

13th December 2022

Director - Industry Assessments
Development Assessment
Department of Planning and Environment
4 Parramatta Square
12 Darcy Street
Parramatta NSW 2150

Delivered by email: industry.assessments@planning.nsw.gov.au
Cc'd Sally.Munk@planning.nsw.gov.au

Reference: Proposed Veolia Woodlawn Advanced Energy Recovery Centre (SSD-21184278)

Dear Director – Industry Assessments,

I object to Veolia's proposed Woodlawn Advanced Energy Recovery Centre, an Electricity Generation – Other project that is to be assessed as a State Significant Development with the exhibition start date of its EIS starting on the 26th of October 2022 and ending on the 6th of December 2022. The EIS contains over 3350 pages of information. As a Chemical Engineer with over 30 years experience in heavy industry, the 28 working days given to review the EIS in detail is insufficient, let alone for the general community to understand the proposal and its implications to the community and comment appropriately. The Department of Planning should consider an extended exhibition period to late Jan 2023 so that the relevant stakeholders and community can adequately assess the EIS and provide more considered submissions.

This proposal does not offer significant benefits to the local community in which it is to operate. The merits are limited and need consideration. In summary, the proposal needs to address:

- The omission of the proposed technology provider, OEM and project engineer.
- The background ground level air quality monitoring used is Goulburn, which is not in the predominant wind direction area. The project should monitor the ground concentrations at Tarago, Windellama and Collector, the nearest towns where the predominant wind blows and which are already severely impacted by the current Woodlawn operation emissions.
- The background emissions data presented is misleading and biased by including the monitoring data from the once in 100 year bush fires occurring in the 2019-2020 period (Figure ES4, page13 EIS)
- The stack emissions of the proposed process that even if within EPA guidelines, significantly pollute the areas in the dominant wind direction areas with various toxic and carcinogenic elements. (see more information below)
- Air emissions that will have significant concentrations at ground level in the Tarago town and will be harmful to its residents especially to the students of Tarago pre and primary schools whom these persistent pollutants affect the most in terms of risk to their health.
- The lack of understanding of the speciation of the heavy metals emitted which govern their deposition and toxicological effects.
- The air dispersion model utilised is outdated and better models and methods exist.
- The process uses significant amounts of diesel fuel to sustain the combustion of the waste to achieve the required 850C for 2 seconds. The burners require 1,392 kg diesel/burner/hour

(Appendix O page 83) which is about 35MWth from diesel when in full operation. Although it is stated that they will only be used intermittently, based on the reference plant data (Appendix GG page 6) and Appendix Q page 20 CO₂ data, the estimated diesel usage is between 300 and 600kL per year, so around 1L of diesel per tonne of waste which adds further the processes poor thermal efficiency.

- The thermal efficiency of the process is low. The EIS in Appendix D page 11 Energy Balance states the thermal efficiency exceeds that required by the NSW EfW Policy Statement by less than 1%. However, this is on a Gross basis. If calculated on a Net basis (i.e. Net Electrical Power Output MWe divided by the Net Thermal Power Input MWth) which has the diesel input and internal electrical consumption removed, the thermal efficiency is only 23% and less than that of an open cycle gas turbine and below what should be required.
- Greenhouse gas assessment outlined in Appendix Q page 24 states that the GHG emission intensity of the electricity generated by the project (0.64 kgCO₂-e/kWh) is lower than the GHG emissions intensity of electricity from the NSW grid (0.85 kgCO₂-e/kWh). This is poor and worse than even natural gas (0.49kgCO₂-e/kWh) let alone renewables which are less than 0.05kgCO₂-e/kWh (<https://www.world-nuclear.org/information-library/energy-and-the-environment/carbon-dioxide-emissions-from-electricity.aspx>). So the benefits of GHG emissions are significantly overstated and misleading.
- The development of an encapsulation cell (Appendix F) for the disposal of toxic ash (Air Pollution Control residue or APCr) from the ARC process, which the current Woodlawn facility does not have a license for and if approved will render the site contaminated without future use. Concern of cell breach and the leaching of contaminants into the surrounding pristine environment have not been adequately considered especially in light of ongoing breaches and contamination of groundwater by its existing operations, with the most recent being in November 2022 to which Veolia admitted to. ([Veolia breaches guidelines, waste leaches into Tarago groundwater | The Canberra Times | Canberra, ACT](#))

