Attachment 1

The EPA's detailed comments on the EIS

Air Quality and Odour Impact Assessment

The EPA has reviewed the application for the Western Sydney Energy and Resource Recovery Centre (WSERRC), with regards to potential air impacts, and considers that it has been prepared in general accordance with the Approved Methods for the Modelling of Air Pollutants in NSW.

The following matters require additional information or clarification:

1. Justification of proposed limits;
2. Clarification of the modelling scenarios;
3. Additional information required for certain receptors, including those to the north east of the proposed facility, in Blacktown;
4. Additional information required for the NOx:NO_2 conversion modelling methodology;
5. Additional information regarding modelling of upset conditions;
6. Additional information regarding emissions from the emergency diesel generator;
7. Validation of the Calmet generated meteorology data used in the modelling;
8. Additional information regarding the odour abatement measures when the plant is not operational;
9. Inclusion of emissions from Austral Bricks in the cumulative assessment;
10. Additional information required to demonstrate the chlorine content can be maintained below 1%
11. Assessment of CO;
12. Additional information required to demonstrate that the minimum operating temperature can be maintained at or above 850°C; and
13. Required analysis of reported non-compliances at the reference facility in Dublin.

1. Justification of proposed limits

The table below compares the Protection of the Environment Operations (POEO) Clean Air Regulation Group 6 emission standards and the European Union's IED emission limits with the superseded Integrated Pollution Prevention and Control (IPPC) Reference Document on the Best Available Techniques for Waste Incineration (August 2006) and the current Best Available Technology Conclusions (BATC) for Waste Incineration (December 2019) BAT- achievable emission levels.

Table 1: Comparison of proposed limits to reference facility, EU and NSW Regulatory limits. Units in terms of mg/Nm^3, unless specified differently

Air impurity	POEO Clean Air Regulation[a) b)]	EU IED[c)]		2006 IPPC[c)]		2019 BAT-AEL[c)]		Reference Facility		Proposed Limit	
		30-minute average	24 hour average	30-minute average	24 hour average	Average over the sampling period	Daily	30 minute average	24 hour average	30 minute average	24 hour average
Particulate matter (TSP)	50 (36)	30	10	1-20	1-5		< 2 – 5	30	10	30	5
SO_2		200	50	1-150	1-40		5 – 30	200	50	200	30
NOx	500 (356)	400	200	30-350	120-180		50 – 120	400	200	400	120
CO	125 (89)	100	50	5-100	5-30		10 – 50	100	50	100	50
HCl	100 (71.5)	60	10	1-50	1-8		< 2 – 6	60	10	60	6
HF	50 (36)	4 [e)]	1	< 2	< 1	< 1	< 1	4	1	4	1
Type 1 & 2 substances [d)]	1 (0.71)										
Aggregate metals [d)]		0.5 [f)]			0.005-0.5[g)]	0.01-0.3		0.5		0.3	
Cd	0.2 (0.14)										
Cd+Tl		0.05[f)]			0.005-0.05[g)]	0.005 – 0.02		0.05		0.02	
Hg	0.2 (0.14)	0.05[f)]		0.001-0.03	0.001-0.02	0.005 – 0.02	0.005-0.02	0.05		0.035	0.02
Dioxins/furans	0.1 [f)]	0.1 ng/m^3 [f)]			0.01-0.1 ng/m^3 [g)]	< 0.01 – 0.04[h)] ng/m^3		0.1 ng/m^3		0.06 ng/m^3	0.06 ng/m^3
VOCs	40/20[i)] (28/14)	20	10	1-20	1-10		< 3 – 10	20	10	20	10
NH_3				1-10	<10		2 - 10			30	10

a) 1 hour averaging period; b) Values in brackets adjusted to 11 % O_2; c) 11 % O_2 reference condition; d) 13 metals per Type 1 & 2 substances (NSW POEO) and 9 metals (Sb, As, Pb, Cr, Co, Cu, Mn, Ni, V) per EU IED; e) Minimum 1-hour; f) Minimum 30 minutes, maximum 8 hours; g) Non-continuous samples; h) 6-8 hour sampling when emissions are stable; and i) Depending on whether containing principal air toxics: j) average value of three consecutive measurements of at least 30 mins each (for any parameter where, due to sampling or analytical limitations, 30-minute sampling/measurement and/or an average of three consecutive measurements is inappropriate, a more suitable procedure may be employed.)

The IPPC document is a summary of emission limits that can be attained using a range of pollution controls. Table 1 shows that the current best available technology is capable of achieving emissions significantly lower than legislation limits (either Clean Air Regulation or EU IED).

The proposed ½ hr average limits for TSP, HCl, HF, SO_2, NOx, NH_3 and Hg are higher than the upper range of the IPPC data. Further, the ½ hour average limits for TSP, HCl, HF, SO_2, and NOx exactly replicate the licence limits for the reference facility, which were developed 12 years ago. The reference facility has been operating since April 2017, and monitoring data indicates emissions can achieve emission levels well below its licence limits.

The recommended daily dioxin limit of 0.06 ng/m^3 is above the BATC recommended limit of 0.04 ng/m^3, which applies for short term (6-8 hour sampling).

The proposed NH_3 limit is three times higher than the upper range of achievable NH_3 emission limits in the IPPC document.

The proposed NOx limit is considered high. Considering the proposal site is in the Sydney basin (where O_3 concentrations can be problematic) and that NOx is a precursor to secondary particle formation, the emissions from this pollutant should be as low as reasonably and feasibly achievable. It is noted that although, SCR technology will produce significantly lower NOx emissions than SNCR, it has not been proposed since it requires more maintenance and is more energy intensive. Nevertheless, the EPA considers that NOx emissions from the project should be controlled using all reasonable and feasible best practice measures.

The NSW Energy from Waste Policy Statement requires an energy recovery facility to use current international best practice emission control equipment. In accordance with Section 10.2 of the Approved Methods for Modelling and Assessment of Air Pollutants in NSW, it is the EPA's policy to set Environment Protection Licence emission limits that reflect the actual performance of the proposed plant and equipment operating in a proper and efficient manner.

The EPA advises that the proposed emission limits do not accurately reflect the best practice design which is required for the proposed new plant.

The EPA recommends that the proposed emission limits be revised to reflect what can be feasibly achieved by best practice emission control technology operating in a proper and efficient manner.

2. Clarification of modelling scenarios

The EPA understands that Scenario 4 and the EPA limit scenario modelled pollutant dispersion at 1 hour average emission limits, and then calculated the impact at the relevant averaging time. For example, particulate dispersion is modelled using 1 hour emission limits, and then the 24 hour averages (and annual averages for the EPA limit scenario) are calculated post-processing. This is consistent with the NSW EPA framework.

It is unclear why Table 6-9 does not provide hourly TSP, PM_{10} and $PM_{2.5}$ mass emission rates. Half hourly average limits are proposed for particulates, and are used in the modelling of both Scenario 4 and the EPA limit scenario (after converting to hourly limits).

Further, the TRA states that Scenario 3 "models the maximum 1-hour emissions under the worst-case operating loads and air dispersion conditions to quantify the maximum short term 1-hour and 24-hour average impacts". It is understood that Scenario 3 predicts 1-hour average concentrations from 1-hour average emissions, so it is possible that the mention of 24-hour averages in the definition of Scenario 3 is a typographical error, though this should be confirmed.

