Energy from Waste Facility Eastern Creek

SSD 6236

12 April 2018

Department of Planning and Environment

Contents

Department of Planning and Environment

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Eastern Creek – Energy from Waste Facility

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Background

- Proposal history – chronology
- Quality of documentation
- Engagement of Independent experts in 2014
- Ongoing engagement with Applicant
- Related approvals / developments

- **Ongoing Key Issues**
- Inconsistency with the NSW EPA's *Energy from Waste Policy Statement* (2015)
- Robustness of air quality impact assessment and human health risk assessment
- Waste source availability and composition
- Sufficient information not received until RTS, e.g. MRA Waste Feedstock Report

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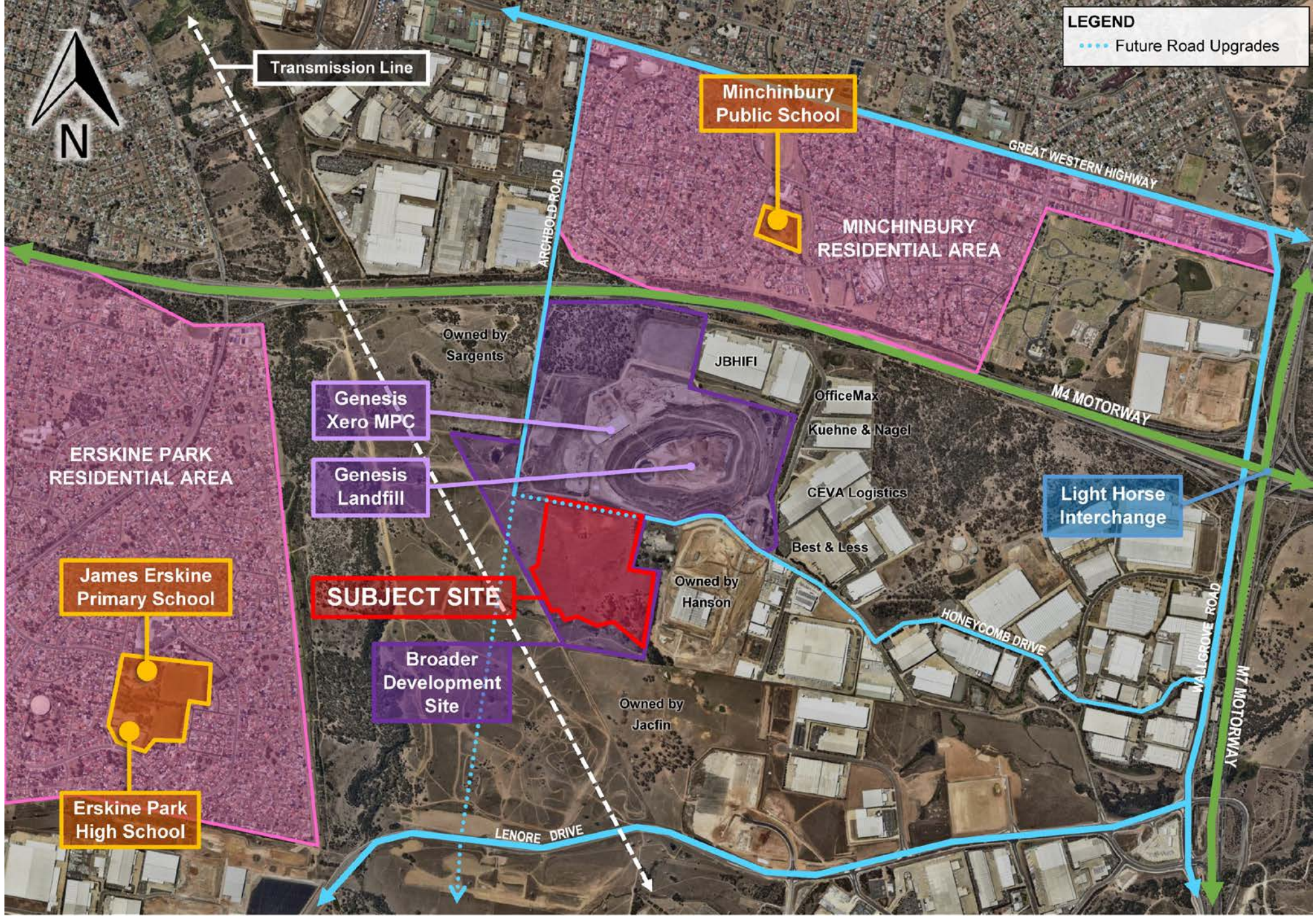
Mount Druitt
Blacktown
N
Colyton
GREAT WESTERN HIGHWAY
MINCHINBURY
RESIDENTIAL AREA
Arndell Park
ERSKINE PARK
RESIDENTIAL AREA
900 m
Broader
Development
Site
SUBJECT SITE
M4 MOTORWAY
Eastern Creek
LENORE DRIVE
M7 MOTORWAY
OLD WALLGROVE ROAD
WALLGROVE ROAD
PROSPECT
RESERVOIR
Water Pipeline
Horsley Park
nearmap