Air Quality Detailed Analysis

The US EPA approved method for pre-screening plume emissions (Screen 3) was utilised to model the proposed project's flue gas plume using the information provided in Appendix O Air Quality Assessment Table 7.3 and Table 7.6 on pages 74 and 76 respectively and also atmospheric data in Section 5 Meteorology and Climate.

Based on the project's proposed stack height of 85m and the average environmental conditions for the location, the modelling results show that the maximum ground concentration of pollutants occurs around a 1 km from the emission source and dilutes with increasing distance from the stack (see Figure 1 below). These are emissions solely from the proposed ARC and do not include the existing emissions from Veolia's other Woodlawn operations which are additive to the ARC's emissions. As the direction of the predominant wind is mainly from the West or the East, the most sensitive areas in the plume path are to the East where the Tarago township located and most importantly the preschool and primary school, where the ground concentration will be nearly 40% of the maximum. To the West is Lake George, an unrecognised natural wonder, which will also be the contaminated by the ARC's plume.

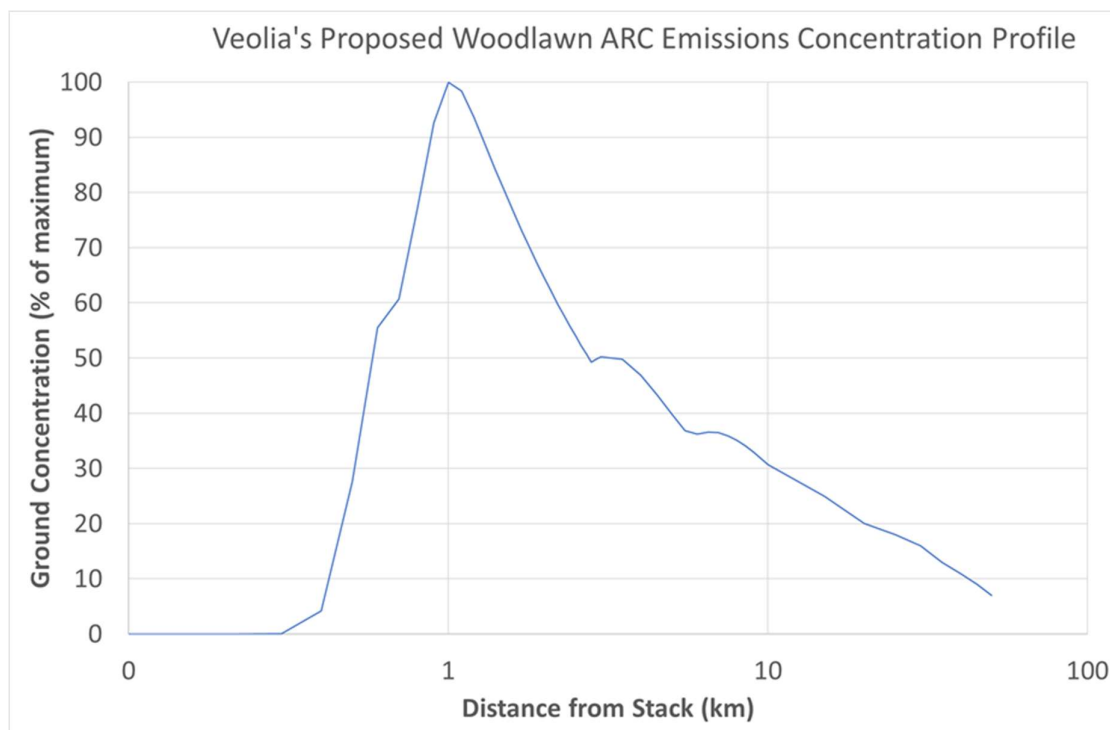


Figure 1: Woodlawn ARC Air Emissions Ground Concentration as a function of distance from the stack

