCB, Σ MRP, Σ DDT and HCB over the 25-year study period. For PBDEs, the most important predictor was TBL, followed by sex. Concentrations increased with TBL and were highest in males. However, no interaction between sex and TBL was observed, indicating no difference in the effects of TBL between males and females. This may signal less offloading for



females during pregnancy and lactation compared to other contaminants assessed. PBDE burdens were lowest in animals from the west coast. While a marginal decline in PBDE burden over time was noted, this had almost no contribution to the overall model fit. Results show that older animals have higher concentrations than younger animals, likely due to the accumulation of contaminants in the tissues over time. Our study provides important knowledge needed to guide appropriate conservation actions, especially in the context of disease susceptibility, including but not limited to toxoplasmosis."

Dioxins and furans, PFAS and other contaminants from the Applicant's proposed waste incinerator would add to the environmental burden, which is of serious concern to Greenpeace given the critically endangered conservation status of the Popoto Māui Dolphin (*C. h. maui*), which is now reduced to a population of circa 40-50 individual animals with a range that includes the west Waikato coast.

A 2021 report issued by the New Zealand Government suggested the population was 54 individuals, but when taking into account recent reported mortalities, their population could be fewer than 40 individuals (New Report Shows Substantial Decline in the Critically Endangered Māui Dolphin Population, Sea Shepherd Conservation Society, 31 August 2021).

Scientists have also recently revealed emerging environmental contaminants of concern within New Zealand dolphins, with similar pollution levels to Japan despite government restrictions on the use of toxic substances (<u>https://www.massey.ac.nz/about/news/new-research-reveals-emerging-environmental-contaminants-of-concern-in-nz-dolphins/</u>).

In a new international study in December 2021, published in Marine Pollution Bulletin, the authors report surprising levels of per- and polyfluoroalkyl substances (more commonly known as PFAS) in Aihe Common Dolphins (*Delphinus delphis*) examined post-mortem between 2019 and 2020 (See: Per- and polyfluoroalkyl substances (PFAS), trace elements and life history parameters of mass-stranded common dolphins (Delphinus delphis) in New Zealand. A. Stockin, S. Yi, G.L. Northcott, E.L. Betty, G.E. Machovsky-Capuska, B. Jones, M.R. Perrott, R.J. Law, A. Rumsby, M.A. Thelen, L. Graham, E.I. Palmer, L.A. Tremblay. Marine Pollution Bulletin, Volume 174, Part A, December 2021).

New international research led by Massey University and its collaborators, the University of Auckland, University of Sydney, Centre for Environment and Food (CEFAS), Cawthron Institute, AsureQuality and others, highlights new insights about

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the prevalence of PFAS in New Zealand. Scientists examined stranded dolphins post mortem and assessed a number of environment contaminants as part of their ongoing health and life history programme.

Massey University Professor Karen Stockin, Rutherford Discovery Fellow and study lead said, "We were surprised to learn PFAS in our dolphins aligned with levels recently reported in porpoises examined off the coast of Japan and other PFAS manufacturing countries in the past decade."

"We also note that the levels reported in New Zealand dolphins are higher than those of other indicator species recently examined during the all-of-Government response to PFAS," she added.

"Our findings highlight two important considerations. Firstly, the remarkable ability for marine mammals to act as sentinel indicator species, and secondly, the risk apex predators such as dolphins and humans endure due to their ability to accumulate such contaminants via the processes of bioaccumulation and biomagnification."

Dr Louis Tremblay, an ecotoxicologist at the Cawthron Institute and the University of Auckland stated: "This study confirms the persistence of this family of fluorinated pollutants. We don't yet know the full extent of the risk these substances pose to humans or wildlife, but it highlights the need for a better management and stewardship of persistent chemicals to minimise their unintended impacts."

Dr Shan Yi, an environmental biotechnologist and engineer in the department of chemical and materials engineering at the University of Auckland, commented: "The exposure of marine mammals is ultimately traced back to the contamination and persistence of PFAS in the aquatic environment. From an engineering perspective, an important implication of this research is that we need efficient PFAS treatment technologies and to improve our knowledge of PFAS environmental fate and transport. Together, these technologies and improved understanding will better protect Aotearoa's aquatic environment, communities, and unique endemic biota." (New research reveals emerging environmental contaminants of concern in NZ dolphins, 4 October 2021, Massey University news release).

The Abstract of their study states: "Profiles of 33 PFAS analytes and 12 essential and non-essential trace elements were measured in livers of stranded common dolphins (Delphinus delphis) from New Zealand. PFAS concentrations reported were largely comparable to those measured in other marine mammal species globally and composed mostly of long-chain compounds including perfluorootanesulfonic acid



(PFOS), perfluorododecanoic acid (PFDoDA), perfluorotridecanoic acid (PFTrDA) and perfluorooctanesulfonamide (FOSA). PFAS profiles did not vary significantly by location, body condition, or life history. Notably, significant positive correlations were observed within respective PFAS and trace elements. However, only negative correlations were evident between these two contaminant types, suggesting different exposure and metabolic pathways. Age-associated concentrations were found for PFTrDA and four trace elements, i.e. silver, mercury, cadmium, selenium, indicating differences in the bioaccumulation biomagnification mechanisms. Overall, our results contribute to global understanding of accumulation of PFAS by offering first insights of PFAS exposure in cetaceans living within South Pacific Australasian waters."

(https://www.sciencedirect.com/science/article/pii/S0025326X21009309).

As stated earlier, contaminants from waste incineration can contribute to the loading of dioxins and PFAS (forever chemicals) in the environment via atmospheric deposition. The Mangapiko Stream connects to the Waipa and Waikato rivers, and then to the Tasman Sea. This is a potential pathway for contaminants from the incinerator to reach the sea and to bioaccumalate in food webs that reach dolphins and humans.

Other contaminants in the incinerator's air emissions will include toxic metals, PFAS and fine particulates, which can also settle in these streams, lakes, wetlands and rivers.

Other contaminants already present in these waterways and water bodies are likely to include pesticides and herbicides from run-off and nitrate pollution from synthetic nitrogen fertiliser use in farming. This means the Board of Inquiry also needs to consider the cumulative and synergistic effects of these various contaminants on local biodiversity and human health.

Local residents and local employees will also breathe in toxic contaminants from the proposed waste incinerator, which could bioaccumulate and be dispersed in the body into vital organs such as the lungs, heart, liver, kidney and brain.

These toxic contaminants could have synergistic effects when they interact with other contaminants in the local environment (such as agricultural chemicals in the local environment and foods, PFAS 'forever chemicals', nitrates in drinking water, vehicle emissions, increased UV-radiation, and other contaminants present in the workplace, school or home etc).



For these compelling reasons, Greenpeace considers that the proposed location is unsuitable for the siting of a high-hazard industrial-scale waste to energy incineration power station.

Local community and public opposition

As the Waikato Times has reported, the Applicant's proposal has been met with strong and widespread community opposition. The Waipā District Council received nearly 900 submissions, the biggest number it has ever received in response to any resource consent application, almost unanimously opposed (Te Awamutu waste-to-energy plant proposal receives record number of submissions, Waikato Herald, 16 October, 2023:

https://www.nzherald.co.nz/waikato-news/news/te-awamutu-waste-to-energy-plantproposal-receives-record-number-of-submissions/).

The Waikato Regional Council reports receiving 822 submissions with 813 opposed and only 6 in support or partial support.

There is also widespread opposition around the country to waste to energy incineration proposals. Many environmental NGOs have submitted in opposition to this proposal, including Greenpeace Aotearoa, Zero Waste Network Aotearoa, 350.org, Environmental Defence Society, Taranaki Energy Watch, Don't Burn Waipa and others.

Human health impacts

The proximity of workplaces and residential areas to the proposed waste incinerator could pose a potential health risk. Children, seniors, people with disabilities including those with a compromised immune system, Māori and Pasifika, and lower decile communities are among the most vulnerable to harm from pollution and hazardous toxic contamination.

Employees at the waste incinerator, nearby residents, children and staff in local schools, employees in nearby workplaces, and seniors in nearby care homes and retirement accommodation are likely to have the highest exposure.

Dioxins and furans will be discharged to air by the incinerator every day.



The United Nations' International Agency for Research on Cancer (IARC) has classified dioxin (2,3,7,8-TCDD) as a Group I carcinogen, indicating there is no safe dose for dioxin exposure (IARC Monographs on the Evaluation of Carcinogenic Risks to Humans Polychlorinated Dibenzo-para-Dioxins and Polychlorinated Dibenzofurans; International Agency for Research on Cancer (IARC): Lyon, France, February 1997; Volume 69.)

Dioxins, namely, polychlorinated dibenzo-p-dioxins and dibenzofurans (PCDD/Fs), are known to pose a significant threat to human health and the environment (Congener patterns of polychlorinated dibenzo-p-dioxins, dibenzofurans and biphenyls as a useful aid to source identification during a contamination incident in the food chain, Ron L.A.P. Hoogenboom et al, Science of the Total Environment, Vol 746, 1 December 2020:

https://www.sciencedirect.com/science/article/pii/S0048969720346271).

Pollutants such as PFAS (forever chemicals), dioxins, furans and toxic metals can potentially cause cancer, birth defects and infertility. They can also potentially cause illness and death from respiratory problems (asthma, lung disease, breathing difficulties), strokes, heart disease, heart attack, and Altzheimer's disease (Facts about "waste-to-energy" incinerators, GAIA (Global Alliance for Incinerator Alternatives), 2018. <u>https://www.no-burn.org/wp-content/</u> and Particle Pollution Exposure, United States Environmental Protection Agency, <u>www.epa.gov/pmcourse/particle-pollution-exposure</u>).