LEGEND
Future Road Upgrades
N
Transmission Line
Minchinbury Public School
MINCHINBURY RESIDENTIAL AREA
GREAT WESTERN HIGHWAY
ARCHBOLD ROAD
M4 MOTORWAY
Owned by Sargents
JBHIFI
OfficeMax
Kuehne & Nagel
CEVA Logistics
Best & Less
Genesis Xero MPC
Genesis Landfill
ERSKINE PARK RESIDENTIAL AREA
Light Horse Interchange
James Erskine Primary School
SUBJECT SITE
Broader Development Site
Owned by Hanson
HONEYCOMB DRIVE
WALLGROVE ROAD
M7 MOTORWAY
Owned by Jacfin
Erskine Park High School
LENORE DRIVE

Project Amendments

Component	Original EIS	Amended EIS	RTS
Processing volume (per annum)	1.35 million tonnes	1.105 million tonnes	552,500 tonnes
Staging	Two stages: Stage 1: 552,500 tpa Stage 2: not stated	Two stages: Stage 1: 552,500 tpa Stage 2: 552,500 tpa	One stage only: Stage 1: 552,500 tpa

The Amended Application

Energy from waste facility with a capacity to thermally treat up to a maximum of 552,500 tpa of residual waste fuel and generate up to 68.7 megawatts of electricity (100,000 homes)

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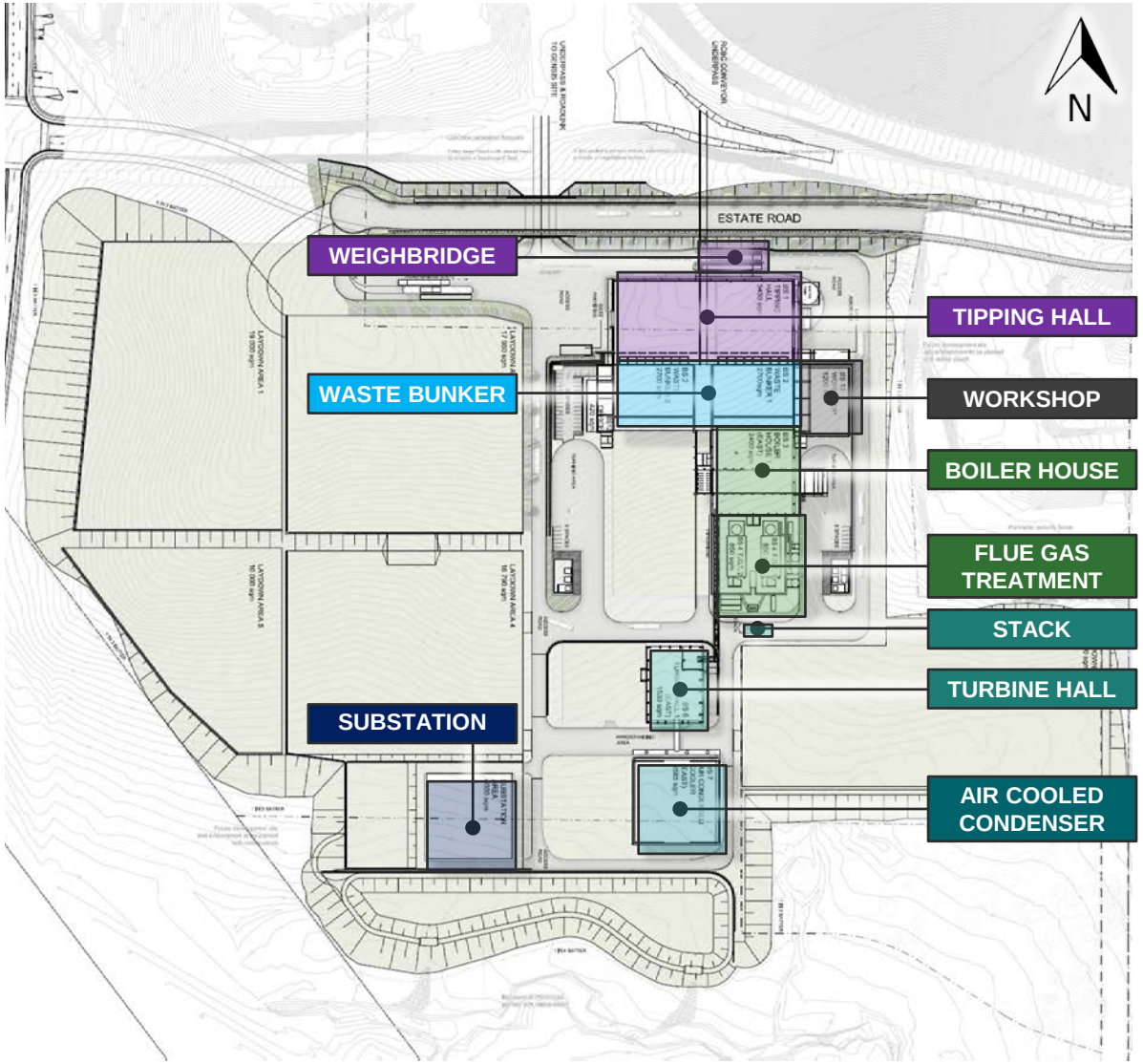
Site Layout