Even the best operated WtE facility, with the world's best practice flue gas treatment systems to achieve emission concentrations within EPA guidelines, will emit a polluting discharge. This can be seen in the reference plant data in Appendix L(ii) page 11 where the emissions monitored over a brief period of the plants operating life showed breaches when compared to the NSW EtW Policy. It can be assumed that breaches to emission limits will occur with the proposed project as Veolia has consistently had emissions breaches and complaints regarding its existing Woodlawn operations ([Official Caution issued to Veolia Environmental Services \(Australia\) Pty Ltd \(MP10 0012\) Goulburn Mulwaree LGA - \(nsw.gov.au\)](#), [Eco-Precinct Complaints Register \(veolia.com\)](#))

These emissions include toxic components that accumulate in the surrounding environment and living organisms that inhabit that environment. The impact of these pollutants to living organisms include reproductive toxicity, neurotoxicity, respiratory toxicity, organ toxicity, aspiration toxicity, carcinogenicity and mutagenicity depending upon the speciation of these pollutants which are not determined or reported. The speciation of the emissions and their impacts can be realised at low concentration, including some in the parts per billion levels.

To understand these emissions, it is best to view the total pollution output over the life of the facility. Based on the data published in the EIS, Appendix O Air Quality Impact Assessment Table 7.8 on page 87 and the assumed 25 year life of the incinerator. It is noted here that the TSP level is the same as the PM10 and PM2.5 levels which is not possible and brings into question the validity of the data. Regardless, based on the information provided, the pollution emitted is shown in Table 1 below and includes;

- Up to 28 thousand tonnes of acid rain forming compounds and above NSW EfW policy
- Up to 60 tonnes of particulate matter with significant amounts of the most dangerous size PM matter, smaller than 2.5microns which penetrates deep into the lungs of humans and

animals giving rise to serious adverse health effects which have been shown to have no minimum threshold levels

- Over 3000 tonnes of CO due to inefficient combustion occurring in the process
- Up to ~1850 tonnes of toxic chlorine and fluorine acids
- Over 700 tonnes of carcinogenic organic compounds including benzene, dioxins and furans and PAH's. In fact the benzene emission exceeds the NSW EfW Policy.
- Up to ten times the NSW EfW policy emission amount for toxic ammonia emissions.
- Up to 10 tonnes of Heavy metals including over half a tonne each of lead, chromium, copper, manganese and nickel. Nearly 6 tonnes of zinc and about 200kg of mercury, a neurotoxic heavy metal with no safe exposure limit.

Table 1: Proposed projects air emissions over the lifetime of the facility

Emission (tonnes/life)	Scenario 1 Expected	Scenario 2 Maximum	Scenario 3 NSW EfW Policy	Main Impact
TSP	2.57	59.01	1311.34	Toxic
PM ₁₀	2.57	59.01	1311.34	Toxic
PM _{2.5}	2.57	59.01	1311.34	Toxic
SO ₂	1356.06	9569.73	6556.70	Acid Rain
NO _x	8619.62	18500.83	16391.76	Acid Rain
CO	143.12	3233.55	5245.36	Toxic
HCl	378.64	1869.04	3278.35	Toxic
HF	1.41	4.92	262.27	Toxic
Total Organic Hydrocarbons	3.51	714.89	515.27	Carcinogenic
NH ₃	245.57	3251.58	327.84	Toxic
Heavy Metals (Total)	1.46	10.10	30.05	Toxic
Antimony	0.083	0.303	1.625	Neurotoxic
Arsenic	0.028	0.075	0.563	Mutagenic
Beryllium	0.000	0.006	0.005	Carcinogenic
Cadmium	0.035	0.098	0.703	Toxic
Chromium	0.145	0.578	2.845	Neurotoxic
Cobalt	0.028	0.075	0.563	Toxic
Copper	0.200	0.825	3.940	Toxic
Lead	0.150	0.578	2.928	Neurotoxic
Manganese	0.178	0.655	3.475	Carcinogenic
Mercury	0.065	0.198	2.623	Toxic
Nickel	0.225	0.643	4.405	Toxic
Thallium	0.030	0.085	0.608	Toxic
Vanadium	0.040	0.158	0.778	Toxic
Zinc	0.255	5.823	4.988	Toxic