Due to their toxicity, they can potentially cause other health problems, including infertility, learning disabilities, sexual reproductive disorders, birth defects, and damage to the immune system (Facts about "waste-to-energy" incinerators, GAIA (Global Alliance for Incinerator Alternatives), 2018.

https://www.no-burn.org/wp-content/

<u>uploads/2021/11/GAIA-Facts-about-WTE-incinerators-Jan2018-1-1.pdf</u> and Particle Pollution Exposure, United States Environmental Protection Agency, <u>www.epa.gov/pmcourse/particle-pollution-exposure</u>).

In fact, according to the World Health Organization, the most toxic forms of dioxin are considered to be the most carcinogenic (cancer causing) substances known to science.

Because of their high toxicity, stability, lipophilic properties, decomposition difficulty, and ability to easily accumulate in organisms, dioxins have been listed as one of 12 priority control persistent organic pollutants (POPs) in the Stockholm



Convention on Persistent Organic Pollutants, with 210 congeners and 17 congeners of significant toxicity (The listing of new persistent organic pollutants in the Stockholm Convention: Its burden on developing countries, Sherriff I. et al, Environmental Science & Policy, Vol 130, April 2022: https://www.sciencedirect.com/science/article/abs/pii/S1462901122000119).

According to "Degradation technologies and mechanisms of dioxins in municipal solid waste incineration fly ash: A review" (Junjie Zhang, Shengen Zhang, Bo Liu, Institute for Advanced Materials and Technology, University of Science and Technology Beijing, Beijing, 100083, PR China, Journal of Cleaner Production, Vol 250, 20 March 2020):

"Dioxins in MSWI [municipal solid waste incineration] fly ash are primarily derived from homogeneous reaction and heterogeneous reaction in the range of 200–800 °C, including cyclization, chlorination, catalytic and de novo synthesis of precursors."

According to Weishi L. et al 2023:

"Dioxin degradation is essential for the large-scale processing of MSWIFA. ... The treatment temperature of the sintering method is usually approximately 1000 °C, resulting in a dioxin degradation efficiency basically higher than 95% and the removal of some volatile heavy metals".

They define the sintering process as: "transforming powdered materials into dense bodies, usually at temperatures between 700 and 1200 °C. Dioxins will decompose into smaller molecules after the sintering process and oxidize to H₂O and CO₂ in the presence of oxygen (Lindberg et al., 2015). Prior to sintering, FA [fly ash] typically requires pretreatment steps similar to traditional ceramic processing, including washing, sieving, ball milling, drying, compaction, and pelletizing."

(Review of thermal treatments for the degradation of dioxins in municipal solid waste incineration fly ash: Proposing a suitable method for large-scale processing. Weishi Li, Daihai Yan, Li Li, Zhuoyu Wen, Meijia Liu, Shengxin Lu & Qifei Huang [Chinese Research Academy of Environmental Sciences, Beijing 100012, China; College of Water Science, Beijing Normal University, Beijing 100085, China]. Science of the Total Environment. Volume 875, 1 June 2023, 162565: https://www.sciencedirect.com/science/article/abs/pii/S0048969723011816).

It follows from this that an operating temperature of 850 °C is not sufficient for total dioxin degradation in municipal solid waste incineration fly ash. The Applicant's proposed incineration furnaces would need to achieve a sustained burn



temperature of approximately 1000 °C to result in a dioxin degradation efficiency higher than 95%, followed by pretreatment and sintering.

The downwind impacts of incinerator air emissions are the greatest. For example, high levels of dioxins have been detected in the eggs of backyard chickens sampled within a three kilometre radius of a waste incinerator in the Netherlands (Zero Waste Network Aotearoa factsheet, 2024:

https://zerowaste.co.nz/assets/RNI-Factsheet-4-Incinerators-create-air-pollution.pdf)

Recently, Don't Burn Waipā has worked with Plume Plotter to model the spread of toxic emissions to air using the data from the Applicant's resource consent application and NZ meteorological data.

They say the data shows that air pollution from the proposed waste incinerator would be much worse than that from any of the 80 other incinerators (proposed or operational) which have been modelled by Plume Plotter around the world. They found that the plume extends over residential land in Te Awamutu.

Plume Plotter is an international website dedicated to modelling the spread of exhaust plumes from existing and proposed waste incinerators. It uses software called AERMOD and local meteorological data to display the extent of exhaust plumes. An animation of the Applicant's Waipā incinerator using 2023 weather conditions is viewable online via this link: https://www.youtube.com/watch?v=MfnGZyVxNJg

Thousands of tonnes of PM10 and PM2.5 will be discharged to air by the Applicant's waste incinerator. PM refers to "Particulate Matter" and the number refers to the size of the particle, with 10 being 10 microns, and 2.5 being 2.5 microns. As it is extremely small, PM2.5 is particularly dangerous because it can reach deep into the alveoli of the lungs. Especially at risk are seniors, children and people with respiratory, cardio-pulmonary, bronchitis, asthma and other lung and/or heart conditions.

Other contaminants will include various toxic metals (including lead, mercury, cadmium) and Sulphur Dioxide, Nitrogen Dioxide, Hydrogen Fluoride, Hydrogen Chloride and other acid gases.

There will also be persistent noise, odour and dust from the burning of so many tyres and so much plastic, car flock and municipal solid waste (MSW), which can also have adverse health effects.



Aotearoa already has an air pollution crisis, so building new waste incinerators will only add to that. Air pollution is reportedly above safe levels in 12 of 13 regions in Aotearoa (Newsroom. 2024.

https://newsroom.co.nz/2024/06/06/air-pollution-above-safe-levels-in-12-of-13-region <u>s/</u>).

Every year, air pollution in Aotearoa results in 3,300+ premature deaths plus 13,000+ hospitalisations for cardiovascular and respiratory disease (Health effects of air pollution.

https://www.ehinz.ac.nz/indicators/air-quality/health-effects-of-air-pollution).

There is already enough evidence on the serious adverse health effects of emissions from waste incinerators but where any uncertainty may still exist, Greenpeace requests the Commissioners take a precautionary approach and recommend the consents sought be declined.

Climate change and energy

The Applicant claims there will be no significant impact from the carbon emissions arising from its proposed waste incinerator, but since the applications were lodged the NZ EPA has published advice that contradicts that claim.

For example, New Zealand has international obligations to the global environment which will be impacted by the carbon emissions from the proposed waste incinerator.

Under the Paris Climate Agreement, the international treaty on climate change signed in 2016, New Zealand has pledged to halve its carbon emissions by 2030 based on what they were in 2005.

The Ministry for the Environment's initial view is that the estimated greenhouse gas emissions for the proposed waste incinerator are between 145,000 and 165,00 tonnes per annum of carbon dioxide, and that this is significant at a national and international level (Advice and Recommendation of the EPA under section 144A RMA, Request to Call-in Resource Consent Applications by Global Contracting Solutions Ltd, pp6-7:

https://www.epa.govt.nz/assets/FileAPI/proposal/NSP000048/EPAs-advice-and-recom mendation/NSP000048-EPA-Advice-and-Recommendation-GCSL-Te-Awamutu-April-2 024.pdf).



The 'feedstock' proposed for this waste incinerator is primarily plastics and other fossil fuel-derived products. It cannot be described as renewable energy. Along with the feedstock this incinerator would use millions of litres of diesel every year to "co-fire" the plant to keep it hot enough to burn plastics, tyres, car flock and municipal solid waste.

Based on the reference Korbach incinerator (cited by the Applicant) being about half the size of the Applicant's, and the amount of diesel fuel needed to maintain the 850 °C burn temperature and the post-combustion auxiliary boilers, between 1.3 and 1.8 million litres/year (5000 litres/day) would be required by the Applicant.

Reading the Application may give the impression that once the mixed waste is burning, it will continue to burn at a steady temperature on its own. But that may vary, which is presumably why the Applicant has sought consents that allow additional diesel to be used. The mixed wastes will not be homogenous and so the combustion temperature may vary. If it drops below 850 °C, additional diesel will be needed to bring it back up to or above the target temperature.

The Application is rather vague about this. The Applicant simply states there will be "Supplementary firing, start up" but does not quantify how often that will occur.

If you add this unspecified additional diesel burning to the amount specified, the total carbon dioxide emissions will potentially be significantly higher than the 145,000 tonnes to 165,000 tonnes per year range suggested in the EPA's advice to the Minister for the Environment.

Over a 35 year period, that comes to a cumulative total of between 5,075,000 tonnes to 5,775,000 tonnes of carbon dioxide emissions. With the addition of the unspecified additional diesel burning figure, it could potentially be over 6,000,000 tonnes of carbon dioxide.

Carbon dioxide and methane

The Applicant has submitted a document entitled "Greenhouse Gas Commentary" as Appendix M.

In this document the Applicant states:



4.2.1 Landfill emissions: "... reducing [methane] emissions from landfills is one of the primary areas of concern by the Climate Change Commission for the waste sector. This diversion of waste has additional environmental impacts through the decrease in demand placed on existing and new landfill sites."

To put this in perspective, in 2020, Aotearoa New Zealand's gross methane emissions contributed 43.5 percent of the country's total greenhouse gas emissions, or 34.3 MtCO2-e. The agriculture, waste, energy, and industry sectors' contributions made up 89, 9, 2 and 0.3 percent of this total respectively (Aotearoa New Zealand's Methane Emissions Reduction Action Plan, Ministry of Foreign Affairs and Trade, December 2022:

<u>https://www.mfat.govt.nz/assets/Climate-Change-Programme-images/Aotearoa-New</u> <u>-Zealands-Methane-Emissions-Reduction-Action-Plan-Full-Version.pdf</u>).

The report states that methane emissions from landfills account for circa 90% of the 9% figure (ie, 8%) with sewage wastewater treatment being the other main contributor. This means that methane emissions from landfills accounted for just under 10% of the quantity of methane emissions from agriculture in Aotearoa New Zealand.