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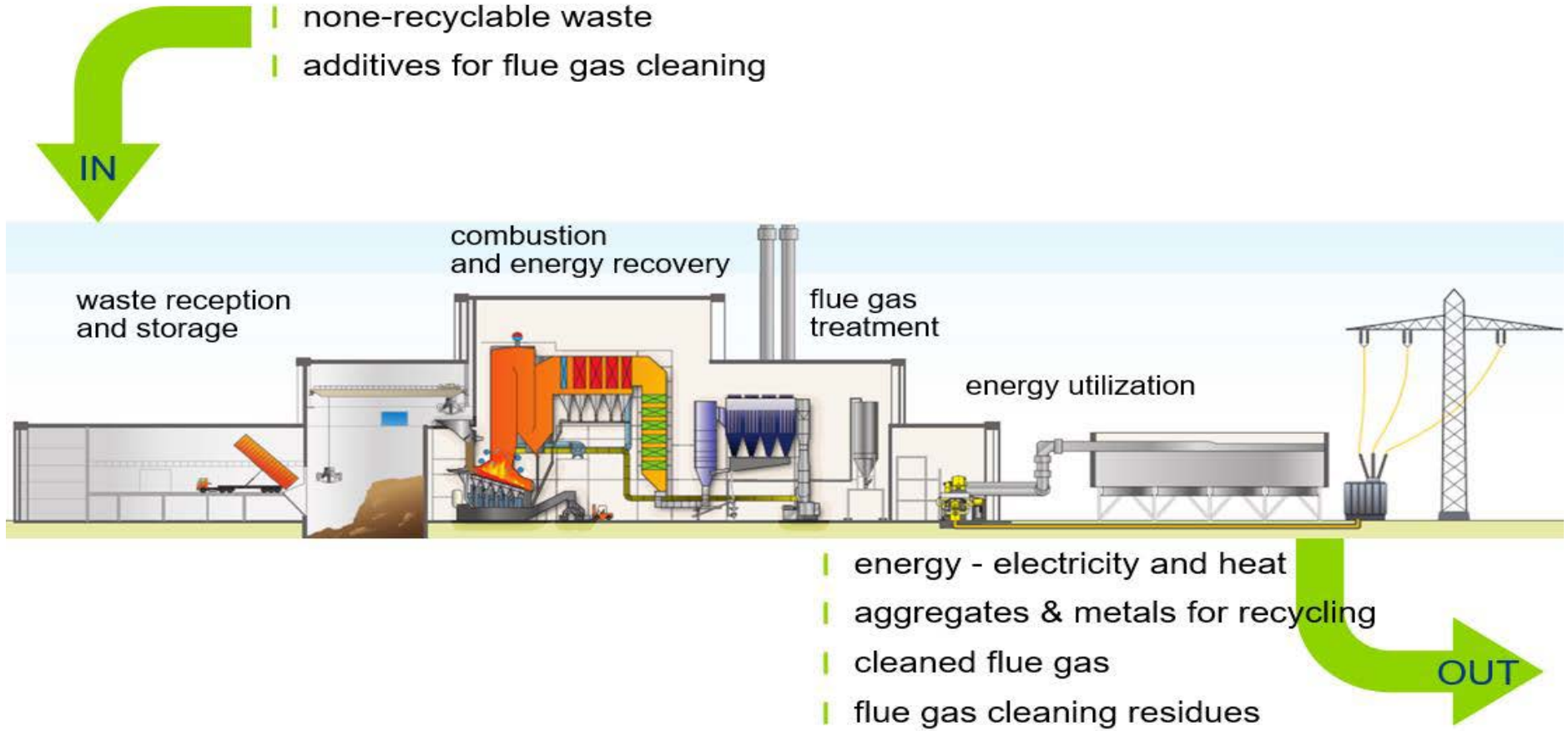
Energy from waste process



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Waste source and composition

The Applicant proposes to source residual waste from existing and proposed facilities under the control of Genesis and Dial-a-Dump Industries

Existing Facilities

Facility	Facility Type	Waste Characterisation	Activity undertaken	Eligible Tonnes (tpa)
Genesis EC* Recycling Centre	Recycling Centre	Wood and textiles	Recycling	751
Genesis EC MPC	Mechanical recycling plant	Chute residual waste	Recycling	41,978
Genesis EC Landfill	Landfill	MRF, Floc, wood and textiles	Landfill	120,954
Genesis Alexandria	Transfer station	Chute residual waste	Recycling	15,714
Subtotal				**179,397**

Proposed Facilities

Facility	Description of Expansion	Waste Characterisation	Additional Eligible Tonnes (tpa)
Genesis EC Recycling Centre	Increase receival of textiles and waste wood	Wood and textiles	67,559
Genesis EC MPC	Increase input stream by 210,700 tpa	CRW	52,262
Genesis EC Landfill	Increase receival of shredder floc	Floc	27,120
Commercial & Industrial Dirty MRF	Build approved processing facility for mixed C&I waste	C&I	226,162
Subtotal Planned Facilities			**373,103**
Subtotal Existing Facilities			**179,397**
GRAND TOTAL			**552,500**

Material Composition

CRW	MRF Waste	Floc Waste	Mixed C&I Waste	Specified Waste Fractions
19.90%	12.06%	14.73%	40.93%	12.37%

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Waste Types

MRF Residual (Visy, Smithfield)
- Currently landfilled at DADI site

• Textiles / rags		26.05%
• Plastics		21.24%
• Cardboard	6.78%	
• Recyclable paper		6.56%
• Contaminated paper		6.06%
• Glass		4.10%
• Composite plastics		4.00%