LP1 flowrates provided in Table 6-11 are unable to be replicated. However, the mass emission rates in Table 6-9 can be replicated.

The EPA recommends the proponent should:

a) Provide hourly TSP, PM_{10} and $PM_{2.5}$ mass emission rates used in the modelling of Scenario 4 and the EPA limit scenario;

b) Provide clarification regarding modelling Scenario 3, and whether it should model 24 hour impacts; and

c) *Clarify LP1 flowrates presented in Table 6*-11.

3. Additional information required for certain receptors, including those to the north east of the proposed facility

The modelling domain is 12 km x 10 km. However, the proposed stack is 75 m high. Thus, it is possible that concentrated plumes could come to ground further afield than what has been modelled. For instance, isopleths presented in Appendix D of the TRA indicate localised concentration maxima in the residential area to the north east of the Great Western Highway, in Blacktown. The magnitude of the isopleths in this area are not labelled.

The modelling domain includes 320 discrete receptors within 3 km of the proposal site. The majority of these are to the south of the proposal site, despite the predominant wind being from the south-west. Only 5 non-commercial receptors are to the north of the site. There are no residential receptors to the north east of the proposal, where isopleths show increased impacts.

Impacts of criteria pollutants are only reported at the identified sensitive receptors used in the modelling. Thus, the true maximum concentration may not have been captured for criteria pollutants.

The EPA recommends:

- ***a) The proponent should justify the size of the model domain and demonstrate that it is large enough to capture all potential adverse pollutant impacts caused by the proposal.***
- ***b) The modelling should be revised to include discrete receptors in the residential area to the north east of the Great Western Highway, in Blacktown. Further, the analysis of the results at these receptors should include a contemporaneous assessment at the most impacted receptors.***
- **c)** ***The contours which indicate localised maxima should be labelled.***

4. Additional information required for NOx:NO_2 conversion

The assessment uses the NSW EPA approved Janssen method, which is based on a method developed by Janssen et al (1988). The method uses two parameters: A and α, which vary with O_3 concentration, windspeed and season, to estimate the NOx to NO_2 conversion ratio. Table E-1 in Appendix E of TRA gives example calculations for 10 consecutive hours on 1 January 2015. The number of hours presented is not sufficient to demonstrate that A and α vary according to O_3 concentration, windspeed and season.

According to Table 4 of Janssen et al, the values of A and α provided in Appendix E of TRA will yield the lowest NO_2 concentration. Thus, it is important to ensure that other values of A and α are also used in the calculations.

In order to clarify that A and α are variable in the applied calculations, the proponent should extend Table E-1 to all hours of 1 January 2015, and provide the calculation spreadsheet for all hours.

5. Additional information regarding modelling of upset conditions

The proposal relies on pollution control to maintain plant operation within emission limits, and in the event of an equipment malfunction, the plant initiates immediate shutdown. The shutdown period is 1-1.5 hours, which is the time taken for waste that is on the grate to fully burn out. The EIS maintains that the proposed plant will never operate outside its design limits, and emission limit values will always be met. Thus, upset conditions were modelled at the proposed regulatory limits, at the extreme load point (Scenario 4).

According to the EIS, there is redundancy built into the plant design, and failure of one component of the system does not lead to failure of the entire system. For example, bag filters will include redundant rows, so that any damage caused to one row will activate the standby row whilst the damaged row is repaired. According to the EIS “this philosophy is followed as far as reasonably practical throughout the design”.

The EIS states that waste will never be combusted without the flue gas treatment system being operational. However, it doesn’t state how failures in the reagent dosing system will be managed, should they occur. TA-Air seeks clarification of how the plant will ensure emission limits are met in the event of pollution control malfunction such as a dosing malfunction and whether it is possible during such situations that the plant operates outside its emission limits for 1 -1.5 hours.

The proponent should provide additional information on how emissions will be managed in the event of a pollution control equipment malfunction, such as reagent dosing malfunction. If emission limits cannot be met during such situations, upset conditions at emissions greater than emission limits should be further assessed.

6. Additional information required for emissions from the emergency diesel generator

During electrical outages, the diesel generator will be used to safely shut the plant down. This should take 1 to 1.5 hours. The generator will also be tested approximately once per week for a total of 15-30 minutes per test. Thus, in both situations, the diesel generator will be used simultaneously with the thermal waste treatment plant. However, the generator has not been assessed as an additional source.

The EIS states that the generator will meet the requirements of the POEO (Clean Air) Regulation, and will use a two-stage catalyst: an oxidation catalyst followed by a particle catalyst.

Per Cl 57A of the POEO Clean Air Regulation, emissions from the generator must comply with POEO (Clean Air) Regulation limits for all pollutants except NOx. Further, S128 (2) of the POEO Act requires that air emissions from point sources that do not have prescribed emissions standards are minimised as much as practicable.

To demonstrate adverse impacts will not result from the operation of the diesel generator, the proponent should either remodel with the generator emissions included, or provide information on the relative proportion of generator emissions compared to the plant emissions, as was provided for the auxiliary burners.

7. Validation of the Calmet generated meteorology data used in the modelling

Calmet was used to generate the meteorology field using measured surface data from 12 meteorology stations, and TAPM derived upper air. The Calmet generated meteorology data was then qualitatively verified by examining windfields, and comparing to measured data within the modelled domain.

Figure 5-2 provides annual and seasonal windroses of the Horsley Park AWS. Figure 6-3 provides Calmet generated annual and seasonal windroses at cell #5349 in the modelling domain. There are no details as to where in the domain cell #5349 is located but it is assumed to be the location of the proposal. Further, there are no details provided of how the Calmet generated data was validated. It is the EPA's preference that the Calmet generated data is validated against observational data that was not used to generate Calmet, however it is not clear whether this was done.

The EPA recommends the proponent provides:

- ***a) The location in the modelling domain corresponding to Cell 5349, where windroses are presented;***
- ***b) Details of how the Calmet data set was validated. If validation was not undertaken using measured data not already used in the modelling, then:***
  - ***i. If there is another meteorology station in the modelling domain that has not been used, then validation using this data should be undertaken;***
  - ***ii. If there are no other meteorology stations in the modelling domain for model validation, then additional information regarding the representativeness of modelled meteorology at the site is required. For example, the proponent could provide frequency plots of windspeed and stability class, and a temperature distribution using measured data at both Horsley Park AWS and the DPIE monitoring station at Prospect, for comparison with Figure 6-4; and***
  - ***iii. Windfields for some other meteorology conditions should also be provided, in order to demonstrate that the Calmet generated windfields are valid.***

8. Odour assessment and proposed controls

During normal operations, the bunker room will be operated under negative pressure and odorous air will be discharged from the stack via the furnace and flue gas treatment system. Further, the waste bunker room will be fitted with fast acting roller shutter doors, which will also help to reduce fugitive emissions.

Odour emissions from the bunker room and truck delivery have been modelled assuming an odour emission rate comparable to that of putrescible landfills. Fugitive odour from the bunker room was modelled assuming the bunker room is 4000 m^2 and that 4.5% of odorous air escapes through the roller doors. The EPA acknowledges that the building is under negative pressure, and most odorous emissions will be discharged through the furnace, however, the 4.5% assumption should be explained and justified. Odour from the trucks has been modelled assuming a truck delivery rate of 24 trucks per hour, each truck load has 5.8 m^2 of exposed waste, and all odour from the trucks escapes the building.