The MFAT report also sets out the main activities and strategies being implemented to reduce methane emissions from landfills, including the Climate Change Response Act and the waste disposal levy, which raises revenue for initiatives to reduce waste and encourage resource recovery (eg, composting and recycling).

The Applicant's Appendix M goes on to state: "Most large landfills in the Waikato region have gas capture, while smaller landfills tend not to.

Therefore, it is considered likely that most of the waste that is diverted to the proposed WtE plant will be from landfills that have gas capture."

The fact that most of the large landfills in the Waikato region are currently capturing and burning methane is preferable to digging them up and sending the waste to the Applicant's proposed waste incinerator. That avoids those methane emissions.

In addition, the aim should be to separate more of the organic waste currently contained in MSW so it can be composted, and to re-use, recycle or repurpose as much of the non-compostible MSW as possible, thus reducing the residual amount of intractable waste that currently needs to be sent to landfill.

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That is the preventative 'top of the cliff' approach in comparison to the 'car crash at the bottom of the cliff' approach that waste incineration represents.

It is also important to bear in mind that methane emissions from the MSW already decomposing in landfills will be released over a prolonged period, not all at once. In contrast, if new MSW is sent to be burned in a waste incinerator, the carbon emissions from burning it are immediately discharged into the atmosphere.

In a landfill it is mostly contained for longer, and as noted, most large landfills in the region capture and burn that methane for on-site electricity generation. That also displaces electricity that would otherwise be sourced from the grid at the market price. The methane from landfill that is burned does not have to be paid for.

Doing so means the methane is converted to electricity and carbon dioxide emissions, which have a lower warming potential than methane.

It also avoids the use of large quantities of diesel to burn the MSW, which has to be transported to New Zealand from overseas and then trucked to the Applicant's waste incinerator to be used as a 'feeder fuel'.

It also avoids the production of large quantities of contaminated ash that requires further transport for disposal or further energy inputs to manufacture concrete or roading material.

The carbon 'footprint' of waste incineration is clearly greater than that of burning the methane on-site at those large landfills which already do so (as described by the Applicant).

In 4.3.1 Key Emission Sources and Relevant Assumptions, the Applicant goes on to state: "For this assessment the latest average emissions factor for the national grid has been used."

As a result of the Zero Carbon Act, carbon emissions from grid electricity will continue to reduce over the time of the consents sought, so the current average emissions factor will not apply over the length of any consents issued in 2025.

The Applicant also states that "Waste will be recovered from decommissioned landfill sites and processed through the WtE plant. This will abate emissions that would be produced from these landfill sites."



The contents of that waste will vary, so it is difficult to quantify methane emissions arising from it. Due to its age, it may also contain discarded Persistent Organic Pollutants such as DDT, 235-T, PCBs etc, so would need to be tested and screened for these. Burning these hazardous toxic chemicals in the presence of MSW will undoubtedly produce additional dioxins.

Digging up, transporting and burning this material is not the only option. It could be captured and used for electricity generation. There are also opportunities to use microbes to mitigate methane emissions from existing landfills (The Role of Microbes in Mediating Methane Emissions, Colloquium Report, Washington, DC, American Society of Microbiology, 15 November 2023: https://www.ncbi.nlm.nih.gov/books/NBK598985/).

Then the Applicant sets out some figures in Figure 4.2: GHG Impact Profile. The figures cited are highly debatable because of the variable characteristics and compositions of the proposed feedstocks, and the ability of the Applicant to sign contracts for the types and amounts of proposed feedstock to be burned, and hence the eventual mix of feedstocks that would be burned. This is the Applicant's 'best case scenario' but they do not include less optimistic scenarios.

Professor Alan Brent of Victoria University of Wellington predicts by the end of the decade, solar generation will increase to 6.4GW or 6400MW in New Zealand.

Onshore wind will increase to 2.9GW or 2900MW and geothermal will increase to 0.6GW or 600MW (Electricity demand will jump as NZ decarbonises—can renewable generation keep up?, Alan Brent Professor and Chair in Sustainable Energy Systems at Te Herenga Waka—Victoria University of Wellington, 2 September 2024: https://www.wgtn.ac.nz/news/2024/09/electricity-demand-will-jump-as-nz-decarboni sescan-renewable-generation-keep-up).

As that happens over the next 10 years, the amount of coal burned to generate grid electricity can potentially be reduced by 10G W or 10,000 MW – a figure that dwarfs the Applicant's 15 MW of generation.

Without giving a citation, the Applicant then asserts that its proposed waste incinerator will emit between 1.24 and 1.4kg of CO2 per kg of feedstock burned. The accuracy of these figures is questionable, given such a high proportion of fossil-fuel derived feedstock (ie, plastics, tyres, car flock) is proposed. The MSW will



also contain plastics, wood, cardboard, paper, disposable nappies, tetrapaks, vinyl flooring, vinyl pipes etc, and the 'feeder fuel' will be diesel.

So, too, is the accuracy of the emissions source data in Figure 4.3: Emission Sensitivity Analysis.

The Applicant states it does not think the New Zealand Emission Trading Scheme (ETS) applies to its proposed waste to energy incineration power station.

The EPA's advice to the Minister for the Environment states that the operator of the proposed waste to energy incineration facility (point 39 in its advice) would be a mandatory participant in the NZ ETS and face costs for GHG emissions. In reference 7 on page 8 of its advice, the EPA also notes that there are five participants currently registered for combusting waste for energy, including Fletcher Cement and Oji Fibre Solutions.

In 5 Conclusion, the Applicant asserts:

"Based on this assessment, the GHG generated by the plant will be greater than the abated GHG associated with the current method of disposing waste and sourcing the same amount of energy through the national grid.

However, it should be noted that compared to a coal powered plant, which is used locally for both grid electricity generation (e.g. Huntly, which accounts for around one third of power in the Waikato Region) and on-site industrial processes, this method provides a positive GHG outcome for the same amount of energy production. For the same annual energy production, the GHG emissions from a coal powered facility, would be approximately 40% higher than from the proposed WtE plant. As expected, the WtE plant has better GHG outcomes than other coal powered facilities, but worse than other renewable power generated in the grid (hydro, water, wind or geothermal)."

This is a straw man argument. The Applicant compares predicted carbon emissions from its waste incinerator with carbon emissions from a coal-fired power station, but the more obvious comparison is with genuine clean renewable energy generation such as wind and solar which have zero carbon emissions and zero toxic emissions.

Nor does the Applicant mention here that they will be using large quantities of diesel as the 'feeder fuel'.



As noted earlier, around Aotearoa there are now underway extensive policy and programme solutions to reduce the amount of organic waste going to landfills. These include various council-backed projects aimed at reducing the amount of organic waste that goes to landfill and increasing the amount of compost produced.

The Government's new carbon emissions reduction plan announced on 10 December 2024 includes stricter controls on methane emissions from landfills which should help to reduce those emissions (New emissions plan still not on track to meet 2031-2035 targets, Eloise Gibson, RNZ News, 11 December 2024: <u>https://www.rnz.co.nz/news/environment/536284/new-emissions-plan-still-not-on-tr</u> <u>ack-to-meet-2031-2035-climate-targets</u>).

MSW is an area where New Zealand could eliminate methane emissions, but building waste incinerators would undermine those efforts by creating a financial incentive to keep burning MSW.

In 4.2.1 GHG Abated, the Applicant asserts in the 'Resource recovery' section that recovering more steel through incineration helps avoid the production of more 'virgin' steel. But that steel could be recovered by shredding the tyres, instead of burning them.

Moreover, burning MSW inevitably increases demand for the production of more virgin materials. If you burn materials that can be recycled, you destroy them and will need more virgin materials to replace them – ie, more timber, pulp, cardboard, paper, plastics etc. In this way, the Applicant's point does not only apply to steel, it applies to the entire MSW stream.

Carbon emissions per kilowatt of electricity

The Applicant's proposal is not renewable energy or renewable resource recovery, it is a fossil-fuelled power station that produces a large amount of hazardous toxic waste in order to generate a tiny amount of electricity and recover metals from the waste stream that can largely be recovered using conventional (non-incineration) recycling and reprocessing methods – including at the Applicant's own existing site and others such as the Pacific Steel recycling facility in Otahuhu, Auckland.

In fact, carbon emissions from MSW incineration are higher per kilowatt of electricity generated than from burning coal.



That means the Applicant's proposed waste incinerator will be an even worse polluter than a power station that burns coal because by burning tyres, plastics and car flock in addition to MSW, the ash produced will be contaminated with more dioxins and be even more toxic than coal ash.

For these reasons, Greenpeace also requests the consents sought be declined.

Clean energy alternatives

The reported cost of the applicant's proposal is \$200 million, but the reported quantity of electricity it could generate is only 15 MW (megawatts) ('Stakes are extremely high' for Waipā if waste-to-energy plant goes ahead, Avina Vidyadharan, Waikato Times, 22 November 2024:

<u>https://www.waikatotimes.co.nz/nz-news/360494389/stakes-are-extremely-high-waip</u> <u>a-if-waste-energy-plant-goes-ahead</u>).

That is a vast sum of money to generate a tiny amount of electricity. Aotearoa already has 9,448 MW of installed electricity generating capacity, (Wikipedia: https://en.wikipedia.org/wiki/Electricity_sector_in_New_Zealand and MBIE, July 2021 Electricity statistics:

https://www.mbie.govt.nz/building-and-energy/energy-and-natural-resources/energ y-statistics-and-modelling/energy-statistics/electricity-statistics) 15 MW is only a tiny 0.15% fraction of that total figure.