Chute Residual Waste (DADI Landfill)
- Currently landfilled at DADI site

• Untreated wood excl. MDF		54.59%
• Textiles / rags		9.84%
• Inert		7.44%
• Treated wood (CCA treated)		4.82%
• MDF board		4.63%
• Plastics		5.78%
• Cardboard	2.31%	
• Other metals		1.50%
• Composite plastics		1.36%

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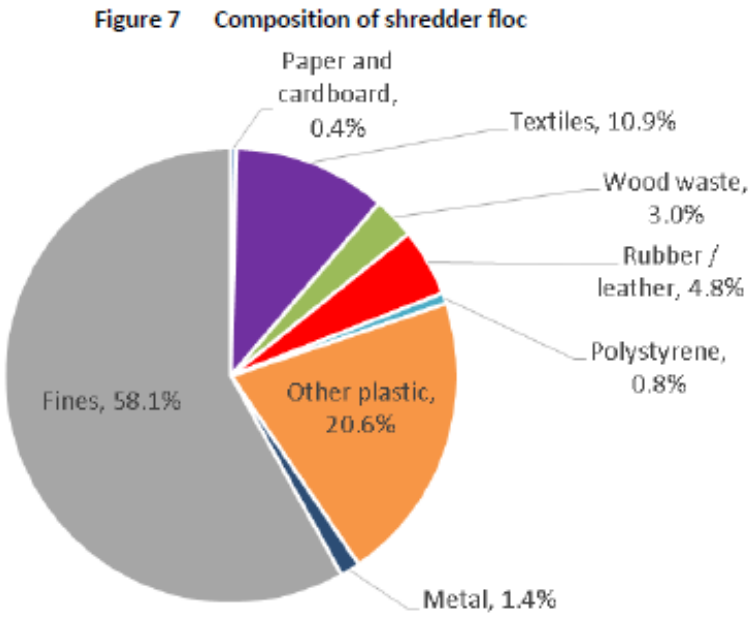
Waste Types

Shredder floc

- Currently landfilled at DADI site
- Waste from car and metal shredding
- 58% fines, potentially hazardous



Emission Limits and Monitoring

- Applicant seeks emission limits that align with Industrial Emissions Directive (IED) limits set by EU
- Continuous Emissions Monitoring System
  - 24 hour feedback and emissions monitoring
  - triggers a shutdown in the event of an exceedance
  - Monitors O_2, CO, HCl, SO_2, No_x, NH_3, VOCs, total particles and flue gas volume
- Spot sampling for heavy metals, dioxins and furans

Waste By-Products

Waste By-Product	Volume (tpa)	Destination
Bottom ash (wet)	146,583	Landfill
APC residue & Boiler ash	21,900	Authorised landfill only
TOTAL	168,483	

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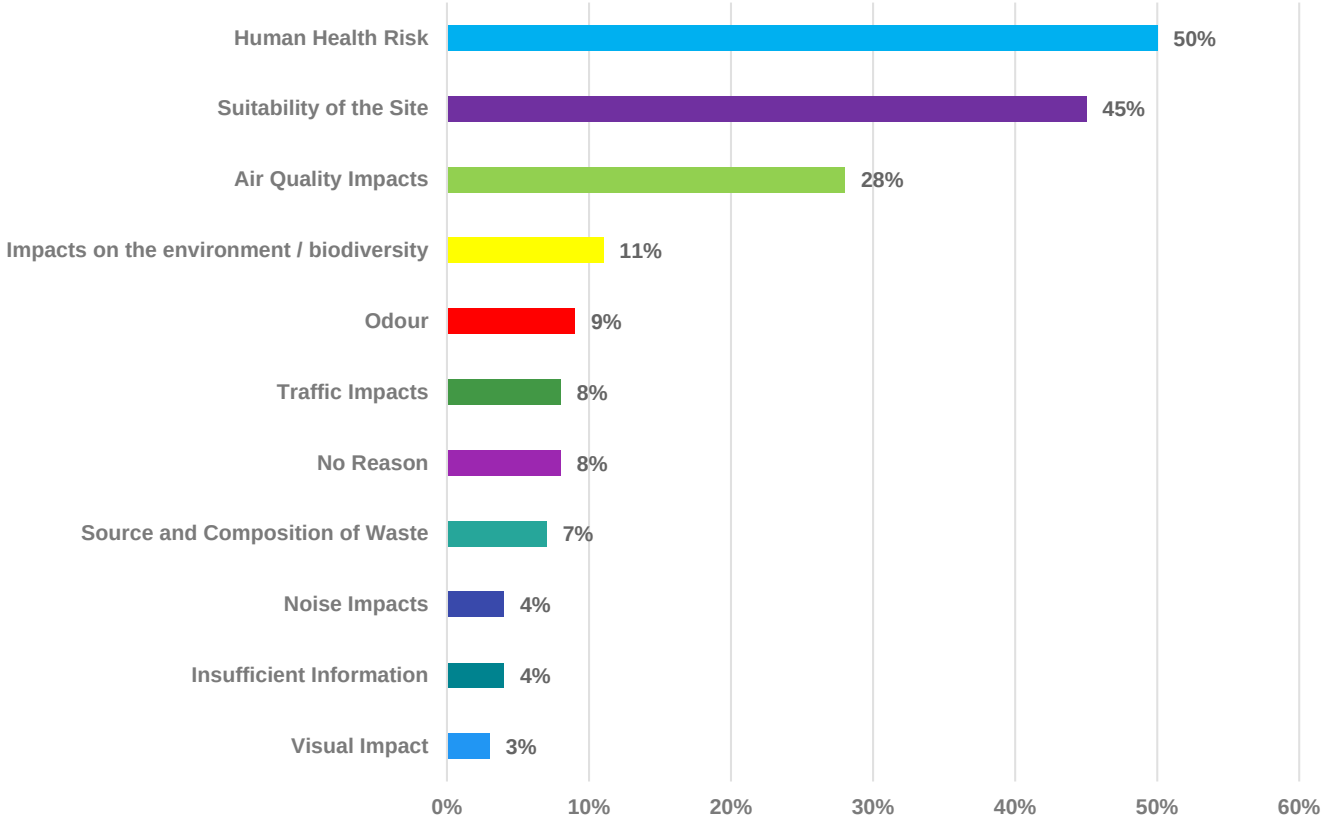
Public Exhibitions and Submissions