Adverse odour impacts during normal operation were not predicted at any of the receptors surrounding the proposal.

When the plant is fully shutdown, so that the furnace and flue gas treatment system is no longer available to treat air from the bunker room, odorous air will be discharged through an exhaust system equipped with a carbon filter to mitigate odour release. During these planned shutdowns, waste levels in the bunker room will be managed to reduce the volume of waste, thus further reducing odour emissions.

Odour impacts during planned shutdowns, when odour is discharged through the carbon filter, were not assessed. Further, the assessment does not provide detailed information on the design parameters of the exhaust system and carbon filters which are used when the plant is not operational. This is required to demonstrate compliance with the odour impact assessment criterion.

For transparency of assessment evaluation, the proponent should justify the assumption that 4.5% of odorous air escapes through the bunker room roller doors during normal operations.

The proponent should provide additional information on the design parameters of the proposed odour control during shut down, which* includes*:

- ***a) Information regarding the location and height of the discharge point (i.e. exhaust system with the carbon filters); and***
- ***b) Demonstration that the proposed carbon filters will be sufficient to prevent adverse odour impacts and facilitate compliance with the odour assessment criterion.***

9. Cumulative assessment should include impacts from the Austral Bricks facility

Emissions from the TNG facility have been adequately incorporated into the cumulative assessment. However, emissions from Austral bricks, which is located within 1 km of the proposal, has not been included in the assessment. Austral Bricks has significant emissions including HCl and HF, which should be included in the assessment. Contrary to what is stated in the TRA, emissions data from Austral Bricks is publicly available.

The EPA acknowledges that impacts from Austral Bricks could contribute to the background monitoring data when the winds are from the southwest. However, impacts from Austral Bricks at the receptors southwest of the site would not be captured in the background monitoring data when winds are from the north east. Thus, the cumulative assessment of impacts on the receptors to the south east of the site will be underestimated.

The cumulative assessment should be revised to include emissions of all relevant pollutants (not just criteria pollutants) from the Austral Bricks facility.

10. More information needed to demonstrate Cl content is < 1% at all times

The EIS includes detailed information regarding the QA/QC procedures to be implemented to identify and exclude loads containing unacceptable contamination.

Further, the EIS states that “waste auditing and laboratory testing of waste received at the Cleanaway Erskine Park waste transfer station indicates that the chlorine content of waste feedstock will have less than 1% halogenated organic substances, expressed as chlorine”. Information provided in the Technical Report C[1] shows that the average chlorine content of the waste feedstock is below 1%. For instance, the average results show the average chlorine content for:

[1] *Technical Report C- Waste and Resource Management Assessment*, ARUP, 10 September 2020.

- MSW is 0.94%
- C&I is 0.43%
- Overall feedstock mix (50% C&I, 50% MSW) is 0.69%

However, the range of the feedstock ratio (MSW:C&I) is not provided, and no supporting information (i.e. statistical analyses) is provided to robustly justify the above-mentioned average chlorine content percentages. This information is especially important considering that the feedstock ratios are not expected to be static.

The proponent should provide statistical analyses to robustly demonstrate that the chlorine content will be lower than 1% at all times.

11. CO impacts not documented

CO impacts were not reported. TA-Air acknowledges that VOCs can be used as a surrogate for CO. However, CO was reported in the draft TRA, and so should be reported in the final assessment.

In the interests of transparency, CO impacts should be included in Tables 7-1—7-3.

12. Further information is required to demonstrate that the minimum operating temperature can be achieved at all times:

The NSW Energy from Waste Policy Statement specifies a number of technical criteria for energy recovery facilities, including the minimum temperature of the gas resulting from the process. Based on the expected chlorine content for feedstock and as required at the reference facility, the proposed minimum operating temperature is 850°C.

It is noted that published quarterly reports from the reference facility in Dublin state that there have been multiple instances when the minimum operating temperature falls below 850°C, which is a noncompliance of Licence Condition 3.18.5.

In light of the above, it is critical that the proponent provides additional information to demonstrate that the minimum operating temperature of the combustion chamber for the proposed plant can be maintained at or above 850°C at all times. Management measures that will be implemented to maintain the temperature should also be provided.

The EPA recommends the proponent provides additional information to rigorously demonstrate that the minimum operating temperature of 850°C in the combustion chamber can be maintained at all times.

13. Reported non-compliances at the reference facility

Table 6-10 in the TRA presents a summary of the of the stack testing reports for line 1 and 2 at the reference facility in Dublin. The stack testing monitoring results are below the emission limits for the reference facility. However, it is noted that published quarterly reports for 2017 and 2019 state that there have been exceedances (presumably related to the CEMs data) of the emissions limits for some of the pollutants (e.g. TOC and SO_2) at the reference facility in Dublin. This is the consistent with information provided in Table 5-9 in the EIS.

The proponent should provide additional information regarding CEMs data for the reference facility in Dublin. This information should include:

a) A summary showing the number of times the CEMs data has been above the maximum license reporting limit (30 min average) for all pollutants.

b) A summary showing the measured concentrations when exceedances of the maximum 30 minute average were recorded.

c) Analysis of the reasons causing the exceedances.

This analysis must be used to inform and propose management and mitigation measures to ensure this will not be the case for the proposed facility.

Human Health Risk Assessment

The EPA provides the following assessment of the Environmental Risk Sciences Pty Ltd (EnRiskS) *Technical Report B - Human Health Risk Assessment Report,* 21 September 2020 (**the HHRA**).

Particulate matter (HHRA, section 5.3)

The project is anticipated to add a minor increment to the background levels of $PM_{2.5}$ or $PM_{10.}$

EnRiskS has assessed this issue in the HHRA in the context of the incremental addition of $PM_{2.5}$ and PM_{10} that this proposed facility would make to background air quality and associated incremental effects on human health.

The EPA acknowledges the results of this expanded assessment in the HHRA, that the particulate matter from the facility on its own would not be expected to exceed guideline criteria. However, the issue is of regional ambient air quality, and it needs to be noted that the background levels of $PM_{2.5}$ and PM_{10} are already at or exceed guideline values.

Other gaseous pollutants (HHRA, section 5.4)

EnRiskS has provided assessment of acute exposures via inhalation. This assessment is a comparison of the maximum predicted 1-hour average concentration, with health-based criteria relevant to an acute or short-term exposure based on a 1-hour average exposure time. Short term health-based criteria relevant to acute exposure and their respective references are listed in **Error! Reference source not found.** (Appendix B). Based on the risk calculations by EnRiskS, the total Risk Index (RI) representing the potential risk from acute exposures to all the gaseous air pollutants was calculated to be 0.94 (HHRA, Table 19).

A RI>1 is indicative of a potential risk of harm to human health. Given the calculated RI of 0.94 is very close to this limit, a sensitivity analysis of risk quotients by using alternative guideline values from the ones chosen by EnRiskS, selected from the range of reference sources cited in the HHRA was undertaken. From the sensitivity analysis, the RI varies from 0.04 to 2.1 depending on the guideline value chosen for each gaseous air pollutant. The possibility of an RI>1 indicates there is potential for an acute risk of harm to human health due to inhalation exposures from the proposed facility.