In contrast, the 12 wind turbines installed at the Mahinerangi wind farm in Otago in 2011 have a capacity to produce up to 36 MW of electricity. That wind farm cost \$75 million to build, which is less than half of \$200 million, and it produces more than double the amount of electricity more cheaply and cleanly.

Wind farms don't produce any ongoing carbon emissions, toxic ash or air pollution. Nor do they require scores of trucks to burn diesel as they drive to and from Te Awamutu to deliver solid waste, they just need the wind – which is free (Mahinerangi Wind Farm, Wikipedia, <u>https://en.wikipedia.org/wiki/Mahinerangi_Wind_Farm</u>).

New Zealand currently has 21 commercially operating wind farms with a combined installed capacity of 1.3 GW or 1300 MW. These wind farms currently supply about 7.5% of New Zealand's annual electricity generation, and provide about 12% of the grid's total generation capacity (Wind Energy Association of New Zealand:



https://www.windenergy.org.nz/wp-content/uploads/2024/06/FactSheet-Wind-farm-d evelopment-in-NZ.pdf).

New Zealand's biggest solar power station started producing electricity in 2023 with a connection capacity of 23MW, Lodestone Energy's solar farm, just outside Kaitāia. The 60,000-panel solar farm is sited on 80 hectares just north-west of Kaitāia at a reported cost of about \$60 million, according to RNZ.

The panels are raised on two metre poles so sheep can graze underneath and around them.

Lodestone is reportedly planning another, even bigger solar farm just north of Dargaville, as well as projects in Edgecumbe, Waiotahe (near Ōpōtiki) and Whitianga ('A task in itself': Country's largest solar power station built in Kaitaia, Peter de Graaf, RNZ, 27 November 2023:

<u>https://www.rnz.co.nz/news/national/503380/a-task-in-itself-country-s-largest-solar-p</u> <u>ower-station-built-in-kaitaia</u>).

There is currently around 270 MW of installed solar generation in New Zealand, which amounts to 0.85% of total electricity generation.

As noted earlier, Professor Alan Brent predicts by the end of the decade, solar generation will reach 6.4 GW or 6400 MW. Onshore wind will reach 2.9 GW or 2900 MW and geothermal 0.6 GW or 600 MW (Electricity demand will jump as NZ decarbonises—can renewable generation keep up?, Alan Brent Professor and Chair in Sustainable Energy Systems at Te Herenga Waka—Victoria University of Wellington, 2 September 2024:

https://www.wgtn.ac.nz/news/2024/09/electricity-demand-will-jump-as-nz-decarboni sescan-renewable-generation-keep-up).

Geothermal energy is another important renewable energy source for New Zealand, producing about 18% of renewable electricity. This means New Zealand is the fifth largest producer of geothermal power in the world, and the Waikato region has 70% of New Zealand's geothermal resource.

Geothermal generation is expected to grow over the next decade, ensuring it will continue to be one of the country's largest sources of renewable energy.



If new electricity sources are required in the Waikato region wind, solar and geothermal are better options for the environment and local consumers than waste to energy incineration.

Supercritical geothermal energy is predicted to be able to supply about 2000 MW of new electricity generation in Aotearoa from 2037, likely without emissions, according to Dr Isabelle Chambefort, who is leading GNS' programme on future geothermal energy.

It is water that is super-hot and at very high pressure, able to provide three times the energy of conventional geothermal sources and could provide 35 per cent of the country's electricity needs, according to a recent report.

According to John O'Sullivan, co-director of the Geothermal Institute at Auckland University, Aotearoa could take a leading role in supercritical geothermal energy research around the world (Highly touted supercritical geothermal resource's pathway to power, Kathryn Ryan, RNZ Nine to Noon, 26 November 2024: <u>https://www.rnz.co.nz/national/programmes/ninetonoon/audio/2018965812/highly-t</u> <u>outed-supercritical-geothermal-resource-s-pathway-to-power</u>).

The proposed waste incinerator in Te Awamutu is reportedly estimated to cost \$200 million to build. By comparison, a small Resource Recovery Centre (RRC) can be started for \$500,000 and a medium sized RRC costs around \$2 million.

Whether you look at the amount of electricity generated or the transformation of solid waste into large quantities of hazardous toxic ash and emissions to air, there are far better alternative technologies that generate genuine renewable electricity and do not produce toxic waste or carbon emissions. Geothermal energy has much lower emissions of naturally occurring carbon dioxide than the anthropogenic carbon emissions from waste to energy incineration.

Precautionary approach

When the RMA was passed in 1991 there were some who sought to narrowly define it as an 'enabling act' which exists simply to give the authority to allow development activities to proceed.

The RMA was not designed to be a rubber stamp for developers to pollute, nor is it an 'enabling harm act'.



It exists to ensure that the natural environment and physical resources such as soil, air, water and buildings are managed sustainably, and establishes environmental bottom lines.

One of the matters that repeatedly arises is what to do in the face of uncertainty. Greenpeace takes the view that a precautionary approach is required under the RMA.

There is a useful definition of the precautionary approach set out in the Hazardous Substances and New Organisms Act which Greenpeace publicly advocated for in 1994, including writing to all Members of Parliament:

S. 7 Precautionary approach

All persons exercising functions, powers, and duties under this Act including, but not limited to, functions, powers, and duties under sections 28A, 29, 32, 38, 45, and 48, shall take into account the need for caution in managing adverse effects where there is scientific and technical uncertainty about those effects.

Scientific understanding of climate change and the synergistic effects of toxic contaminants have increased greatly over the three decades since the RMA was passed. So much so, there is now a compelling case for strengthening the application of the precautionary approach in the context of the cumulative effects of carbon emissions on the climate and biodiversity, and emissions of toxic contaminants to air, land and water on human health, species, habitats and ecosystems.

In 1991 the world did not know how severe and irreversible the effects of climate change were going to be; that there was no safe dose of dioxin; that some toxic chemicals last 'forever'; and that microplastics would come to enter all ecosystems and the human body. We do now because of decades of scientific research, some of which are cited in this submission.

The duration of the resource consents being sought by the Applicant is another factor. Any consents issued in 2025 need to be 'fit for purpose' and consistent with the more advanced state of scientific knowledge in decades to come. Clearly, the operation of a large waste incinerator that produces very large carbon emissions to the atmosphere will be untenable in the zero carbon world of 2050.

The Applicant may argue that the imposition of the conditions it has identified will be sufficient to address any significant adverse effects or uncertainty.

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Greenpeace is of the view that that there is no sufficiently proportionate action that can remedy or mitigate the significant adverse effects of carbon emissions and toxic emissions on human health and the environment (such as dioxins and furans) because those effects are not always reversible – and even if they were, it could be very costly and come with its own adverse effects (including the cost to taxpayers and the public health system).

A polluter cannot undo irreversible climate change or human health impacts. Once an island in the Pacific is permanently inundated, there's no raising it from the depths. Once a species is extinct, there's no resurrecting it. And once a child has died from cancer or a stroke, there's no bringing them back to life.

The Applicant's proposed waste incinerator could prove to be the tipping point for irreversible effects such as these to occur. Faced with that uncertainty, Greenpeace requests the Commissioners be guided by the precautionary approach and recommend the consents sought be declined.

Ecocide as a crime against humanity

In September 2024, Vanuatu, Fiji and Samoa proposed that ecocide be recognised as a crime against humanity and that it could provide a global framework of accountability for environmental damage.

Ecocide is defined as acts of "unlawful or wanton" environmental destruction committed in the knowledge of their likely severe, widespread or long-term effects. In September 2024 the Pacific Island nations formally requested an amendment to the principal treaty of the International Criminal Court to add ecocide alongside genocide, war crimes and aggression to the international community's list of most serious crimes.

There is a relevant legal case currently before the courts in Aotearoa.

In February 2024, Iwi leader Mike Smith won the right to sue seven large carbon emitters for their role in causing climate change, in a Supreme Court ruling (Iwi leader Mike Smith gets his day in court against seven major emitters, Eloise Gibson, RNZ News, 7 February 2024:

https://www.rnz.co.nz/news/te-manu-korihi/508553/iwi-leader-mike-smith-gets-hisday-in-court-against-seven-major-emitters and



<u>https://www.rnz.co.nz/news/national/508603/mike-smith-s-case-against-major-nz-e</u> <u>mitters-garners-international-interest-lawyer-says</u>).

Mike Smith says a group of polluters including Fonterra, Z Energy and Genesis Energy have a legal duty to him and others in communities who are being damaged by emissions of planet-heating gases. He wants those polluters to either stop polluting, or start rapidly cutting their carbon emissions.

Those companies profit from their harmful emissions but it is the environment and the health of communities that bear the cost and the adverse effects – and it is our tamariki children and mokopuna grandchildren who will also pay a price.

The world's climate scientists are telling us to expect more severe weather events, wildfires, heatwaves, rising sea levels, and the disruption of ocean currents and marine food chains.

The United Nations, and the US EPA and other government agencies around the world are telling us that POPs and PFAS are toxic and can cause cancer, disrupt fertility and hormones etc.

Before the RMA existed, developers and their shareholders may have said, 'we did not know that' but they cannot say that now.

The miraculous existence of Te Taiao is now threatened by the dual threat of global climate change and toxic pollution. As a part of living nature, we all have a responsibility to do what we can to protect Te Taiao.

In this case, that means declining the consents sought by the Applicant.

Latest evidence of climate change

The European Union's Copernicus Climate Change Service (C3S) recently reported the latest data shows that 2024 is almost certain to be the hottest year on record. It will also be the first year to have an average temperature of more than 1.5 °C above pre-industrial levels, marking a further escalation of the climate crisis.

Data for November 2024 showed the average global surface temperature for the month was 1.62 °C above the level before the mass burning of fossil fuels drove up global heating. With data for 11 months of 2024 now available, scientists said the



average for the year is expected to be 1.60 °C, exceeding the record set in 2023 of 1.48 °C.

