Submission No 208

INQUIRY INTO PROPOSED ENERGY FROM WASTE FACILITIES

Name: Ms Nicole Blinco

Date Received: 30 October 2025

Submission to the NSW Legislative Council Select Committee on Proposed Energy from Waste Facilities

Dear Honourable Members,

I appreciate the opportunity to make a submission to the inquiry into proposed energy from waste facilities. I am a resident of Forbes, NSW, and have several close family members and friends who live in Parkes. I am a qualified engineer, with a degree in Renewable Energy Engineering (Research & Development) from the Australian National University, and I have a background as a project engineer in thermal power generation. While I don't have any specific experience in the EfW industry, I have a level of technical literacy that enables me to understand and assess the merits of EfW technology and the EPA EfW policy approach.

I believe there are numerous issues the overall EfW regulatory framework in NSW that require urgent attention. In this submission I will focus on just four:

1. The failure of the EPA's EfW policy to meet or exceed world's best practice, while being advertised as having the most stringent emissions standards in the world
2. The lack of genuine community consultation prior to policy changes that affect rural and regional communities
3. The failure to address critical findings raised in the Public Health Association of Australia's systematic review of the health impacts of waste incineration (Tate et al.) and findings of other relevant studies
4. The failure of the NSW State Government to meaningfully address the root cause of the waste crisis

This submission will expand on each of these points and provide supporting evidence and references where available. Please note that throughout this submission I use the general term 'EfW facilities', but in most cases I am specifically referring to thermal power plants that use waste incineration to recover energy, such as the facility proposed by the Tribe Consortium for development in Parkes.

Kind regards,

Nicole Blinco

Dioxin and Furan Emission Standards

Note on Best Practice: In this submission, I use 'best practice' to refer to the European 'Best Available Techniques' (BAT) Reference Document for Waste Incineration.

Note on Units: I have used the units 'ng/m^3' interchangeably with 'ng I-TEQ/Nm^3'. I understand they are technically different. I-TEQ weights each dioxin and furan variant based on its toxicity relative to the most toxic one (TCDD). Nm^3 (as opposed to m^3) adjusts the gas volume to standard conditions (0°C and 101.325 kPa) to make measurements comparable across time and location. ng I-TEQ/Nm^3 is the more commonly accepted, 'correct' unit to use to measure dioxin and furan concentrations, and I assume this will ultimately be used by EfW plants in NSW. However, NSW EPA Policy uses ng/m^3.

Emissions Monitoring

EPA Policy requires EfW plants in NSW to measure dioxin and furan (also referred to as PCDD/F) emissions four times in the first year of operation, and twice per year after that [1]. The sampling period is unclear, but commonly accepted test methods use a 6-8 hour sampling period [2]. This is known as 'short-term sampling' or 'periodic sampling'

The NSW EPA Policy falls below the BAT standard (BAT 4) which calls for monthly sampling with a sampling period of 2-4 weeks (known as 'long-term sampling'). The BAT then recommends moving to short-term sampling *only if* emissions are proven to be sufficiently stable [2].

The NSW EPA decision is based on an independent expert review by authors from the University of Sydney, who claimed that the results from short-term and long-term sampling 'do not differ significantly' [3]. This is an interpretation of a European study, but I am concerned the interpretation may be flawed. The European study compared emission levels measured with short-term and long-term sampling, with data from 142 reference lines in Belgium and France. The study found that there is little difference between the two sampling methods when measuring *low levels of PCDD/F emissions*, but found that *high PCDD/F emission levels* were more likely to be measured by long-term sampling [3]. The table below summarises the findings, which are detailed in Annex 8.9 of the BAT document.

Table 1 Equivalent PCDD/F emission measurements, as detailed in Annex 8.9 of the BAT document

Short-term sampling value (ng I-TEQ/Nm^3)	Equivalent long-term sampling value (ng I-TEQ/Nm^3)
0.01	0.01
0.04	0.06
0.06	0.08

Long-term sampling is able to capture emissions data during different operating conditions. PCDD/F are more likely to be emitted at high levels during non-steady state operation, especially during cold start-up when combustion is incomplete and the temperature conditions are ideal for PCDD/F formation [2].