In addition, EnRiskS reportedly used guideline values from the *Texas Commission on Environmental Quality (TCEQ)* for gaseous hydrochloric acid (HCl), hydrofluoric acid (HF), chromium (IV), manganese and nickel in the HHRA. However, the values reported by EnRiskS in the HHRA are different from those documented in the TCEQ guideline.

The EPA recommends the proponent require that **EnRiskS revise the HHRA for assessment of acute risk of harm to human health, using the lowest guideline value for each gaseous air pollutant from the reference sources cited as a conservative approach. If the lowest guideline value is not chosen for any particular gaseous pollutant, justification on the selection of the guideline value needs to be provided in the HHRA.**

Surface Water and Groundwater Impact

The *Environmental Impact Statement* (EIS) indicates that controlled discharges and managed overflows from the sediment basins could occur during the construction stage, and that groundwater intercepted by the excavation for the waste bunker could potentially be dewatered to the sediment basins via swales.

The *Due Diligence Contamination Investigation* states that there is a range of potential sources of contamination at the site. The limited water sampling results presented in the EIS indicate groundwater and surface water at the site contain elevated levels of pollutants that could potentially cause harm if discharged to waters, including ammonia, oxides of nitrogen, copper, zinc and manganese for both groundwater and surface water and phosphate for surface water.

Clarification is required regarding how potentially contaminated groundwater from the excavation and polluted water contained in the existing farm dam would be managed. The proposed construction stage stormwater management measures mainly involving sedimentation are unlikely to reduce concentrations

of these pollutants to trivial levels. Discharge to waters should only be considered where alternatives such as off-site disposal, discharge to sewer or appropriate reuse are not practical.

If discharges are proposed then consistent with Section 45 of the Protection of Environment Operations Act 1997, a water pollution impact assessment would also be required by the EPA to inform consideration of the licence application.

Excavation and dam dewatering

It is recommended that the proponent clarifies how intercepted groundwater and polluted water contained in the existing farm dam would be managed. The proponent should first consider a range of options including off-site disposal, discharge to sewer under a trade waste agreement or appropriate on-site reuse. Treatment and discharge to waters should only considered where other alternatives are not practical, reasonable and feasible.

If the proponent proposes discharging intercepted groundwater and/or water from the farm dam to waters, then the following information is required:

- *a water pollution impact assessment for these discharges (Requirements for a water pollution impact assessment are detailed in the 'Water pollution impact assessment' section below)*
- *details of management criteria (e.g. pollutant concentrations) and associated management actions, with:*
    - *management criteria developed with reference to the relevant guideline values from the* Australian and New Zealand Guidelines for Fresh and Marine Water Quality *(ANZG, 2018)*, the predicted treatment efficiency and predicted discharge quality
    - *alternative disposal or appropriate reuse included as management actions where management criteria are exceeded.*

Construction stage stormwater discharges

It is recommended that the proponent clarifies whether controlled discharges of construction stormwater are proposed. The proponent should first consider a range of alternative options, such as appropriate on-site reuse, with discharge to waters only considered where these alternatives are not practical, reasonable and feasible.

If the proponent proposes controlled discharges of construction stormwater it is recommended that a water pollution impact assessment for these discharges is undertaken prior to determination (Requirements for a water pollution impact assessment are detailed in the 'Water pollution impact assessment' section below).

Water pollution impact assessment

If construction stage discharges are proposed, it is recommended that a water pollution impact assessment is prepared. The level of detail in the assessment should be commensurate with the risk. Subject to the results of this assessment the proponent should consult with the EPA regarding whether water discharge limits are required to be included on the environment protection licence for the construction stage.

If the impact assessment indicates a risk of non-trivial harm to human health or the environment after all practical measures are implemented, then discharge limits may be included on the environment protection licence. The water pollution impact assessment should be provided prior to determination and should:

- *be prepared in consultation with the EPA*
- *include a risk assessment identifying all pollutant sources on site that could potentially influence the quality of any proposed discharges to waters*
- *a discharge characterisation, predicting the concentrations of all pollutants expected to be at non-trivial levels in surface water discharges (desktop assessment and/or based on surface and groundwater sampling) under typical and worst-case conditions*
- *assess the potential impact of the proposed discharges on receiving waters based on the discharge characterisation and with reference to the relevant* Australian and New Zealand Guidelines for Fresh and Marine Water Quality *(ANZG, 2018) guidelines for slightly to moderately disturbed ecosystems*

- *specify the analytical limits of reporting used for any data that is being assessed and compare the analytical limits of reporting to the relevant ANZG (2018) assessment criteria for slightly to moderately disturbed ecosystems—where the limit of reporting does not provide a suitable basis for assessing risk of water pollution, propose alternative options to characterise the risk, including more sensitive laboratory testing or risk mitigation options*
- *where there is a risk of non-trivial harm from discharges, investigate practical measures that could be taken to avoid or minimise pollution. Consideration should include alternative disposal options for contaminated water, at-source controls, reducing wastewater run-off volumes (covering stockpiles, bunding, flow diversions), appropriate onsite reuse and additional and/or alternative treatment measures*
- *provide details of a construction stage surface water monitoring program.*

It is noted that there are errors and omissions in the guideline values adopted in the *Due Diligence Contamination Investigation* report. These include the following:

- The report refers to the ANZECC (2000) and NEPC (2013) guideline values rather than the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (ANZG, 2018) guideline values
- Total arsenic concentrations are compared to the drinking water guideline value, but the ANZG (2018) arsenic (V) guideline value (13µg/L) is not considered.
- Total chromium concentrations are not compared to the ANZG (2018) chromium VI guideline value (1µg/L).
- The report adopts a hardness corrected guideline value for copper, where ANZG (2018) advises against this.
- The report does not compare ammonia and oxides of nitrogen (NO_x) concentrations to the ANZECC (2000) physical and chemical stressor guideline values.

If the proponent prepares a Water Pollution Impact Assessment, it is recommended that the appropriate guidelines and associated guideline values including those detailed above are adopted.

Contamination remediation

It is unclear what water pollution controls will be implemented prior to and during remediation in areas with potential soil contamination that could impact water quality.

It is recommended that the proponent provide details of enhanced water pollution controls that would be implemented prior to and during remediation of contaminated areas where there is potential for water quality impacts.

Reuse of oil water separator effluent

The *Hydrology and Flooding Assessment Report* states that, during the operation stage, runoff from areas where there is a risk of spills of chemicals or hydrocarbons will be bunded to prevent overflow to the surrounding area and oil and water separators will be installed to treat runoff from these areas. The report indicates that this applies to ammonia tanks, the diesel refuelling area and the electrical substation. It is unclear how the proponent proposes to use or dispose of treated effluent from the oil water separator/s.

It is recommended that the proponent provide details of management of effluent from the oil water separator/s, confirming that the effluent would not be discharged to waters and demonstrating that it would be of an appropriate quality for any proposed reuse.

Reuse of operation stage stormwater

The *Hydrology and Flooding Assessment Report* indicates roof runoff will be reused for process water. No reuse of stormwater collected in the proposed detention basin is proposed.

It is recommended that the proponent considers options to avoid discharges from the proposed operation stage detention basin and minimise potential associated pollution, such as reuse for irrigation of landscaped areas.

Contaminated Land

The EPA considers the nature and extent of contamination on the site has not been fully assessed. Some contaminants have been identified in soil vapour, but the source of this contamination has not yet been identified; these contaminants were not detected in groundwater.