Samantha Burgess, the deputy director of C3S, has been quoted by The Guardian saying: "We can now confirm with virtual certainty that 2024 will be the warmest year on record and the first calendar year above 1.5C. This does not mean that the Paris agreement has been breached, but it does mean ambitious climate action is more urgent than ever."

(Climate crisis deepens with 2024 'certain' to be hottest year on record, Damian Carrington, The Guardian, 9 December 2024: <u>https://www.theguardian.com/environment/2024/dec/09/climate-crisis-deepens-with</u> <u>-2024-certain-to-be-hottest-year-on-record</u>).

The supercharging of extreme weather by the climate crisis is already clear, with heatwaves of previously impossible intensity and frequency now occurring around the world, along with fiercer storms and worse floods.

Particularly intense wildfires blazed in North and South America in 2024. The fires, driven by severe droughts, affected the western US, Canada, the Amazon forest and the Pantanal wetlands.

The scale of some of the fires in 2024 were at historic levels, especially in Bolivia, the Pantanal and parts of the Amazon. Canadian wildfires were again extreme although not at the record scale of 2023. The fires caused high levels of air pollution across continents for weeks.

Millions of hectares of vegetation was destroyed and 3 billion animals were killed or displaced by the wildfires that ravaged New South Wales and Victoria in 2019 and 2020, according to a July 2020 study by ten scientists from five institutions commissioned by the World Wildlife Fund for Nature (WWF): <u>https://www.unesco.org/en/articles/australia-after-bushfires-0</u>

Here in Aotearoa, there has been a spate of wildfires in recent weeks. Firefighters have battled four large wildfires in Canterbury during windy and hot weather in December 2024 so far.

Prior to that, there was a huge wildfire in the Waikato which broke out on 20 October 2024 which devastated the Whangamarino wetland, a protected wetland with a delicate ecosystem with rare species some found nowhere else on Earth (Fire



response at Whangamarino winds down, Department of Conservation news release, 29 October 2024:

https://www.doc.govt.nz/news/media-releases/2024-media-releases/fire-response-atwhangamarino-wetland-winds-down/).

The blaze was 15 kilometres in perimeter and burned more than 1,000 hectares and took 9 days to bring under control.

Experts have also warned of the potential damage to one of New Zealand's largest carbon sinks there.

The area that burned contained the largest and most intact raised peatland habitat in Whangamarino. This globally rare habitat is one of the few remaining raised peatlands in the southern hemisphere – and the peat soil plays an important role in storing carbon. The fire released an estimated 96,000 – 181,800 tonnes of greenhouse gasses back into the atmosphere.

It took 9 days to get under control and extinguish.

The unique habitat supports a high diversity of threatened native wetland species, including Waikaka Black Mudfish, Matuku-hūrepo Australasian Bittern, and Pūweto Spotless Crake. It also hosts many threatened plant species and is the only known location in the world of the critically endangered endemic Swamp Helmet Orchid.

Even earlier in the year there was a large wildfire in the Christchurch Port Hills which prompted a state of emergency to be declared, and evacuations of residential properties. That fire started on 14 February 2024 on Worsleys Road - seven years and one day after another large wildfire in the Port Hills in 2017.

The economic damage caused by extreme weather is reportedly rising, according to the research institute of insurance company Swiss Re. Its data found that estimated economic losses in 2024 rose by 6% to \$320bn, a figure 25% higher than the average over the previous 10 years.

Hurricane Helene and Hurricane Milton and other more severe thunderstorms in the USA, as well as floods in Europe and the United Arab Emirates, contributed to insured losses. But less than half the losses across the world were covered by insurance as poorer people were unable to afford the premiums.



Losses are likely to increase as climate change intensifies extreme weather events and insurance costs are likely to keep increasing.

There are now real risks of ecosystem collapse, changes in ocean currents, more species extinctions, and the inundation of entire low lying countries (Sixth Assessment Report of the IPCC: <u>https://www.ipcc.ch/assessment-report/ar6/</u>).

All of this highlights the urgent need to rapidly cut existing anthropogenic carbon emissions and avoid building new polluting power stations, and instead build more genuinely renewable energy generation such as wind and solar, and new hydropower 'battery' storage capacity.

Building a waste to energy incineration power station in Te Awamutu now will lock-in more anthropogenic carbon emissions for the next generation when we should have stopped building new fossil-fuelled power stations and started to make the transition to renewables in the 1990s – as Greenpeace requested at the Stratford power station Board of Inquiry hearings in 1994.

For these reasons Greenpeace submits the consents sought by the Applicant be declined. If the Applicant wants to generate genuinely renewable, clean electricity it could apply for consents to build a wind farm or a solar farm. Greenpeace could support that.

If the Applicant wants to recover resources from MSW and other wastes it could apply for consents to operate a new resource recovery centre that re-uses, re-purposes, recycles and composts wastes. Greenpeace could support that.

That is also what most submitters want and what the local community clearly prefers.

Declining the consents would avoid significant adverse effects and send a positive signal to others that are interested in developing new renewable energy generation and new resource recovery centres. It would also give the community greater confidence in the statutory process at a time when the Government has decided to strike out the RMA and pass an ill-conceived Fast-track Approvals Bill.

Would you want a big waste incinerator built near your house where your children or grandchildren play? Would you want your property values to diminish because you live near a polluting waste incinerator? This community does not want that. Neither does Greenpeace.



Environmental effects

New Zealand has international obligations to the global environment which will be impacted by the production and emission of dioxins, furans and other harmful contaminants from the proposed waste incinerator.

New Zealand has signed and ratified the Stockholm Convention on Persistent Organic Pollutants (POPs), which includes the aim of reducing and phasing out the production and emission of dioxins and furans.

Since the 1990s, the Crown has spent many millions of dollars researching and reducing dioxin sources and sinks that exist due to past toxic chemical use and site contamination.

The Applicant's proposed waste incinerator would create a large new source of dioxins, furans and other harmful contaminants.

The proposed waste incinerator would burn up to 166,525 tonnes of waste a year or 456 tonnes a day, emitting dioxins and furans, toxic metals, and ultra fine particles into the air (PM10 and PM2.5), which is a major source of harmful air pollution.

The hazardous nature of the wastes that the Applicant plans to burn include:

17,529 tonnes per year of car flock, which is residual waste from scrap metal processing (especially used and broken-up cars) that includes PVC plastics (vinyl), foam, rubber, metals and contains PFAS forever chemicals. Notable examples of PVC plastics used in the automotive industry include sun visors, seat coverings, underbody coatings, mud flaps, the interior of door panels and pockets, and wiring.

PFAS (Per- and polyfluorinated alkyl substances), also known as the forever chemicals, are a large chemical family of over 10,000 highly persistent toxic chemicals that do not occur in nature.

Incineration of PFAS-containing wastes can emit harmful air pollutants, such as fluorinated greenhouse gases and products of incomplete combustion, and some PFAS may remain in the incinerator ash (Disposal of products and materials containing per- and polyfluoroalkyl substances (PFAS): A cyclical problem, Tasha Stoiber, Sydney Evans, and Olga V. Naidenko, Chemosphere, Volume 260, December 2020: https://www.sciencedirect.com/science/article/abs/pii/S0045653520318543).



35,058 tonnes of plastics, which will contain a variety of plastic types including chlorinated PVC plastics. Incineration of plastics can emit harmful air pollutants.

35,058 tonnes of used tyres (three million tyres). Only about 20% of a tyre is natural rubber, the rest is derived from fossil fuels with harmful additives including Zinc Oxide and petroleum-derived carbon black. Incineration of used tyres can emit harmful air pollutants.

78,880 tonnes of municipal solid waste (MSW) which is waste from households, commerce and trade, offices and other institutions. It contains a wide variety of waste types, PVC, plastics, chlorinated products and items. Incineration of MSW can emit harmful air pollutants.

8,764 tonnes of Remediation MSW to be sourced from old landfills, which may also contain discarded chemicals and other hazardous substances.

This comes to a total of circa 166,500 tonnes of waste per year to be burned.

Over 35 years that would come to a cumulative total of 5,827,500 tonnes of waste.

Chlorinated materials that are common in MSW include chlorine-bleached Tetrapaks, chlorine-bleached nappies and chlorinated plastics such as PVC.

PVC is ubiquitous in MSW because it has been used in the manufacturing of a very wide range of common items including plastic containers, electrical cable insulation, flooring, signage, footwear and clothing, window frames, pipes, plumbing, packaging, medical devices, toothbrushes, toys, inflatables swimming pools, seating and sports equipment.

Many household cleaning products contain chlorine, including laundry detergents, dishwashing detergents, chlorine bleach, chlorinated disinfectant cleaners, mildew removers, and toilet cleaners. Plastic and cardboard containers that have had these materials in them are discarded as household waste items and usually contain some residual amount of chlorine. When large numbers of these items are aggregated in MSW, the quantity of chlorine present becomes large.

Chlorine is also used in the manufacture of many items that enter the MSW stream including unwanted herbicides and pesticides, flame-retardant compounds, used



batteries, discarded paints, metal fluxing, household bleaching agents, and bleached paper and cardboard.

For decades timber was treated in Aotearoa with Pentachlorophenol (PCP) as a preservative, up to the early 1990s. Discarded treated timber from household and garden repairs and demolitions can also enter the MSW stream. PCP itself was contaminated with dioxins and furans during its manufacture.

Burning all of these wastes will produce emissions that contain toxic chemicals and toxic metals including dioxins and furans, PFAS, sulphur dioxide, carbon monoxide, mercury, lead, cadmium, nitrogen dioxide and hydrogen chloride in an area immediately adjacent to houses, schools, medical facilities and food processing sites.