Periodic, short-term sampling does not capture this, because it is undertaken during steady-state operation in normal operating conditions, when PCDD/F emissions are lower and more stable. The French data from the above-mentioned European study reported a correlation between elevated values obtained by long-term sampling measurement and the number of start-ups/shut-downs occurring in the time period during which the sampling was performed [3].

A study on an Energy from Waste Plant in the Netherlands found that significantly higher PCDD/F emissions were recorded using continuous, long-term sampling. Short-term sampling carried out over the same time period did not identify these [4].

The independent expert reviewers justified their recommendation for twice per year, short-term testing in NSW by saying that it 'is appropriate for emerging EfW industry in Australia, as it ensures strict guidelines to be complied with while allowing industry to install a simpler testing method' [3]. This reasoning, and the possible erroneous interpretation of the available data, suggests that the independent expert review was written for the benefit of industry, not as an impartial analysis of best practice standards.

Emissions Limits

The best practice emissions limits for dioxins and furans are found in BAT 30 (see Figure 1), which gives different emissions limits for:

- Existing plants and new plants
- Short-term sampling and long-term sampling
- PCDD/F and PCDD/F + dioxin-like PCBs

Table 5.7: BAT-associated emission levels (BAT-AELs) for channelled emissions to air of TVOC, PCDD/F and dioxin-like PCBs from the incineration of waste

Parameter	Unit	BAT-AEL		Averaging period
		New plant	Existing plant	
TVOC	mg/Nm^3	< 3–10	< 3–10	Daily average
PCDD/F (1)	ng I-TEQ/Nm^3	< 0.01–0.04	< 0.01–0.06	Average over the sampling period
		< 0.01–0.06	< 0.01–0.08	Long-term sampling period (2)
PCDD/F + dioxin-like PCBs (1)	ng WHO-TEQ/Nm^3	< 0.01–0.06	< 0.01–0.08	Average over the sampling period
		< 0.01–0.08	< 0.01–0.1	Long-term sampling period (2)

(1) Either the BAT-AEL for PCDD/F or the BAT-AEL for PCDD/F + dioxin-like PCBs applies.
(2) The BAT-AEL does not apply if the emission levels are proven to be sufficiently stable.

Figure 1 BAT emission standards for dioxins and furans

Note that the emission standards provided by the BAT distinguish between those measured with long-term sampling and those measured using short-term sampling, in a manner that is consistent with the findings summarised in Table 1 of this submission For example, an AEL of 0.04 ng I-TEQ/Nm^3 measured with short-term sampling corresponds with an AEL of 0.06 ng I-TEQ/Nm^3 measured with long-term sampling.

The emission limit that is most relevant for comparison with the NSW EPA Policy limit is the AEL for *new plants*, using *short-term sampling*, and *only measuring PCDD/F*. The upper end of this limit is 0.04 ng I-TEQ/Nm^3. The NSW EPA Policy limit is 0.1 ng/m^3, *more than double* the best practice limit.

The independent expert review report erroneously listed the BAT emission limit as '0.01-0.1 ng I-TEQ/Nm^3' in Table 1-2 [3]. As shown in Figure 1 (Table 5.7 of the BAT document), this is the emission limit for *existing plants*, using *long-term sampling*, *measuring PCDD/F + dioxin-like PCBs*. The review then concludes that the NSW EPA limit of 0.1 ng/m^3 is equivalent to the most stringent, 'best practice' limit.