An interim audit advice from a NSW accredited site auditor, commenting on the nature and extent of the contamination and the appropriateness of the Remediation Action Plan (Technical Report G2) in ensuring that the site can be made suitable as a resource recovery centre is required.

The proponent has identified the need for an updated hazardous building survey and detailed procedure on unexpected finds. However, these reports have not been provided. The EPA was therefore unable to undertake an assessment of the proposed measures to address these contamination issues.

Given this, it is recommended that a NSW EPA accredited site auditor be engaged throughout the duration of works for this project to ensure that any contamination is appropriately managed. Site auditors can provide increased certainty to planning authorities of the nature and extent of contamination and the suitability of a site for a specific use.

The EPA recommends that the proponent submit:

- ***i. an updated hazardous building survey;***
- ***ii. detailed procedure on unexpected finds in their Remediation Action Plan;***
- ***iii. an interim audit advice from a NSW accredited site auditor commenting on the nature and extent of the contamination and the appropriateness of the Remediation Action Plan (Technical Report G2) in ensuring that the site can be made suitable as a resource recovery centre.***

Please note:

1. The processes outlined in State Environmental Planning Policy 55 - Remediation of Land (SEPP55) are to be followed in order to assess the suitability of the land and any remediation required in relation to the proposed use.

2. The proponent must ensure the proposed development does not result in a change of risk in relation to any pre-existing contamination on the site so as to result in significant contamination [note that this would render the proponent the 'person responsible' for the contamination under section 6(2) of *Contaminated Land Management Act* (CLM Act)].

3. The EPA should be notified under section 60 of the CLM Act for any contamination identified which meets the triggers in the Guidelines for the Duty to Report Contamination www.epa.nsw.gov.au/resources/clm/150164-report-land-contamination-guidelines.pdf

4. The EPA recommends use of "certified consultants". Please note that the EPA's Contaminated Land Consultant Certification Policy (https://www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/clm/18520-contaminated-land-consultant-certification-policy.pdf?la=en&hash=D56233C4833022719BCE0F40F870C19DC273A1F7) supports the development and implementation of nationally consistent certification schemes in Australia, and encourages the use of certified consultants by the community and industry. Note that the EPA requires all reports submitted to the EPA to comply with the requirements of the CLM Act to be prepared, or reviewed and approved, by a certified consultant.

Noise Impact Assessment

The EPA requests clarification of a number of issues identified in its review of the *Western Sydney Energy and Resource Recovery Centre, Technical Report I, Noise and Vibration Impact Assessment*, dated 24 August 2020, prepared by Arup Acoustics.

1. There is an exceedance of 2 dBA at Residential Receiver 1 during adverse meteorological conditions during the night time period. Within Table 15, it is shown that a majority of noise contribution is from breakout from the C2 and D1 halls, the former of which contains the turbine and boiler. It is stated that the design of the louvres will need to be reviewed at the Detailed Design (DD) stage to ensure that adequate mitigation can be applied to enable compliance at R1 at all times.

   The EPA seeks further clarification on the assumptions and source noise data used to determine the noise levels at the receivers. The internal noise levels of the C2 and D1 Halls are given as 85 dBA, with transmission loss data provided for the primary building envelope materials. Louvres and doors are stated to be modelled as openings. As there is no transmission loss data provided for the proposed louvres, and no low frequency data provided for the C2 and D1 Hall plant, further information regarding whether or not the predicted exceedance at R1 is controlled by low frequency noise?, and how the louvres will be designed to mitigate the low frequency noise (if this is the case) is required.

   The EPA recommends clarification of the cause of the predicted exceedance at R1 is provided, and if it is confirmed to controlled by low frequency noise, further information on louvre design to mitigate this also be provided.

2. The report provides a low frequency noise assessment by way of showing the difference between the C-weighted and A-weighted noise levels at each receiver. The NIA also indicates that data below 63 Hz is not available for the selected equipment, nor is third octave band data to assess tonality. The EPA seeks clarification regarding the validity of the C-weighted predictions when there is no low frequency data available below 63 Hz. Similarly, a lack of low frequency equipment data is likely to affect the proponents ability to predict the performance of a selected louvre, especially in lower frequencies where louvres are less efficient.

   The EPA recommends clarification on the method proposed to be employed during detailed design to ensure that adequate mitigation is provided, particularly with reference to the low frequency requirements of the louvres employed in C2 and D1 halls. This assessment should consider feasible and reasonable contingency measures that could be employed to mitigate these annoying noise characteristics or accommodate the correction factors that may be applied (potentially retrospectively) should correction factors be found to be relevant. The additional assessment should include measurements or available acoustic data on similar operational facilities to demonstrate that presented operational noise levels are indeed achievable.

3. The noise impact assessment has categorised the residential receivers to the south as urban. The basis for this is outlined in the NIA on page 19 as follows:

   > *"While the nearest residential receivers (to the south) are located within a rural area, their ambient noise levels are higher than those anticipated for rural receivers which is likely due to their proximity to the M7. Therefore, in accordance with NPfI, those receivers will fall into the urban category under the NPfI, as their ambient noise levels is controlled by traffic noise".*

   While the EPA acknowledges that the ambient noise environment for the residential receivers to the south of the site will be influenced by noise from the motorway, the extent of influence will be affected by meteorological conditions due to the offset distance to many receivers in the catchment. The EPA notes that the ambient noise monitoring in the NIA was undertaken during February i.e. summer. With reference to wind roses presented in the EIS, Technical Report A, the prevailing wind directions in summer are generally from the eastern quadrant which would enhance noise from the motorway. During other seasons, winds from the eastern quadrant are far less prevalent and indeed wind

vectors would typically serve to reduce noise from the motorway for significant periods of time. On this basis, the EPA does not concur with the urban classification.

The EPA recommends that the suburban residential amenity category is adopted in the assessment. Additionally, the EPA recommends that additional characterisation of the ambient noise environment (i.e. background noise levels) is undertaken to determine potential seasonal differences given the fact that the ambient noise environment is significantly influenced by a single noise source and direction.

4. The EPA notes that the assessment approach has departed from the guidance in the Noise Policy for Industry (NPfI) in that the assessment has considered both LAeq,15min dB levels and LAeq(period) dB levels. The NIA notes this approach has been adopted due to the following:

   "A reason for this simplification is to allow just one assessment for the worst-case 15-minute period for the day, evening and night. However, for sites that could emit relatively continuous noise, the NPfI ultimately sets a less stringent amenity criteria. For this assessment, as the project may emit relative continuous noise from plant and equipment, but also, a traffic schedule is available to assess both the worst case and average activity, both the intrusive and the amenity assessments have been conducted rather than the alternative simplified assessment procedure outlined in the NPfI".

   While the NPfI provides for a default equivalence of 3dB between the LAeq,15min and LAeq(period) descriptor, it also allows for site specific equivalences to be adopted where they can be supported. The EPA notes that the predicted noise levels in Table 14 of the NIA, show a 1-2dB difference at residential receivers between the LAeq,15min and LAeq(period) descriptors.

   The EPA recommends that the assessment be amended to present project noise triggers levels and predicted noise levels using the LAeq,15min descriptor so that limits in accordance with the NPfI can be considered for the development, noting that a project specific equivalence could be adopted, if appropriately justified.