There is even the risk that the MSW burned contains or is contaminated with discarded banned agricultural herbicides and pesticides such as DDT, 245-T, aldrin, chlordane, dieldrin, endrin, heptachlor, hexachlorobenzene and other POPs; banned industrial chemicals such as Pentachlorophenol (PCP), hexachlorobenzene, and polychlorinated biphenyls (PCBs); and toxic by-products such as hexachlorobenzene; dioxins and furans (PCDD/PCDF), and PCBs.

The MSW would need to be systematically tested and screened to exclude these chemicals or by-products. The Applicant cannot rely on casual visual inspections by different individuals whose knowledge of these problem chemicals and by-products is likely to be variable.

When these other wastes are burned in the presence of plastics, they can form new toxic organochlorine compounds and contaminants such as dioxins and furans and PFAS forever chemicals.

The presence in MSW of many materials that are not readily combustible such as broken electronics, broken mirrors, broken kitchen appliances, glass, ceramics, rocks, stones, sand and soil can make it more difficult to burn, even if they are only present in relatively small pieces or fragments.

The presence of flame retardants in many materials such as discarded carpets, clothing, curtains and old furniture also mean these items are not readily combustible and contain PFAS forever chemicals.



The maximum predicted daily levels of NO2 of 70-92 μ g/m3 (including background concentrations of 16 μ g/m3) are nearly four times higher than the daily World Health Organization (WHO) guideline (25 μ g/m3).

The maximum predicted annual levels of NO2 of 19 μ g/m3 (including background concentrations of 4 μ g/m3) are nearly double the annual WHO guideline (10 μ g/m3).

The proposed waste incinerator would also produce 23 tonnes of ash per day, consisting of 21 tonnes of bottom ash and two tonnes of fly ash, both of which are hazardous because they are contaminated with toxic metals, dioxins and furans (the fly ash more so than bottom ash).

In June 1997, Greenpeace observed totally inadequate incinerator ash handling practices at a large medical waste incinerator in South Auckland (which closed down soon after). Large open sacks of dioxin-laden ash were left outside the main building, leaking onto the ground and into a nearby stormwater drain. Greenpeace also observed workers through open doors inside the incineration factory covered in black ash who were not wearing breathing masks or protective gloves.

Where the ash entered the drains, there was a black stain on the ground leading to the drain grate. From there the ash had gone into the stormwater system, causing dioxin contamination of the stormwater pipes and local waterways (Greenpeace activists shut down a South Auckland toxic waste incinerator, Greenpeace news release, 16 June 1997).

In Europe, waste incinerators have contaminated land and water downwind for many kilometres. In France, health authorities have issued warnings to millions of residents not to eat eggs from domestic coops in the Île de France region due to high levels of contamination "by persistent organic pollutants [POPs]" such as dioxins, furans, polychlorinated biphenyls and per- and polyfluoroalkyl substances (known as PFAS or forever chemicals). Tests by the ToxicoWatch Foundation in 2022 found very high levels of dioxins in domestic backyard chicken coops near the largest waste incinerator in Europe, located in Paris. Authorities have now carried out their own research in 25 farms and confirmed their initial warning. Similar findings of contaminated land have been recorded in China where large waste incinerators operate in or near various cities.

A recent report published by a BBC News investigative team shows that rubbish incineration is now the UK's dirtiest form of power and how waste-to-energy incineration produces the same amount of carbon dioxide emissions for each unit of



electricity as burning coal. It also produces more carbon dioxide than burning natural-gas fired or oil-fired energy generation (Burning rubbish now UK's dirtiest form of power, 15 October 2024, Esme Stallard, Matt McGrath, Patrick Clahane & Paul Lynch, BBC News: <u>https://www.bbc.com/news/articles/cp3wxgje5pwo</u>). The Applicant's proposal is worse than this because it would burn tyres, plastics and car flock with the MSW, hence it could have even higher carbon emissions than burning coal on its own.

Air emissions limit for dioxins and furans

Given that no safe dose has been determined for dioxins and furans, setting air emissions limits for them does not guarantee protection of the environment or human health.

As noted earlier, the Ministry for the Environment published a Proposed National Environmental Standards for Air Quality report in May 2004, which stated: "This dioxin standard applies to any new high-temperature incinerators burning wastes that are considered to be hazardous as defined in the Ministry for the Environment's proposed draft definition of hazardous waste (Ministry for the Environment, 2002b). The draft New Zealand hazardous waste definition is similar to that used by Environment Australia to enforce the Basel Convention. 'High temperature' is considered to include incinerators typically operating above 850 degrees Celsius.

The Ministry for the Environment originally proposed an emission limit standard for high-temperature incineration of 0.1 ng/m3 (Ministry for the Environment, 2001a). However, even this low standard is not a guarantee of protection. The remaining ash residue is also highly toxic and difficult to dispose of. Incineration is an obsolete technology for disposing of hazardous wastes and more environmentally friendly technologies are available. The Ministry considers that a more direct and efficient method of reducing emissions of dioxins is to control the activities that cause them, which is why we have put forward this proposal to ban new high-temperature incineration of hazardous waste."

(4.2.7 High-temperature hazardous waste incineration, page 30, Proposed National Environmental Standards for Air Quality, Ministry for the Environment, May 2004).

Greenpeace concurs that an emission limit of 0.1 ng/m3 is no guarantee of protection and that incineration is an obsolete technology for disposing of hazardous wastes, especially when there are better, less polluting technologies

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available. As the Ministry says in the report, a more direct and efficient method of reducing (and thus avoiding) emissions of dioxins is to control the activities that cause them, which is why they put forward the proposal to ban new high-temperature incineration of hazardous waste which the Government then adopted later in 2004.

Moreover, Greenpeace believes that the Applicant's proposed waste incinerator fits the definition of a high temperature hazardous waste incinerator used by the Ministry for the Environment.

For example, it proposes to burn wastes at high temperatures of 850 °C and above, including burning wastes that have some of the qualities set out in the Ministry's definition of hazardous wastes, such as wastes that contain infectious, eco-toxic, flammable and/or corrosive materials.

The Applicant's proposal also involves generating a tiny amount of electricity and recovering certain metals. Given that both of these can be achieved through other cleaner, less energy intensive and less polluting methods (renewable energy generation such as wind or solar and conventional non-incineration metals recycling), Greenpeace requests that the Commissioners recommend the consents sought be declined.

Toxic ash disposal

The Applicant has stated that the proposed waste incinerator would produce 23 tonnes of hazardous incinerator ash per day comprising 21 tonnes of bottom ash and 2 tonnes of fly ash. The Applicant has not supplied a detailed description of the hazardous toxic contaminants in the ash but it is well known that ash from waste incineration is a highly hazardous toxic substance that contains high concentrations of contaminants such as dioxins, furans, heavy metals etc.

Incineration ash was ranked in the top ten list of the most hazardous wastes in an assessment carried out by the Ministry for the Environment's Hazardous Waste Advisory Group in 1998. Given the types of waste the applicant proposes to burn, Greenpeace expects the concentrations of contaminants in the ash would exceed the waste acceptance criteria for New Zealand landfills.

Based on the precautionary approach, and the lack of a safe way to remove 100% of dioxins and furans from waste incineration ash, the consents sought should be declined.

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The Applicant originally said it plans to send the resulting toxic ash to the Hampton Downs Landfill, although no documentation was provided on this. That landfill reportedly has a leachate collection system. If the ash is accepted there, leachate collected from the part of the landfill where the incinerator ash is deposited could over time be contaminated with dioxins and furans and other contaminants from the ash.

The leachate is transported in underground pipes to tanks from where it is pumped to above ground storage tanks. From there it is transferred to a road tanker and driven to Manukau where it is "disposed of" in the municipal sewer (Investigation of brominated flame retardants present in articles being used, recycled and disposed of in New Zealand, Ministry for the Environment, 30 March 2021, in Appendix G: https://environment.govt.nz/publications/investigation-of-brominated-flame-retarda https://environment.govt.nz/publications/investigation-of-brominated-flame-retarda https://environment.govt.nz/publications/investigation-of-brominated-flame-retarda https://environment.govt.n

Once it has been discharged into the sewer, the leachate will flow to the Mangere sewage processing facility where any dioxins and furans and other contaminants present in the landfill leachate would end up in the settling pond sediment, the adjacent Manukau Harbour and mud flats (an internationally important site for migratory wading birds), and in the sewage sludge 'biosolids' that are transported to and deposited in the former quarrying site on adjacent Puketutu Island (What a waste: getting our poop sludge out of landfill, Nikki Mandow, Newsroom, 24 January 2023:

https://newsroom.co.nz/2023/01/24/what-a-waste-getting-our-poop-sludge-out-of-lan dfill/).



The Puketutu Island quarry site.



Ash use in concrete or roading

The Applicant states in Appendix M - 2.3.2 Plant Resource Outputs: "... the ash will be converted into concrete barriers which can be used on the grounds of the plant or on other industrial sites." and states in Appendix M - 4.2.2 GHG Generated: "... bottom ash ... may also be able to be used in construction applications such as roading or concrete."

This would involve mixing the dioxin-contaminated ash with cement to make concrete slabs of some description, but no measurements are given on how much ash would be mixed with cement to manufacture each slab of concrete, what the process would entail (including dealing with any waste or air emissions arising from it), or how any employees involved in this activity would be protected from dioxin exposure. Nor are further details given about the way the ash would be used in "roading".

The dioxins and other contaminants contained in that concrete would leach out over time, and then once the structures the concrete is used in are demolished, they will either go to landfill or be crushed and used for other purposes where the dioxins could leach out and contaminate the local environment and people.

The use of waste incinerator ash in "roading" could lead to contaminants leaching and contaminating the environment and people.