EPA explanation

The EPA came close to addressing this issue in its consultation report on proposed changes to the NSW Energy from Waste Policy in 2021. The report dismissed concerns about emissions limits not being stringent enough, and recommended that *'a significant degree of caution be applied when comparing numerical emission limit values, including comparing emission standards across jurisdictions'*. The report goes on to give examples of factors that make direct comparison difficult. These factors include:

- *units of measure*
- *limit percentiles*
- *averaging periods*
- *reference conditions (temperature, pressure, reference gas correction, etc.)*
- *monitoring requirements*
- *allowable exceedances or statistical analysis applied to a standard*
- *treatment of monitoring data – including allowance for monitoring uncertainty*
- *jurisdictional discretion imbedded in the regulations*

I agree that all these factors may complicate a direct comparison between emissions standards, such as those found in the BAT document and those in the EPA's own EfW Policy. However, Office of the Chief Scientist and Engineer's report and the report of the independent reviewers both treat the EU BAT limits and the NSW EPA limits as directly comparable. Neither report provides any explanation or justification as to why 0.1 ng/m^3 (rather than 0.04 ng/ m^3) is equivalent to the most stringent emissions standard for dioxins and furans.

The EPA's consultation report then further explains that direct comparison is necessarily appropriate because the EU's Industrial Emissions Directive *'is not rigidly prescriptive on the application of EU BAT level(s) including long term levels and allows the local permitting authority some discretion in setting permit conditions that derogate from the BAT conclusions.'* This provides a convenient 'out', allowing the EPA to claim that it has the most stringent emissions standards in the world, as the most stringent emissions standard in the world are not 'rigidly prescriptive'.

Summary

I believe that the EPA's EfW policy does not align with world's best practice in relation to dioxin and furan emission standards, which is a matter of significant concern for our community. This discrepancy raises broader questions about whether other aspects of the policy may also fall short of international benchmarks. I have not yet had the opportunity to explore any of the other technical areas in depth, but this issue alone suggests a need for further scrutiny. I have attempted to seek clarification from Professor Abbas regarding these concerns, in case I made a mistake in my interpretation of the literature, but I have not received a response. I have also made several attempts to get into contact with The Hon Penny Sharpe MLC and the EPA to discuss these concerns, these attempts are still in progress.

I respectfully ask that the Select Committee:

1. Seeks clarification from the Chief Scientist, and/or Professor Abbas, on whether there was an error in the assessment of best practice dioxin and furan emissions limits and monitoring methods
2. Recommend an independent third-party review of the original independent expert assessment to ensure the EPA EfW policy and framework is impartial, evidence-based, and aligned with international best practice in all technical areas
3. Recommend that the EPA:
    a. Lower the emission limit for dioxins and furans to 0.04 ng/m^3
    b. Update its monitoring standards to require long-term sampling of dioxins and furans until emission levels have been proven to be sufficiently stable

Table 2 Summary of discrepancies between BAT standards and NSW EPA Policy in relation to dioxin and furan emission monitoring

Emission limits and monitoring for dioxins and furans in waste incineration plants	**NSW EPA Energy from Waste Policy Statement, 2021**	**Best Available Techniques (BAT) Reference Document for Waste Incineration, 2019**
Emission limits **Dioxins and furans** **PCDD/F**	0.1 ng/m^3	For <u>new</u> plants <0.01-0.04 ng I-TEQ/Nm^3
Emission monitoring frequency	Every three months for the first 12 months of operation. Two measurements per year after that.	Once every month, until emission levels have been proven to be sufficiently stable.[1]
Type of sampling and sampling period	Short-term sampling (sampling period unclear, possibly 6-8 hours)	Long-term sampling (sampling period 2-4 weeks), until emission levels have been proven to be sufficiently stable.[1]

[1]After emissions have been proven to be sufficiently stable short-term monitoring still applies (once every six months, 6-8 hour sampling period)