5. Operational noise levels have been predicted in the NIA based only on the day and night period. The NIA has justified this approach on the follow basis:

   "Operational noise levels have been predicted for the following scenarios. Note the evening period has not been included as there are no trucks travelling during this period (Refer to Appendix B)".

   The EPA notes that Appendix B to the NIA notes that no truck movement are anticipated during the evening period. It is unclear, however, whether evening noise levels will therefore align with presented daytime levels or night-time levels as both periods are predicted to include truck movements of varying numbers.

   The EPA recommends that the NIA be amended to present evening operational noise levels in accordance with the requirements of the NPfI.

NSW Energy from Waste Policy Statement

Pre-sorting of all waste

Waste feedstock to the proposed facility must be compatible with the resource recovery criteria of the NSW Energy from Waste Policy Statement (the Energy from Waste Policy).

Table 1: Resource Recovery Criteria of the Energy from Waste Policy requires all Municipal Solid Waste (MSW) and Commercial and Industrial Waste (C&I) received by an Energy Recovery Facility be first processed at a Processing Facility undertaking bona-fide resource recovery operations producing separate output material streams for reuse or recovery. The only wastes that may be received directly from the waste generator are those described as "Separated waste streams" in Table 1: Resource Recovery Criteria which are not relevant to this application.

The proposal includes pre-sort of a proportion of feedstock waste streams at a Processing Facility. However, the proponent's Scenario 1 Feedstock Strategy includes the proposal that "Residual mixed waste from source separated business collection and councils operating a 3-bin FOGO kerbside collection service are 100% eligible for energy recovery and will be directed to WSERRC without any initial processing."

The Scenario 1 Feedstock Strategy is not compliant with resource recovery criteria of the Energy from Waste Policy. The proponent acknowledges that Scenario 2 Feedstock Strategy is also not compliant.

The proponent should revise its Proposed Feedstock Strategy to be compliant with the resource recovery criteria of the NSW Energy from Waste Policy Statement to include pre-sorting of all waste feedstock at a suitably licenced Processing Facility.

Note 2 ***Table 1: Resource Recovery Criteria contaminants***

Pre- and post-sorting is proposed to increase resource recovery (i.e. metals and some plastics), but pre-sorting of potential contaminants other than PVC is not proposed (e.g. batteries, halogenated wastes, asbestos). It is not adequate to rely on community education programs and/or supply contracts with local governments to mitigate the risks of contaminants entering the incinerator. Such contaminants will likely be concentrated in the ash outputs, which are proposed for land application.

The absence of pre-sorting for contaminants from ostensibly similar input waste sources (MSW and C&I) in the European comparison facilities may not be directly relevant, as source separated collections are understood to be far more advanced and well-established than those in Australia. Note 2 to Table 1: Resource Recovery Criteria of the Energy from Waste Policy requires waste streams proposed for energy recovery should not contain contaminants such as batteries, light bulbs or other electrical or hazardous wastes.

Table 5.4 of the EIS: Summary of material recovery during pre-processing and the Energy from Waste Process demonstrates that the proposal will not remove these contaminants. The EPA considers the proposed QA/QC reliance upon pre-qualification provider contracts and limited tipping floor spot checks (5.8.4 to 5.8.10 of the EIS) insufficient safeguard to ensure compliant feedstock in this regard.

5.8.3 of the EIS asserts "EfW facilities globally, including the reference facilities discussed in this EIS, are designed in line with best practice (defined in the European Union Best Available Techniques Reference Document) to deal with contamination within a waste stream".

The EPA understands that the proposed plant may tolerate certain concentrations of Note 2 contaminants (and the like). However, the proponent has not made clear the feedstock contaminant tolerances of the reference facilities; or the feedstock contamination concentrations received at those facilities. Without that information, the equivalent manufacturers specifications of the proposed facility and the likely contaminant concentrations in the proposed feedstock for this proposal, the proponent cannot determine whether unsorted feedstock will be suitable for the proposed plant.

Pre-sorting of all feedstock waste at a processing facility provides greater assurance that all eligible feedstock (MSW and C&I) will have had removed note 2 to Table 1 contaminants.

The proposal should be modified to demonstrate that all waste intended for incineration at the premises will be pre-sorted at a suitably licensed waste processing facility:

- In compliance with the resource recovery criteria of Table 1 of the *NSW EPA Energy from Waste Policy*;
- That will identify and remove all contaminants and other non-conforming waste from the feedstock in accordance with Note 2 to Table 1 of the *NSW EPA Energy from Waste Policy;*
- Producing feedstock with a content of less than 1% of halogenated organic substances as expressed as chlorine in accordance with the Technical Criteria of the *NSW EPA Energy from Waste Policy*;

- That maintains sorting processes, sampling and other QA/QC procedures of sufficient rigour to produce feedstock to an approved specification for the energy from waste facility
- Maximise the potential for diversion of resources from the waste stream prior to incineration at the facility;
- Minimise the risk of contaminant concentration spikes passing into the facilities burner with the subsequent risk of stack emission exceedances;
- Ensure contaminants captured as IBA (Incinerator Bottom Ash) residual ashes are minimised to enhance the potential resource recovery of these materials;
- Ensure contaminants captured as FGTR (Flue Gas Treatment Residues) residual ashes are minimised providing greater certainty around the immobilisation and subsequent disposal of these hazardous wastes.

Feedstock specification required

Further detail is required regarding:

- pre-sort processes at the nominated processing facility to demonstrate a compliant feedstock;
- Manufacturer specification or other detail of the feedstock tolerances of the proposed incineration plant to inform the design of sampling and other QA/QC procedures both at the pre-sort facility and at this proposal; and
- Feedstock specification to ensure compliant operation of the incinerator, its stack emissions and quality of residual ash outputs.

Erskine Park Waste Transfer Station

The Erskine Park Waste Transfer Station will require further approvals if it is to be the nominated pre-sort facility. During the previous assessment process for that development the local community raised concern about potential odour emissions that may be caused by receiving putrescible waste.

The proponent should provide discussion of the Erskine Park Waste Transfer Station facilities capability to be upgraded appropriately; and contingencies, should that facility not gain the appropriate approvals.

Hazardous Materials

The management of incinerator bottom ash (IBA) is unclear

The EIS contains conflicting statements regarding the fate of IBA generated from the WSERRC facility. The IBA is stated to undergo maturation and metals recovery at a dedicated offsite ash-handling facility (TR C 5.2.2 and 5.3.1, EIS 3.4.16.1, TR D 4.7.2), while elsewhere this dedicated offsite IBA processing facility is referred to being under investigation for consideration only and subject to a separate development application process (EIS 5.11).

At the offsite facility the IBA is proposed to undergo an ageing process that stabilises the mineral fraction of the IBA (TR D 4.7.2). This ageing process also reduces the reactivity and leachability of the ash.

As the volume of IBA is expected to be around 80,000 tpa wet weight after quenching, and there being uncertainly with respect to the classification of IBA and options to reuse the IBA, the IBA has the potential to be a large ongoing waste stream generated by the WSERRC facility.

The EIS states a resource recovery order and exemption (RRO/E) will need to be obtained and market development needed to enable a pathway for IBA to be reused (EIS 22.3.1). The EIS states the RRO/E will be progressed in parallel with the development process, however if no resource recovery pathways have been set up for the IBA before commissioning of the WSERRC facility, the IBA will be disposed to a suitably licensed landfill until suitable reuse is established.