Original EIS

- 44 submissions, 29 public objections (public, businesses & special interest groups)
- EPA, NSW Health, Blacktown City Council objected

Amended EIS

- Council / Mayor Stephen Bali, public concern, social media
- 990 submissions, 963 public objections
- EPA, NSW Health, Blacktown City Council & Penrith City Council objected



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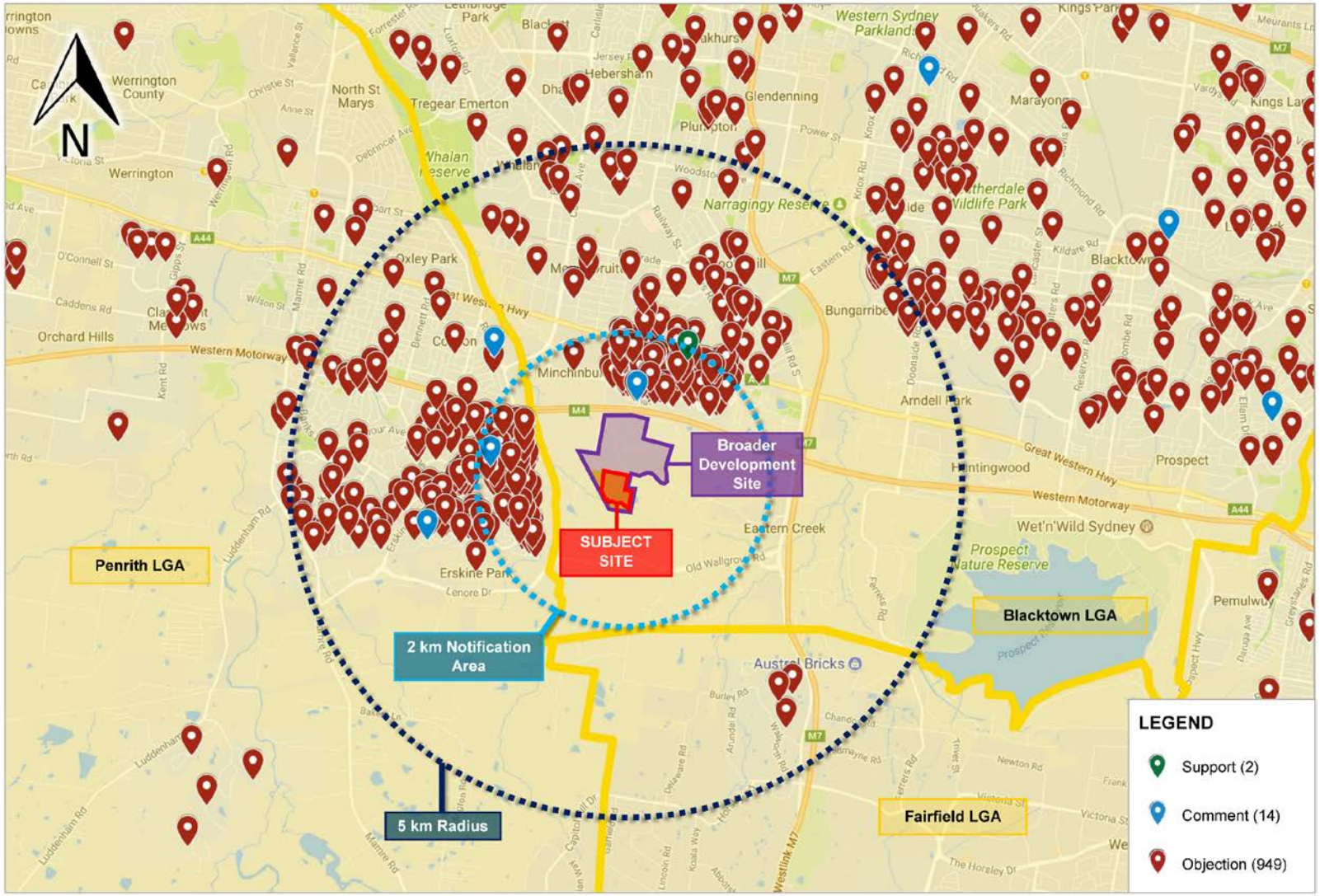
Location of Objectors

- 49% within five km



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Environment Protection Authority

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NSW Energy from Waste Policy Statement

Natalie Alves, Senior Policy Officer, NSW EPA

01 Reference Facility Requirement

Energy recovery facilities must use technologies that are proven, well understood and capable of handling the expected variability and type of waste feedstock.