Lack of community consultation

The Parkes Special Activation Precinct (SAP) has apparently been destined to host an EfW facility since its inception. Early planning documents refer to ‘energy recovery’ and ‘resource recovery’ as key industries to be developed in the SAP but mostly avoid using the word ‘incineration’ directly. Expressions of interest to develop an EfW facility were opened by the NSW Government in November 2020. In July 2022, changes were made to the Protection of the Environment Operations (General) Amendment (Thermal Energy from Waste) Regulation 2021 to ban the thermal treatment of waste to recover energy throughout the state, except in four regional precincts. A consultation process on the draft regulation was held from February to March 2022. However, this consultation process did not include meaningful community engagement, particularly with residents of the four nominated regions. In late March this year that there was a public announcement that Parkes Energy Recovery had been awarded a contract to develop an EfW facility in the SAP. This was the moment when our collective community of Parkes and Forbes became aware of the plan for the facility and of Parkes’ status as one of the four exceptions to the statewide ban on waste incineration.

I have corresponded with the EPA on this issue and have been informed that consultation opportunities were provided through the ‘Have Your Say’ portal, targeted stakeholder correspondence, and digital communications. However, based on my own research and conversations with others in my community it is clear these measures were insufficient to ensure genuine community awareness and engagement.

The typical member of the public does not routinely visit the EPA’s ‘Have Your Say’ portal to check for issues that may affect them. The use of portal does not represent proactive and effective community outreach. I have not been able to find a single social media post from the EPA promoting the 2022 consultation process, nor were there any news articles or other publicly available announcements informing affected communities of the proposed changes to the regulation in plain language. Where such announcements were made by local councils or local media organisations, they used alternative terms for waste incineration, such as ‘resource recovery’ or ‘energy recovery’. These terms are not recognisable to the average person as referring to waste incineration, and our community therefore remained unaware and unconcerned.

As a resident of an area now affected by this, I was not made aware of the consultation process at the time. Nor were my family, friends, neighbours or local community members. The failure to adequately promote the consultation process through widely accessible channels, such as social media, local print media, community noticeboards, radio, or direct mail to residents in relevant postcodes, meant that large segments of the population were effectively excluded from participating. There also appears to have been no effort to hold public information sessions or forums in potentially affected areas, despite the high level of public interest such a policy understandably generates.

To gauge awareness within my own community, I conducted an informal Facebook survey asking whether residents of Parkes had heard about the 2022 policy change at the time. Of the 100 respondents, only one person indicated that they had been aware of it. The remaining 99 had not heard anything about the proposed policy change or its implications for the Parkes region. This lack of awareness is deeply concerning and strongly suggests that the EPA’s consultation methods did not reach a broad or representative cross-section of the public. I understand that my survey does not constitute robust, scientific research, but it at least provides a broad indication of the effectiveness of the 2022 consultation process.

This same pattern was repeated earlier this year with residents near Tomago, a region that was proposed to replace the Richmond Valley as one of the four EfW precincts. The EPA did not make any meaningful attempts to consult with residents of the Newcastle, Port Stephens or Maitland areas during the consultation period that ended in May. I could not find a single news article or social media post from the EPA, local councils, local media or other local groups in the areas around Tomago. I also could not find any publicly available information from the proponent of the Tomago EfW project, Remondis.

During the consultation period in May this year I sent emails to local, state and federal representatives in all areas surrounding Tomago, asking that they ensure their constituents were made aware of the consultation process and had the opportunity to participate. I received one response, from the office of the Honourable Kate Washington MP, Member for Port Stephens. In that response, I was informed that *'the public consultation process has been conducted through the EPA's website, in line with standard practice. There is no specific obligation for local Members of Parliament to separately promote this consultation on social media or through other channels'*.

While I understand that there is no specific obligation for MPs to promote the EPA's consultation processes, I would expect that there is a general obligation for MPs to represent the interests and concerns of their constituents, and to be proactive about public engagement where there are issues that may affect the local community. The EfW policy is within the state government's jurisdiction, and the legislation that enshrines it is a matter that MPs have the direct ability to influence. It was disheartening to hear such a dismissive response from the Member for Port Stephens, particularly given the significance of this policy change and the potential long-term impacts on the region.