The EPA notes the EIS identifies five suitably licensed landfills in the area surrounding the WSERRC facility, though only one of the landfills would be able to accept the waste if the IBA is classified as restricted solid waste (RSW). The expected lifetime of this landfill requires consideration, especially to ensure the appropriate management of waste generated at the WSERRC facility (the IBA) that is classified as restricted solid waste, and not able to be readily treated at an offsite processing facility under an immobilised contaminants approval in order to reclassify the waste so it can be disposed of at other landfill facilities.

The proponent should:

a. **Clarify the fate of IBA;**
b. **Provide detailed information on the handling and management pathways if IBA is classified as RSW; and**
c. **Provide contingencies should one or more suitable landfills not be available for the duration of the project to dispose of any IBA or FGTR that is classified as restricted solid waste.**

It is unclear if the IBA as described in the EIS will be suitable to be loaded/unloaded from vehicles, transported and landfilled.

The IBA is quenched in a water bath following its discharge from the end of the combustion grate to reduce the temperature of the ash. The wet IBA is stated to be about 20% moisture and not a sludge, and able to be carried along a vibrating conveyor eventually to be temporarily stored in the IBA hall (EIS 3.4.16.1).

The EIS states that following oversize items removal, primary metal recovery and intermediate storage of the IBA, no ash (IBA) treatment or long-term ash storage will occur onsite. In addition the EIS states the facility will have a fully enclosed ash handling system for IBA (EIS 3.4.16.1), however it is unclear if this is referring to the enclosed IBA hall or enclosed conveyors and other areas and mechanisms used to move and store IBA within the IBA hall.

The EPA notes that IBA that is too wet may be difficult to handle and load, while IBA that is too dry will have the potential to generate a significant amount of dust. In addition, IBA that has not had time to age, a process which is proposed to take place at the offsite processing facility if this is incorporated into the project, will also have higher reactivity and leachability. Cooling of IBA has the potential, depending on it composition, to form and release phosphine and hydrogen both of which are hazardous gases. The EIS refers briefly (EIS Table 14.2) to the IBA bunker being designed so gases produced by IBA will be drawn into the furnace and incinerated, and also that IBA will be transported offsite in open air tankers to ventilate the IBA and prevent the build-up of hydrogen (TR J 3.2.5).

Despite this the EIS does not clarify:

- if the IBA will be suitable for loading and unloading vehicles, or landfill disposal, and how this will be ensured;
- what the fully enclosed ash handling system comprises; and
- how the loading of the IBA into vehicles at the WSERRC facility will occur.

The proponent should clarify:

a. **if the IBA is suitable for loading and unloading vehicles, transportation and landfill disposal, and how this will be ensured;**
b. **what the fully enclosed ash handling system comprises; and**
c. **the means of loading of the IBA into vehicles at the WSERRC facility.**

It is unclear if ferrous items may require cleaning prior to transport offsite for processing.

The EIS states bulky items within the IBA will be removed by a scalper and stored prior to being removed offsite for recovery. The EPA notes that depending on the nature of the bulky item it may not be amenable for recovery.

Ferrous metals in the IBA will be removed by a ferrous metal separator and will be deposited into a storage bunker and removed offsite for recovery.

The EIS refers to cleaning of bulky materials removed from the IBA not being required, However the EIS does not clarify if ferrous metals may need cleaning or pre-treatment, for example to remove any attached IBA, prior to offsite processing. If ferrous metals do require cleaning, the facility will need to be designed to incorporate an appropriate process for this purpose.

The proponent should clarify:

a. if ferrous metals might require cleaning or pre-treatment prior to be transported offsite for processing and how this would be done; and
b. how bulky items that cannot be recovered will be managed.

Pathways for recovery or disposal for the ash residues (IBA and FGTR) must be determined by robust classification of the ash at the WSERRC facility and in accordance with the NSW requirements.

The EIS refers to the expected classification of each residue stream being determined by comparing residue characterisation data from the Dublin reference facility to the NSW Waste Classification Guidelines (TR C 5.2). The resulting classifications are noted in the EIS to be broadly consistent with typical characterisation and classification benchmarks of Energy to Waste (EfW) facilities processing similar waste streams in the UK and EU. However due to:

1) the standard testing procedures differing between jurisdictions, in particular the use of BS EN 12457-3 procedure for leachability testing compared to the NSW requirement to use US EPA SW-846 Test Method 1331 toxicity characteristic leaching procedure (TCLP), and
2) the testing of Dublin IBA that had not undergone maturation, i.e. samples in which chemical changes which partially immobilise contaminants and reduce leachability had not taken place,

the EIS states the results gained from the Dublin waste characterisation will not be directly comparable to the results for WSERRC facility IBA with a high degree of confidence (TR C 5.2.2). Consequently, the EIS recommends direct testing of residues using NSW procedures during the commissioning phase to confirm waste classifications.

The EPA notes that as the testing and characterisation of site generated ash residues will determine the recovery or disposal pathways for this waste, it is important that this testing and characterisation is undertaken in an accurate and reliable manner. Details of the sampling and characterisation of the ash residues are not provided in the EIS however will be required to be included in appropriate project management plans.

The EIS includes information on management and mitigation measures which includes the development of a construction environment management plan (CEMP), operational environment management plan (OEMP) and waste management plan (WMP) (EIS 24). However the EIS does not refer to the need for a sampling, analysis and quality plan (SAQP), or equivalent, to ensure the sampling, analysis and subsequent characterisation of the waste is representative, provides a robust basis for subsequent waste management decisions, and considers relevant factors such as compositional variability in the processed waste.

The proponent should include in the proposed mitigation and management measures the requirement to prepare a sampling, analysis and quality plan or equivalent, to ensure waste generated by the WSERRC facility will be accurately and reliably characterised for waste management purposes.

Disposal pathways for FGTR which is classified as restricted solid waste are not assessed in detail.

The WSERRC is designed to include a minimum of 6 days storage capacity for FGTR (EIS 5.11)

The EIS states FGTR will be managed offsite using existing infrastructure which is stated in the EIS to not need any additional related development (EIS 7.3). Specifically the EIS (TR C 5.3.2) refers to FGTR:

i that is classified as RSW as being able to be disposed of to an appropriately classified landfill, namely SUEZ Kemps Creek Landfill;

ii that exceeds RSW thresholds and thus will require further treatment to immobilise the relevant contaminants prior to disposal. The Cleanaway Bulk Hazardous Solid Waste Treatment (BHSWT) facility at 42-46 Charles Street St Marys is noted to be able to perform this waste treatment, with the treated waste being disposed to an appropriately licensed landfill.

With respect to the Cleanaway BHSWT facility at St Marys, the EIS (EIS 5.11) states the facility has the required processing capacity and is licensed to accept and treat FGTR material. In the case that this facility is not available, FGTR will be sent to another suitably licensed facility.

The EPA notes the EIS does not include any justification that the Cleanaway St Marys hazardous waste treatment facility can lawfully and practically treat by immobilisation an additional 360 tonnes of waste per week. The facility does not currently have an immobilised contaminants approval (ICA) issued by the EPA to treat FGTR. In addition, it is unclear what other suitably licensed facility is available to replace the Cleanaway St Marys facility if waste is unable to be treated at that facility.

In addition, the EIS does not refer to any contingencies if the Cleanaway St Marys facility and/ or other treatment facilities were unable to treat waste generated from the proposal.