A 2022 study of waste incinerator bottom ash use in the European Union identified a list of 15 concerns for public health and safety:

- 1. Current standards for safety are outdated. In the EU, the use of bottom ash is inadequately regulated; rather there exists a hotchpotch of, at best, autonomic rules and guidelines, with many countries having no requirement for testing.
- 2. Bottom ash contains significant total concentrations of elements which are a 'high level of concern' based on EU REACH hazard classifications.
- 3. Bottom ash test methods have inconsistently prescribed total concentration values, with regulations only requiring the determination of a handful of toxic substances.
- 4. Bottom ash leaching test methods have inconsistently prescribed limit values, with regulations only requiring the determination of a handful of toxic substances.

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- 5. Bottom ash leaching test methods are not based on current science and underrepresent real conditions:
 - a. They consider short-term leaching only, with some toxic elements mobile after six years of experimentation.
 - b. They give spurious results due to pH buffering. This makes the sample appear to be more stable than it actually is.
 - c. They fail to consider the influence of humic matter, which is shown to accelerate leaching.
 - d. For bound applications they fail to consider the long-term effects of cement carbonation due to atmospheric CO2 uptake and weathering. This gives a false estimate of stability.
- 6. There is a likelihood of hazardous bottom ash export to countries with more lenient regulations.
- 7. The waste incinerator industry fails to mention the hazards associated with bottom ash in its 'fact sheets' and in permit/planning applications.
- 8. Microplastics are not destroyed by the incineration process, with up to 565 microplastic particles per kg of bottom ash.
- 9. PCDD/Fs [dioxins and furans] are present in bottom ash in larger volumes than in fly ash and in concentrations of ca. 3/5 that of fly ash. For bottom ash to be used as building aggregate, only one European country assesses for PCDD/F total concentration and no European country assesses for PCDD/Fs in leachate.
- 10. PBDE concentrations are an order of magnitude higher in bottom ash than in fly ash, and are not destroyed by the incineration process. No European country assesses for PBDEs in bottom ash to be used as a building aggregate, either with total concentration or leachate.
- 11. PCBs concentrate in bottom ash in quantities almost two orders of magnitude higher than in fly ash (taken by the mean), and they also leach from bottom ash in higher concentrations than fly ash. Only three countries in Europe assess for the total concentration of PCBs in bottom ash for use as a building aggregate, and none assess for PDBs in leachate.
- 12. PFASs accumulate at three times greater the total concentration in bottom ash than in fly ash. No European country assesses PFASs in bottom ash for use as a building aggregate either by total concentration or leachate.
- 13. The EU Best Available Techniques for bottom ash processing are outdated and do not represent current scientific knowledge:
 - a. Sieving/screening to remove smaller grain size fractions is not satisfactory, with many potentially toxic elements found in larger quantities in larger grain sizes. It leads to a higher risk of toxic dust exposure and airborne toxin dissemination.



- b. Weathering/ageing is not wholly beneficial. It can lead to higher toxin mobility and indirectly increase the hazard of bottom ash by binding more metals within the mineral fraction.
- 14. The bottom ash treatment industry is still at a fledgling stage and it is currently incapable of removing all metals. The presence of some, such as Aluminium, causes swelling and hydrogen release, along with a possible fire hazard in cement-bound applications over the long term. Even after treatment, Al is present in bottom ash in quantities liable to disrupt the structural integrity of cement-based (blocks and concrete) products over time, creating long-term risks associated with the use of these products.
- 15. Many independent studies showed that waste incinerators were not operating at a steady state in compliance with the Industrial Emissions Directive. This impacts not only on the capacity of waste incinerators to produce benign bottom ash, but also raises concerns about the efficacy of waste incinerator monitoring and policing.
- 16. (Toxic Fallout, Research Report January 2022, Author: Andrew Neil Rollinson, Editor(s): Janek Vahk, Ana Oliveira, Zero Waste Europe and Global Alliance for Incinerator Alternatives: <u>https://zerowasteeurope.eu/wp-content/uploads/2022/01/zwe_Jan2022_toxic_f</u> <u>allout_research_report.pdf</u>).

Incinerator ash used in the construction of pathways near allotments in the UK caused extensive dioxin contamination resulting in local residents in Byker, Newcastle upon Tyne, being warned not to eat any vegetables grown on their allotments (Dioxins found in allotments near incinerator, David Hencke and Sarah Boseley, The Guardian, 26 May 2000:

https://www.theguardian.com/uk/2000/may/26/davidhencke.sarahboseley).

As this shows, the dioxins and other contaminants in the incinerator ash does not disappear by sending it to landfill or by adding it to concrete or using it as a roading construction material.

Section 17 of the RMA stipulates that adverse effects must be avoided, remedied or mitigated, irrespective of the benefits of the proposed activity.

The only way to avoid the significant adverse effects of the hazardous toxic contaminants from the Applicant's proposed waste incinerator is for the consents sought to be declined.



Air emissions and ash testing

Requiring a couple of pre-scheduled annual air emissions tests and ash tests would be woefully inadequate because they would form such a tiny data set and could potentially be gamed by manipulation of the feedstock and ramping up the burn temperature in the period before and during each test.

How could the consenting authority be confident in knowing whether the incinerator is exceeding the levels set in any consents for the rest of the time?

That requires continuous real-time testing of air emissions and ash, which cannot easily be manipulated.

The Senate of the US State of Oregon's bill number 448 requiring continuous monitoring of toxic emissions from waste incineration facilities passed into law with the governor's signature on 4 August 2023: https://www.oregon.gov/deq/mm/Documents/SB488Implreport.pdf

Emissions that must be continuously monitored include dioxins and furans, carbon monoxide, sulphur dioxide, nitrogen oxides, lead, mercury and arsenic: <u>https://www.wastedive.com/news/oregon-incinerator-emissions-law-sb-488-covanta-marion/689838/</u> and <u>https://www.energyjustice.net/or/sb488</u>

If consents are granted, the Applicant should be required to provide continuous real-time testing of air emissions and ash at least in line with those in the State of Oregon.

Fire and flooding risks

There is a risk of a serious prolonged fire and/or explosion at a site where so much combustible hazardous material is stored (including diesel) and such high temperatures are required to be sustained to burn that waste.

We have cited the example of the 1984 ICI fire in Auckland. A more recent example is the car yard fire in Auckland which occurred during the night of 1 December 2024. That required 19 fire appliances, caused explosions, and created a large plume of toxic smoke:

https://www.1news.co.nz/2024/12/02/large-car-scrapyard-fire-contained-in-auckland <u>s-takanini/</u> and



https://www.rnz.co.nz/news/national/535368/explosions-heard-as-large-fire-breaks-o ut-in-south-auckland

Another relevant example of the hazards of waste incineration is the massive fire at the Doral waste to energy incinerator near Miami in Florida, USA, which broke out on 12 February 2023. Fire fighters were unable to control the fire for two weeks, so it burned continuously for nearly three weeks, and resulted in smoke containing toxic contaminants. The incinerator building burned to the ground and the fire severely contaminated the surrounding community and environment (The Doral Incinerator Fire, Documenting health risks and environmental hazards during the three-week fire at the Miami-Dade County waste incinerator in February to March of 2023, Dominique Burkhardt, Senior Attorney; Emma Rimmer, Litigation Assistant; and Bala Sivaraman, Public Affairs and Communications Associate, Earthjustice, USA, June 2023:

<u>https://earthjustice.org/wp-content/uploads/2023/05/20230531_doral-incinerator-fire</u> <u>-report3.pdf</u>).

Te Awamutu is served by a volunteer fire department, and the region reportedly does not have the capacity to address a significant fire with explosions involving so much hazardous material and toxic smoke.

These examples demonstrate how disastrous an on-site fire could be at the Applicant's proposed waste incinerator, involving diesel fuel, car flock, plastics, tyres and MSW.

A plume of thick toxic smoke could pose a serious threat to the health of on-site employees, and could be blown towards adjacent workplaces and residential housing.

This also raises the question of what fire-fighting equipment would need to be maintained on-site and the level of training that employees should be required to have.

Another question is, where would any contaminated fire-fighting foam or water end up, and if it reaches the adjacent Mangapiko Stream, what would the effect be on freshwater fish and other aquatic life?

If smoke from a fire were to be blown over the adjacent milk processing factory it could potentially harm or injure employees there or contaminate milk products,



which could give cause for the factory to be closed down for a period of time to allow for clean-up and toxicity testing, which could impact the local economy.

Airborne contaminants could also be deposited on local farmland and impact on stock and future grazing. For example, following the Chernobyl nuclear accident in the Soviet Union in April 1986, sheep farms in parts of the UK thousands of kilometres were banned from selling their meat for years due to radioactive contamination of farmland that was blown there from the Chernobyl reactor meltdown in Ukraine. Dioxin contamination of local farmland near Te Awamutu could in turn affect the local economy and the reputation of local produce.

Accidents happen

In 1992, Greenpeace publicly called for the Fukushima nuclear power station to be closed down because it was built on an earthquake fault line on a coastline prone to tsumanis. Those concerns were dismissed by Tepco, the power station operator.

In 2001 a large earthquake and tsunami resulted in electrical grid failure and damaged nearly all of the Fukushima power station's back-up electricity sources. The inability to sufficiently cool the high temperature fuel rods in the power station's nuclear reactors led to a triple reactor meltdown that breached containment and resulted in the release of massive amounts of radioactive contaminants into the surrounding environment.

The operator and the authorities were both powerless to stop the triple meltdown from starting once the power was cut, and the reactor meltdowns then proved extremely difficult to stop.

The accident was rated seven (the maximum severity) on the International Nuclear Event Scale by the Nuclear and Industrial Safety Agency. It is regarded as the worst nuclear accident since the nuclear meltdown at the Chernobyl nuclear power station in the Soviet Union in 1986, which was also rated seven on the International Nuclear Event Scale.