Summary

Key regulatory changes in relation to EfW policy have been introduced quietly, designating regional communities as hosts for controversial waste incinerator projects. This shift has been made despite the state government's and the EPA's clear awareness of the widespread and sustained public opposition to previous proposals (such as the Eastern Creek Energy from Waste Facility and the Matraville incinerator project). The manner in which these changes were made suggests a deliberate avoidance of public scrutiny. While this process may have been legally compliant, it certainly does not pass the 'pub test'.

With respect to community consultation and engagement, I ask the Select Committee to:

1. Call on the EPA to carry out meaningful and proactive community consultation in the Parkes, Lithgow, Goulburn and Newcastle/Port Stephens regions in relation to EfW policy, so that members of the public can ask questions, raise concerns and contribute in a meaningful way to the decision-making process
2. Request clarification from the EPA on the process through which the four precincts were nominated, and the reasons they were nominated

3. Scrutinise the methodology used for the public consultation processes to date, including how engagement channels were selected, and require the EPA to explain why that approach was chosen over more transparent or publicly accessible alternatives.

Public health concerns

The EPA's Energy from Waste policy does not adequately address growing concerns about the potential health impacts of waste incineration, particularly in agricultural areas like Parkes. There is a notable gap between what is currently required under the NSW regulatory framework and what would constitute a genuinely precautionary, health-protective approach aligned with international best practice.

The Public Health Association of Australia (PHAA) recently published a landmark systematic review of the health impacts associated with waste incineration technologies [6]. This world-first review found significant associations between proximity to waste incinerators and a range of adverse health outcomes, including neoplasia, congenital anomalies, infant mortality, and miscarriage.

Importantly, the PHAA review noted that a precautionary approach is required for modern incinerator technology, because newer facilities may not have been operating for long enough for adverse effects to emerge. In light of this, the PHAA recommends against locating new incinerators near areas of food production, and consuming food grown in proximity to waste incinerators. It also recommends that 'independent third-party conducted baseline population studies and long-term surveillance cohort studies be mandated to measure the longitudinal and emerging effects of the incinerator's presence on the local community and the environment' as a condition of applying for a licence to build a waste incinerator.

Despite these findings, the current policy and regulatory framework in NSW does not require proponents to undertake baseline or ongoing population health monitoring, even for developments located in agricultural communities. In the case of the Parkes proposal, for example, there is currently no requirement for the operator to conduct health surveillance, ambient air quality monitoring, or biomonitoring of soils, crops, or livestock, either before or after the plant begins operation. Without this data, it is impossible to determine whether the facility is having adverse effects on human health or the surrounding environment.

The omission of ambient and biomonitoring requirements and the weak alignment with international emissions standards point to a concerning regulatory gap. These shortcomings are particularly troubling given that emissions from waste incinerators are known to contain persistent organic pollutants (POPs) such as dioxins and furans. These substances bioaccumulate and can pose long-term risks to health and food safety. I am concerned that weak emissions data and lack of biomonitoring could lead to serious adverse health effects as a result of the accumulation of POPs in the Parkes environment over the anticipated 40 year operational life of the proposed waste incinerator facility.

Studies in Europe, including in France and the Netherlands, have found unsafe levels of these compounds in eggs from backyard chickens kept near incinerators, prompting public health authorities to advise residents to avoid consumption [7,8].

While the EPA currently relies on proponents to submit a Human Health Risk Assessment (HHRA) as part of the development approval process, this approach is inadequate on its own. The EPA should establish mandatory, standardised requirements for health protection measures for all EfW facilities, rather than determining these on a case-by-case basis according to what is proposed in a proponent's HHRA. It should not be left solely to developers to suggest or define how health risks are assessed or managed.

Finally, while the NSW Government and the EPA have stated that the current policy is guided by the precautionary principle (for example by excluding facilities from metropolitan areas) that principle appears to have been inconsistently applied. If such facilities are deemed too risky to be located near high-density populations in Sydney, it is unclear why they are considered acceptable in regional communities like Parkes, which may have limited resources to monitor, manage, or respond to potential long-term impacts.