Based on the above facts it is hard to see the merit in this project, not just for the local community but for NSW people as a whole. It is a poor solution to Sydney rubbish issue as it generates minimal electricity and consumes considerable fossil fuel. It is a step backwards for the environment and common sense. Burning rubbish is not a good idea. This can be seen in Europe where WtE facilities became the option of choice for dealing with their burgeoning waste issue. However, the EU is gradually turning away from WtE with major financial institutions excluding it from support as waste incineration is a carbon intensive process and does not meet the EU's sustainability criteria as it harms rather than supports the transition to a circular economy. WtE facilities discourages waste prevention and recycling while encouraging increasing waste generation. (European Commission, "A new Circular Economy Action Plan," 2020. [Online]. Available: https://eurlex.europa.eu/resource.html?uri=cellar:9903b325-6388-11ea-b73501aa75ed71a1.0017.02/DOC_1&format=PDF)

The Veolia project will set a precedent and the inverted pyramid of waste management (see Figure 2 below) will be forgotten.

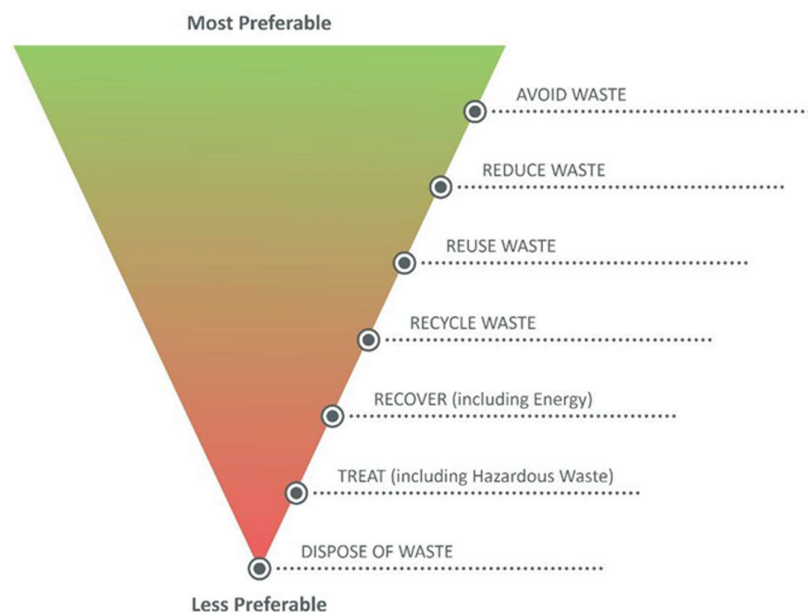


Figure 2: Waste Hierarchy from NW Policy (Commonwealth of Australia 2018)

The third worst option, RECOVER, which is burning the rubbish, generating minimal power but significant emissions to the surrounding environment and a large waste (bottom ash and toxic filter ash) to dispose of, will be the go to management technique for Sydney's waste industry and government. It is not acceptable to deal with Sydney's expanding waste issue by burning it in someone else's backyard. The government should encourage industry to offer solutions in the top four categories of AVOID, REDUCE, REUSE and RECYCLE. These routes, based on sustainability principals and the goal of a circular economy, have not been explored sufficiently and must be before any incineration is considered. As such, this project has no merit and must not be approved.

I do not have any reportable political donations in the last two years to declare and I acknowledge and accept the Department's disclaimer and declaration as required under the Departments submissions policy.

Yours sincerely,

Tim

A handwritten signature in dark ink, appearing to be 'Tim', with a long horizontal flourish extending to the right.

Dr T Evans

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