Since then, the Fukushima nuclear power station has been disabled. In the immediate aftermath of the disaster, 150,000 local residents had to be evacuated. Since then, an estimated US\$82 billion has been spent dealing with the aftermath of the disaster, including compensation and clean up.



The obvious conclusion in hindsight is that the authorities should never have approved the construction of a nuclear power station at that site in 1971, and Tepco should have heeded the concerns that Greenpeace raised in 1992 and closed it down then.

The chance of a catastrophic accident involving fire at the Applicant's proposed waste incinerator site may be relatively small but the potential consequences and costs could be very large. If the incinerator and associated buildings were to be badly damaged in a fire and the company put into liquidation, the Crown could be left to pay for and organise clean-up and remediation.

The Applicant's proposed site is subject to 'severe flooding risk' which makes it unsuitable for such a hazardous site.

The Insurance Council of New Zealand has strongly urged the government to stop allowing new building on floodplains due to the inevitable flooding brought on by climate change ("Building in flood-prone locations needs to stop, insurer IAG says", August 17, 2022).

A severe flood could risk the release of hazardous wastes and toxic ash into the environment, and could potentially lead to an accidental fire and/or explosion, and the discharge of toxic smoke and fire-fighting water into the local environment.

This warrants a requirement for the highest level of safety measures to be put in place and the presence of adequate hazardous fire-fighting clothing and equipment on-site.

Compliance history

The Applicant is a subsidiary of Global Metal Solutions Limited (GMSL). In 2022, GMSL was reportedly ordered to pay \$134,900 to Hamilton City Council in respect of enforcement order proceedings that were initiated by Hamilton City Council to deal with the impact of noise (including persistent breaches of the noise limits in the Hamilton City District Plan) from its metals recycling business.

Insufficient information



Greenpeace rejects the Applicant's assertion that any effects from its waste incinerator will be "no more than minor" and considers that the information (and further information) provided by the Applicant is incomplete and falls far short of what is necessary.

The Applicant's human health risk assessment references but then ignores for assessment purposes the WHO ambient air quality guideline for PM2.5, NO2 and SO2.

The Applicant's air quality assessment does not include some pollutants as part of its cumulative assessment, notably dioxins, hydrogen chloride, hydrogen fluoride and mercury.

For an application of this scale and cost, and for such hazardous ongoing activities involving hazardous wastes and emissions, a more comprehensive set of assessments, proposed detailed consent conditions and draft management plans should have been prepared by the Applicant.

This lack of adequate information provides no confidence to Greenpeace as to how all operations and hazardous wastes and substances will be managed safely and effectively on an ongoing basis, should the consents sought be granted.

Liability for site contamination

There is a history of the Crown having to pay to decontaminate and remediate hazardous toxic contaminated sites in New Zealand, such as the Tui gold mine site in the Waikato and the Mapua NZ Fruitgrowers site near Nelson where there was severe toxic contamination.

A deadly legacy

The Tui mine on Mt Te Aroha in the Waikato was abandoned after the mining company Norpac Mining went bankrupt in 1973, leaving a toxic contaminated site that the Crown and taxpayers had to pay to clean up. The company had mined copper, lead and zinc sulphides there from 1967-73, and left large-scale toxic zinc and cadmium contamination. Initially the Crown allocated \$9.88 million for the site to be remediated in 2010. That increased to \$21.7 million at the completion of the remediation of the mine site in 2013 (Lessons to be learnt from toxic legacy, Aaron



Leaman, Waikato Times, 2 May 2013:

<u>https://www.stuff.co.nz/waikato-times/news/8621609/Lessons-to-be-learnt-from-toxi</u> <u>c-legacy</u>).

Another example of this was the agricultural chemicals formulation site at Mapua near Nelson.

The large NZ Fruitgrowers Company chemicals formulation site in Mapua which operated into the 1980s was heavily contaminated with toxic herbicides and pesticides including DDT and 245-T. After the company was broken up in the 1980s and sold to other businesses, liability for site contamination became contested. After lengthy and messy litigation, the Crown ended up having to pay for most of the multi-million dollar clean up two decades later. In the meantime, the local community had to live with the reality of toxic contamination leaking into the local environment and coastal waters (Investigation into the remediation of the contaminated site at Mapua, Parliamentary Commissioner for the Environment, 4 June 2008:

https://pce.parliament.nz/publications/archive/2007-2010/investigation-into-the-rem ediation-of-the-contaminated-site-at-mapua/).

Another sector that has left a legacy of toxic contaminated sites is the timber treatment industry. The Waipa saw mill had severe PCP contamination because thousands of tonnes of PCP were used there before it was banned in 1991.

In 1992, the Crown owner of the Waipa saw mill, the Forestry Corporation, agreed to pay \$3 million to treat affected groundwater, soil and waterways in the area. The contamination occurred after huge quantities of PCP treated timber were produced and used in building construction and fencing etc over decades. Any PCP treated timber burned in the Applicant's incinerator will produce dioxins (Assessment of Dioxin Contamination at Sawmill Sites, A Report to the Ministry for the Environment, Tonkin & Taylor Ltd and SPHERE, October 2008: https://environment.govt.nz/assets/Publications/Files/assessment-dioxin-contamina tion-sawmill-sites-2008-10.pdf and, Timber mills leave legacy of poison, 30 June 2000, Melissa Moxon, NZ Herald: https://www.nzherald.co.nz/nz/timber-mills-leave-legacy-of

poison/GHPUHW5QACJYZC5SMUPDCPMSKE/).

An even more expensive example is the Tui oil field off the Taranaki coast. In 2016, Tamarind Resources purchased 57.5% interests in the oil field but by 2019 the company was declared bankrupt and collapsed, leaving the Crown with a \$300

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million bill for safely removing the subsea infrastructure back to shore and safely decommissioning it there.

At the time that Tamarind Resources collapsed, Greenpeace was critical of the company for its failure to decommission the Tui oil field and for shirking its responsibilities by allowing its subsidiary to go into liquidation leaving it absolved of responsibilities.

Most New Zealanders would see it as a bare minimum that companies are required to cover the cost of cleaning up after themselves.

This is another reason why Greenpeace requests that if consents are granted, the Commissioners recommend including a clause prohibiting the on-sale of the consents by the Applicant. That would help to prevent a new owner leaving an orphaned contaminated site that the Crown and taxpayers have to pay to clean up and remediate.

Posting a bond and company liability

Given the very large amount of hazardous wastes to be burned and toxic contaminants that will arise from that incineration, there is the potential for severe contamination arising from the Applicant's proposed waste incinerator. This could result from poor ash handling and management, contaminated surface run-off, and/or the ongoing accumulation of toxic contaminants in soils and sediments both on-site and at adjacent properties and waterways.

This in itself should give pause for thought about the potential for the creation of another contaminated site that the Crown might in future need to pay to clean up.

In the event of consents being granted, the Applicant should be required to post a bond in the range of \$10-20 million to be held by the Crown. This would help ensure that the Crown would not in future need to pay for a clean-up in the event that the site is found to be contaminated and Applicant goes into liquidation.

The directors and chief executive of the Applicant's company should also be held directly liable as a condition of any consents issued, so if they fail to exercise due diligence to ensure the company complies with the conditions set out in any consents, they can be held financially and legally liable, including for site



contamination. This would be consistent with health and safety legislation on the person conducting a business or undertaking (PCBU).

Waste minimisation and zero waste policies and strategies

Greenpeace's earlier submission on the consents being sought by the Applicant which set out substantive points about waste minimisation and zero waste policies is appended with this submission to the Board of Inquiry.

In summary, the goal of New Zealand's national waste strategy looks for ways to recover value from waste without increasing emissions. The Applicant's proposal does not fit with this waste strategy.

Incinerators lock-in the production of waste because the capital costs are so high, and the requirements for waste 'feedstock' are constant that they must maintain supply, often locking-in councils to waste contracts that are directly contrary to waste minimisation goals.

Various studies have shown that overseas waste to energy incinerators burn mostly recyclable or compostable waste. In New Zealand, council analyses of the average household rubbish bag repeatedly reveal that most of what is thrown out is recyclable or compostable. Incinerating materials that can be recycled or composted violates the waste hierarchy, is energy inefficient, and represents a loss of resources and a massive opportunity-cost to the government and society.

Zero waste solutions

Investing in zero waste policies and strategies that create a circular economy is a better approach to waste reduction and sustainable resource recovery than waste incineration.

For example, zero waste hubs can reduce waste and recover resources without burning them. Collections of organic food waste and organic garden waste can be composted to reduce the amount sent to landfill where it would decompose and release methane. Recycling schemes are easier, cheaper, and faster to establish, require less money to build, and also employ far more people than waste incinerators.



Phasing-out fossil-fuel derived plastics and the implementation of a nationwide container deposit scheme would be far more effective and efficient at reducing plastic waste in Aotearoa than collecting ever-more single-use plastic bottles and burning them in polluting waste incinerators.

Length of consents

The maximum period for resource consents under the RMA is 35 years. Greenpeace does not support 35 year consents because they lock-in the emissions for too long.

If long-term consents are granted, there is an expectation they would include conditions that anticipate environmental norms, standards and regulations over the same time period. So, if 35 year resource consents were to be approved in 2025, they would be valid until 2060, by which time Aotearoa will be a low to zero carbon economy.

Also, there would need to be regular public reviews to assess compliance and to consider the need for new or more stringent consent conditions. The current budget period for reducing New Zealand's GHG emissions runs to 2030. That would be a suitable time to review any consents issued in 2025, and to set a new review period.

Nick Young, Greenpeace Aotearoa Inc.