In relation to public health concerns, I ask that the Select Committee calls on the EPA to:

1. Adopt the policy and regulation recommendations of the PHAA study
2. Require EfW facility proponents to fund ambient air quality monitoring, biomonitoring and population health monitoring as a condition of applying for a licence to operate
3. Mandate a minimum distance that EfW facilities can be built from any residential areas and areas of agricultural production

I also ask the Select Committee to consider whether it would be appropriate for SafeWork NSW to implement workplace exposure standards for dioxins and furans and/or requirements for health monitoring for workers at EfW facilities within the WHS regulatory framework.

Addressing the NSW waste crisis

Regardless of the specifics of the EPA's EfW policy, regardless of what emissions limits are selected, or which regions are forced to host these facilities, I disagree with the principal of waste incineration as a solution to the state's urgent waste crisis. We simply cannot solve this problem by burning rubbish. Waste-to-energy incineration does nothing to address the root causes of excessive waste generation. Incineration should always be a last resort in the waste hierarchy, used only when all practical options for avoidance, reuse, and recycling have been exhausted.

By locking the state into long-term incineration infrastructure, the government effectively guarantees a continued supply of waste for decades to come. EfW facilities require vast, predictable waste volumes to continue operating, creating an incentive to maintain or even increase waste generation rather than reduce it. This approach directly contradicts the principles of a circular economy and risks undermining public and private investment in genuine waste reduction, reuse, and recycling initiatives.

The scale of the waste problem in NSW reflects structural, economic and cultural issues in the way products are designed, marketed, and consumed. Modern supply chains are dominated by single-use plastics, excessive packaging, and low-cost products with limited durability or repairability. Convenience continues to outweigh sustainability. At the same time, there are few incentives or accessible services to support repair, reuse, or resource recovery.

The lack of incentives and services for upstream reduction of waste is evident in the NSW Government policies and strategies, such as:

- Waste and Sustainable Materials Strategy 2041
- NSW Plastics Action Plan
- Waste and Circular Infrastructure Plan 2025

These documents acknowledge the need to transition towards a circular economy, but they do not go far enough. The measures in these plans focus mostly on downstream management, such as recycling, recovery infrastructure and litter reduction. There are a handful of measures that address the upstream reduction of waste, but they are not ambitious enough.

In my view, our state lacks an ambitious, wide-reaching and coordinated policy framework aimed at reducing material throughput across the economy and driving the large-scale behavioural and industrial change that is needed to genuinely tackle the waste crisis. Our government must prioritise setting stronger design standards on products, enacting stricter regulatory restrictions on unnecessary packaging, and holding large producers and retailers accountable for the waste their products create. There also needs to be more substantial financial support and other policy incentives for the development and use of reusable, recyclable, and biodegradable materials and products.

Policy development and funding allocations should be weighted according to the waste management hierarchy, directing the greatest support to initiatives that prevent waste generation at its source.

The continued extraction, consumption, and disposal of finite raw materials is fundamentally unsustainable, and future generations cannot afford to inherit an economy that depends on this linear model of production and waste. Addressing this issue requires a social and economic upheaval, away from disposability and towards long-lasting, re-usable, repairable, recyclable and genuinely sustainable products. This will require an ambitious, coordinated and politically courageous effort to confront entrenched industry interests, reshape consumer behaviour, and prioritise long-term environmental outcomes. **Until such an effort has been made, resorting to incineration risks cementing the very system that needs reform**.

I respectfully ask that the Select Committee:

- Call for the development of ambitious, enforceable policies to reduce material throughput across the economy, including mandatory product-design standards, stricter limits on unnecessary packaging, binding producer-responsibility requirements and the development of standardised container and packaging reuse systems.
- Recommend a moratorium on new EfW facilities until the State demonstrates meaningful progress in reducing overall waste generation and implementing a coherent circular economy framework.

References

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