This must be demonstrated through reference to **fully operational** plants using the **same technologies** and **treating like waste streams** in other **similar jurisdictions**

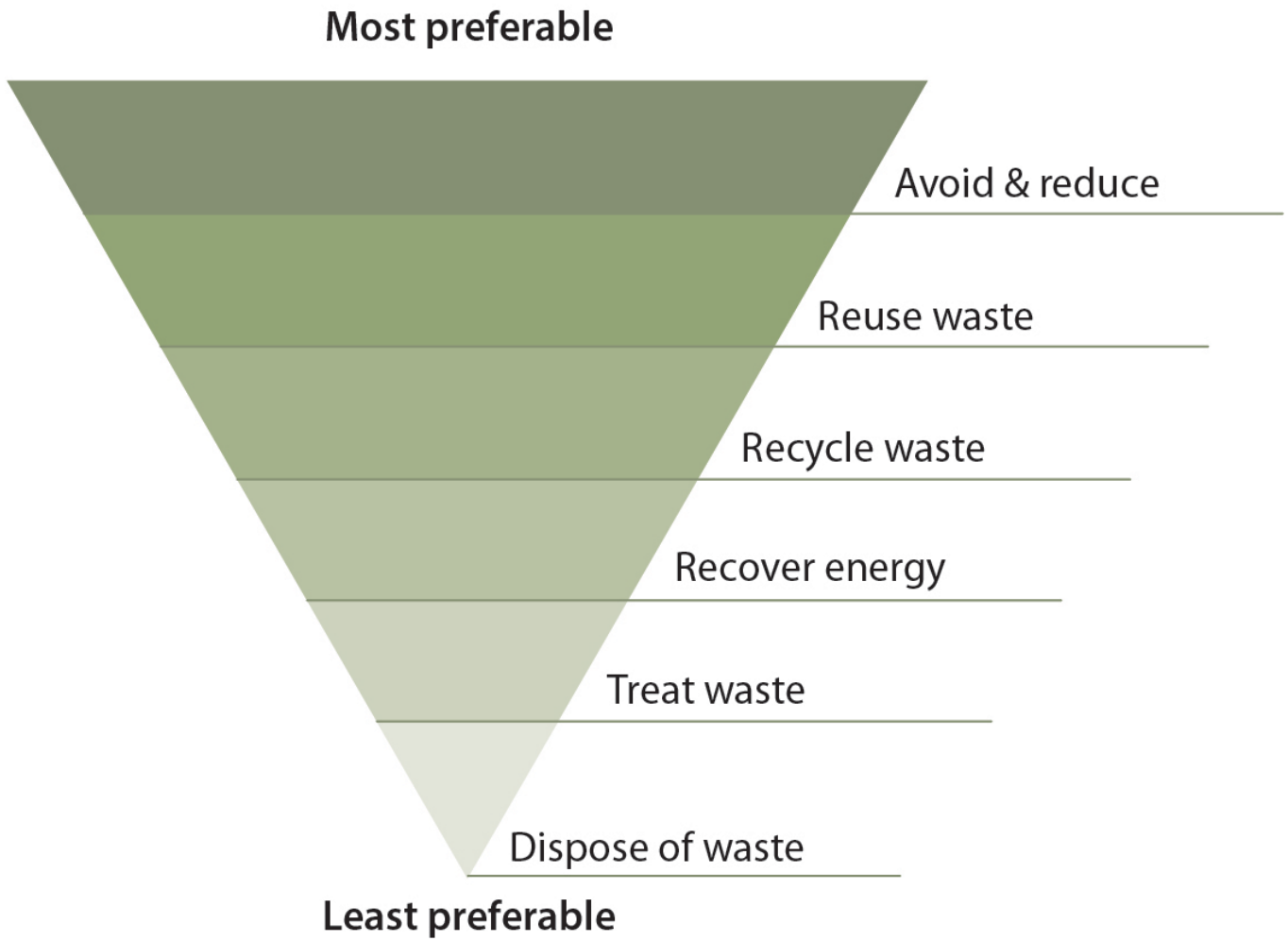
01 Reference Facility Requirement

The requirement to reference a facility that **treats like waste streams** has not been met.

	Ferrybridge design data	Ferrybridge operational data	RtS proposed fuel mix
Solid Recovered Fuel	**60%**	**100%**	0%
Commercial and Industrial waste	**30%**	0%	**41%**
Materials Recovery Facility	0%	0%	**12%**
Specified waste (largely wood waste)	**<10%**	0%	**12%***
Chute Residual Waste (mixed construction and demolition waste)	0%	0%	**20%**
Floc waste	0%	0%	**15%**

* The average amount of wood waste will be much higher, at around 30%

02 The NSW Waste Hierarchy



Resource Recovery Criteria

The policy statement's objectives in setting resource recovery criteria are to:

- promote the source separation of waste.
- drive the use of best practice material recovery processes
- ensure only the residual wastes from bona-fide resource recovery operations are eligible for use at an energy recovery facility.