Best practice management of restricted and hazardous waste is immobilisation onsite, reducing risks and emissions associated handling, decanting, transport and providing the facility operators with greater control over the treatment and disposal of its waste.

The proponent should provide additional information to:

a. **justify the proposed FGTR treatment facility at St Marys can lawfully and practically treat and immobilise an additional 360 tonnes of hazardous waste per week;**
b. demonstrate one or more other suitably licensed facilities are available to treat FGTR, and/or other contingencies are available to address the scenario where the Cleanaway St Marys facility is not operating or cannot process the FGTR waste generated by the proposal; and
c. consideration of onsite immobilisation of restricted and hazardous waste streams.

The EPA also notes the EIS refers to two locations for the Cleanaway Hazardous Solid Treatment Facility as:

a) (incorrectly) 40 Christie Street, St Marys (EIS 15.3.2)
b) (correctly) 42-46 Charles Street, St Marys (EIS 5.11)

The proponent should amend the EIS to ensure the correct location for the Cleanaway Hazardous Solid Treatment Facility is included.

The EIS does not refer to the need for the offsite FGTR treatment facility to obtain an immobilised contaminants approval from the EPA in order to treat and immobilise FGTR.

The EPA notes that FGTR that is classified as hazardous waste will require treatment via immobilisation prior to disposal in NSW. The EIS refers to lead being the key contaminant of concern based on FGTR composition benchmarking data for similar European EfW facilities, though also cadmium and chromium(IV) potentially exceed hazardous waste thresholds.

The EPA notes an immobilised contaminants approval (specific immobilisation approval) for the waste is required to be in place prior to any treatment of FGTR, to enable the treatment and reclassification of the waste for disposal purposes. Without an immobilisation approval allowing the immobilisation and subsequent reclassification of the treated waste, there will not be a pathway to dispose of the FGTR.

The proponent should include in the EIS the requirement to obtain an immobilisation approval for the treatment of FGTR.

The unacceptable and non-compliant waste types require clarification.

The EPA notes the receipt and processing of inappropriate (out of specification) waste, such as hazardous and other waste, which the facility has not been designed to manage, has the potential to result in significant adverse impacts to the environment and human health.

To ensure the project does not result in any unacceptable human health impacts the EIS states that best practice mitigation measures have been embedded in the project design and operation, including control of incoming waste feedstock. This includes a waste vehicle inspection bay (though it does not allow inspection of the waste as this is enclosed within the vehicle), inspection of the waste within the receiving hall if required – including sampling and rejection and removal if required, and removal of non-compliant (large) items within the waste bunker itself to the quarantine area by an operator using a crane.

The EIS (TR C 3.8) includes information on excluding inappropriate waste and notes that such wastes will be excluded through waste acceptance criteria within a pre-qualification process and contractual agreements with waste suppliers. The criteria will be supported by an on-site quality assurance and quality control procedure, in the Cleanaway Waste Acceptance Protocol, which is described in the EIS (EIS 3.8.5).

The EPA notes the waste listed as unacceptable wastes or non-compliant wastes (TR C 3.8.1) is in some cases ambiguous or not clearly defined. For example:

a) *Medical waste* is referred to however it is unclear what this waste includes. However, *Clinical and related waste* which is defined in the NSW Waste Classification Guidelines and the *Protection of the Environment Operations Act 199*7 is not referred to in the list of unacceptable wastes.
b) *Liquid and oily wastes* are referred to however it is unclear what constitutes an 'oily waste.'
c) *Concentrations of lightbulbs or other electrical wastes* and *concentrations of disposable batteries* are referred to, however it is unclear how in practice these will be defined and managed, and how this could be regulated.

The proponent should clarify what will constitute unacceptable wastes or non-compliant wastes.

Details of operations and measures to manage facility hazards will be finalised in the detailed design phase. Information and outcomes from this phase will require review and may be used to inform conditions to allow the EPA to regulate the proposal and any potentially hazardous impacts.

The proposal includes a liquid dangerous goods tank storage area which will include the storage of auxiliary fuel (diesel), ammonia and sodium hydroxide. Significant quantities of DG and hazardous materials will be stored onsite including:

- FGTR (EfW residue) – 360T
- sodium hydroxide (for wet scrubber use) – 50T
- activated carbon (for flue gas treatment) – 50T
- hydrochloric acid (for water treatment regeneration) - 1T
- ammonia/ammonium hydroxide solution 25% concentrate (for selective non-catalytic reduction) - 100T.

In addition, hydrogen and phosphine may be produced from the reaction of IBA with moisture and air.

Measures proposed to safely store and handle IBA and FGTR and other dangerous goods used as treatment reagents in the EfW process are outlined in the EIS (Chapter 14 Hazards and risk, and the Preliminary Hazard Analysis). The measures include storage and separation of acids and bases and other dangerous goods in accordance with relevant standards and legislative requirements. Adequate bunding and storage capacity, and real time monitoring to identify leaks within ammonia hydroxide silos, are proposed.

The EIS notes the management measures will ensure a very low potential for any leaching of dangerous goods from the proposal which could cause human health impacts.

Hazards and risks associated with dangerous goods used and created as by-products from the EfW facility and screening are considered and assessed in the project Preliminary Hazard Analysis.

The EIS (TR J) notes that detailed analysis, planning and response to potential hazards in some cases will be determined in the detailed design phase. The EPA notes robust and detailed operational response and emergency procedures will need to be developed and carefully implemented following the detailed design phase, to ensure these hazards will be well managed.

In relation to operations and management measures the EPA recommends:

a) that detailed plans and procedures will be required to be developed and implemented following the detailed analysis, response planning to potential hazards associated with the facility;
b) the facility should be constructed such that all external hardstand areas are sealed, bunded and drain to a stormwater system constructed with isolation valves to contain spills or any fire fighting waters; and
c) environment protection licence conditions may be developed based on the detailed analysis and response planning in order for the EPA to effectively regulate the proposal and any potentially hazardous impacts

Radiation detection system must be fit for purpose and effective

The EPA notes the WSERRC will include a waste delivery monitoring system that include radiation detection to prevent the treatment of any radioactive materials at the facility. This is consistent with *Best Available Techniques Reference Document for Waste Incineration* (2019) requirement (#11) for the monitoring of waste deliveries from municipal solid waste and other non-hazardous waste. The EPA also notes that a procedure for 'Radioactivity detection via equipment installed at the facility' is also proposed (TR D 4.3.3).

However, the EIS does not contain any information on the radiation detection system(s) to be used, and only limited information on how the system will be implemented. The EPA notes the EIS states (EIS 3.4.6) that a load of waste found to contain radiation (by inspection using a portable survey meter) will be rejected and will remain the responsibility of the supplier for proper disposal at a suitably licensed facility. The EPA notes this approach may result in further risks and that it is the proponent's responsibility to ensure:

1) waste received at the site will not result in unacceptable safety risks due to potential exposure to radiation; and
2) plans and procedures must be designed and implemented to robustly manage any risks associated with receipt of waste emitting radiation.

The radiation monitoring devices used at the facility should as far as practicable conform with the requirements specified in the EPA's *Radiation Guidelines 1: Monitoring devices*.

The facility must develop and implement detailed procedures and plans relevant to the radiation monitoring system. The plans and procedures must incorporate all relevant scenarios and ensure risks associated with receipt of waste emitting radiation are appropriately identified and managed.