Energy recovery facilities may only receive feedstock from waste processing facilities or collection systems that meet the criteria outlined in Table 1 of the Policy.

04 Additional Policy Requirements

Facilities proposing the thermal treatment of hazardous waste materials are excluded under the Policy.

If a waste has a content of more than 1% of halogenated substances, expressed as chlorine, the temperature should be raised to 1100 degrees Celsius for at least two seconds after the last injection of air

05 Air Quality Impact Assessment

Chronology:

- Adequacy, exhibited EIS, RTS on EIS, amended EIS and RTS on amended EIS

- All air quality impact assessment results are generally consistent
- Five emission scenarios in most recent AQIA:
  - Expected, NSW Regulatory case, Upset, EU – IED, diesel generators
- Conservative emission estimates for metals
- Assessment Findings:
  - Assessment generally predicts compliance with EPA impact assessment criteria for all scenarios

05 Air Quality Impact Assessment

EU-IED scenario most appropriate and represents best practice

- Principal toxic air pollutants controlled to the maximum extent achievable through best practice process design and emission control
- Reflects NSW EPA approach to setting emission limits
  - Object of POEO Act – reduce to harmless levels the discharge of pollutants

Ability to achieve best practice IED limits remains uncertain

- Absence of reference facility
- Did not demonstrate control efficiency for volatile and semi- volatile metals

Conclusion

- AQIA predicts compliance with potentially conservative assumptions
- If assessed emission performance achieved – AQ impacts acceptable.
- Uncertain if assessed emission performance will be achieved

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Arup

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Arup Waste to Energy experience

Arup are an international multidisciplinary consultancy, having worked on multiple high profile energy from waste projects.

Services	Example Projects
Design	T Park in Hong Kong (Sludge incineration WtE) Leeds WtE Lincolnshire WtE Shropshire WtE Kemsley WtE
Planning	Dublin WtE North London Waste Authority WtE Dundee & Angus WtE Cork Indaver Hazardous WtE Irish Cement (use of SRF alternative fuel)
NSW EPA policy compliance	Berrima cement plant (SRF alternative fuel) Green Distillation Technologies (GDT) (Tyre fuel) Integrated Green Energy (plastics to fuel) Development of guide to the NSW EPA EfW Policy Joyanne Manning sat on NSW EPA emerging technologies advisory committee as technical expert

The Arup scope of work was generally to consider whether:

- The TNG facility will use current international best practice techniques with respect to process design and control; emission control equipment design and control; emission monitoring with real-time feedback; arrangements for the receipt of waste; management of residues from the energy recovery process;
- The proposed technologies are proven, well understood and capable of handling the variability and type of waste feedstock; and
- Whether the TNG facility delivers on all aspects of the NSW Energy from Waste Policy Statement (EfW PS) (2015) (including meeting emission limits).

Summary of main assessment work undertaken by Arup to date on TNG facility

Work stage / date	Description	Main findings
1 / Nov 2014	Adequacy review of technical components of proposed facility	Significant omissions regarding material availability and composition, reference facilities and design details in addition to other issues. Adequacy not met.
2 / June 2015	Merit assessment of concept design report and technical sections of EIS	Significant inconsistencies and inaccuracies. Insufficient detail on technology to assess if best practice. Insufficient information to assess against NSW EPA EfW PS.
3 / Nov 2015	Response to submissions	Did not address significant number of issues raised in the June 2015 merit assessment. Recommendation to amend the EIS.
4 / May 2016	Gap analysis of documents submitted by Proponent as part of assessment process and in response to initial EIS (above)	Many inconsistencies and inaccuracies still present. More information / evidence required on material availability and eligible tonnage. Comparison to reference facility inadequate given c.50% C&D waste in design fuel mix.
5 / Nov 2016	Adequacy review of amended EIS	Ten key queries raised, grouped under four themes: The need to demonstrate the technology being used is proven, well understood and capable. of handling the expected variability and type of waste feedstock Material availability throughout the life of the project in accordance with the NSW EPA EfW PS. Material composition. Proof of performance.
6 / Oct 2017	Adequacy review of RtS report	No major omissions (pending detailed merit review). Some partial inadequacies regarding consultation.
7 / Jan 2018	Merit review of RtS report	Reference facility does not meet the NSW EPA EfW PS. Elements of the material availability assessment do not meet the NSW EPA EfW PS eligibility criteria. Adjusted for the criteria, c. 280,000 tpa of waste fuel is available based on Proponents modelling.

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EnRiskS

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EnRiskS

- Small firm specialising in risk assessment for contaminated land management, planning documentation and industrial developments
- Staff each have more than 10 to 25 years experience undertaking such assessments
- Company provides assessments and peer review of assessments for governments (commonwealth and state EPAs and Health Depts), range of corporations (AGL, Orica and private developers) and environmental consulting firms

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Human Health Risk Assessment

- Common part of planning assessments for facilities like this
- Makes use of air quality modelling to estimate concentrations that might be present in areas around the plant where people might be
- Air quality modelling uses assumed concentrations in the stack then combines the engineering of the stack and the meteorological information to estimate ground level concentrations
- Ground level concentrations are then used in the risk assessment along with assumptions about how people might be exposed to determine potential risks – national guidance available

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Human Health Risk Assessment

- Concentrations of various pollutants in the stack cannot be known specifically for this plant until it is constructed and operational
- Concentrations will depend on the mix of waste used as fuel
- Normal situation for many facilities during the planning phase
- Instead the assessment uses a number of different sets of assumptions about concentrations in the stack:
  - Highest measured concentrations in similar international facilities (scenario 1)
  - Maximum legal concentration under POEO Clean Air Regulation (scenario 2)
  - Maximum concentration under EU Industrial Emissions Directive (scenario 4)
- Upset conditions were also assessed (Scenario 3 and 5)

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Human Health Risk Assessment

- These scenarios give a range of risk estimates to help understand the risks posed by the proposal
- It is also expected that the air quality modelling and risk assessment will demonstrate that:
  - facility will comply with the legal requirements in NSW (the POEO Regulation)
  - emissions from the facility at the licence limits proposed for the licence will not pose an unacceptable risk (EU Directive)
  - expected emissions will not pose an unacceptable risk (monitoring from UK)

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Human Health Risk Assessment

- Both POEO and EU Industrial Emissions Directive only cover a subset of the pollutants that may be discharged – those found to be important in indicating proper operation and those of most concern
- Monitoring from other facilities finds a larger set of pollutants
- The monitoring data was also used in Scenario 2 and 4 for chemicals not covered by the regulations
- Conservative assumptions made in this assessment – used maximum measured concentrations from monitoring data and not to be exceeded limits from the different regulations
- Quite a number of the pollutants only make small contribution to risk

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Human Health Risk Assessment

- Main issue for this assessment is confidence in the assumed concentrations in the stack
- The mix of waste to be used in this facility is different from the mix used in the facilities from the UK where monitoring data was available
- Different mix of waste can mean that the concentrations of some chemicals in the stack may be quite different from those found in the UK plants or that different chemicals may be present
- Pollutants related to combustion (NOx, SOx, Particles etc) are unlikely to differ significantly
- Some of the air toxics may be quite different – some of the metals are major contributors to risk and so if these change significantly this will change the risk estimates

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Human Health Risk Assessment

Exposure Pathway	Adult	Child
Inhalation	0.13	
Incidental Ingestion of Soil	0.0002	0.002
Dermal Contact with Soil	0.00002	0.00005
Ingestion home grown produce	0.05	0.1
Total (rounded)	0.2	0.25

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Human Health Risk Assessment

- The risk assessment has been undertaken in line with national guidance – always with some uncertainty
- When estimated risks are close to 1 then it is more critical to have confidence in the inputs - usually leads to the collection of additional data but for proposed facilities this cannot be done
- The difference in the mix of wastes compared to the international facilities adds to the normal level of uncertainty
- If risks were less than 0.1, then this might have been manageable
- Risks estimated for this facility range from 0.1 to 0.5 which makes this uncertainty more critical

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Human Health Risk Assessment

- Concentrations only need to increase 2 or 3 fold and risks could become unacceptable
- The unusual waste streams proposed for use at this facility could mean:
  - higher levels of critical pollutants than used in this assessment
  - new pollutants not already covered in the assessment OR
  - emissions could still be within the range already known for the proposed reference facilities.
- It is difficult to know which of these options applies for this facility.
- This means that even with the use of these various scenarios it is difficult to know whether the risk assessment is appropriate and sufficiently conservative.

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NSW Health

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NSW Health

NSW Health have residual concerns about the potential impacts on health of the proposed Energy from Waste facility and Eastern Creek:

1. There is still uncertainty about the impact of the anticipated fuel mix at Eastern Creek on emissions from the plant. Recent audits by ARUP Pty Ltd confirm that the fuel mix and therefore the air pollution performance between this plant and the benchmark Ferrybridge Waste to Energy Facility in the UK are not comparable.

2. Whilst air pollution modelling suggests that the increment in air pollution in Western and South Western Sydney attributable to this plant will not lead to exceedences of current air quality standards, other considerations apply. Air pollution modelling has shown that this region is subject to higher average levels of pollution than other parts of the city, and proposed developments such as the airport at Badgery's creek will put additional pressure on the performance of this airshed.

Continued

3. The benefits from a reduction in greenhouse gases seems, on the basis of the EPA analysis, to have been overstated.

4. While compliant, concentrations could vary only 2 fold before they would not be compliant. This is considered too small a margin of safety given the level of uncertainty in this assessment in relation to stack concentrations, air dispersion modelling, and exposure assumptions about pathways of exposure.

Accordingly the current proposal is not supported

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Conclusions

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Conclusions

- Inconsistent with the NSW *Energy from Waste Policy Statement* (2015) presents uncertainty around the performance of the facility
- No suitable reference facility presents uncertainty around the expected air emissions
- Given these uncertainties, the location of the proposal in close proximity to residential areas is not suitable
- Design fuel contains potentially hazardous materials (floc waste)
- Likely to use material for energy recovery instead of utilising this material to achieve higher order resource recovery outcomes
- No community acceptance
- Proposal is inconsistent with relevant waste management strategies and needs assessments
- Not in the public interest as public benefit (greenhouse gases, diversion from landfill) does not outweigh risks and uncertainties with the proposal

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Thank you

April 2018

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