

# **RESPONSE TO SUBMISSIONS REPORT**

## **SSD6236: ENERGY FROM WASTE, EASTERN CREEK**

14 DECEMBER 2017  
SA5220  
FINAL  
PREPARED FOR THE NEXT GENERATION

**URBIS**

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# INTRODUCTION

## 1.1. OVERVIEW

### 1.1.1. Background

Energy from Waste (EfW) refers to the thermal treatment of eligible waste materials to generate electricity. The Next Generation (TNG) propose to receive and use as fuel, residual waste from the recycling and resource recovery of construction and demolition, and commercial and industrial waste streams, that cannot feasibly or economically be reused or recycled and would otherwise go to landfill.

A State significant development application (SSDA) for an EfW Facility (an *Electricity Generating Facility*) was submitted to the Department of Planning and Environment (the DPE) by TNG in April 2015 and placed on exhibition between 27 May 2015 and 27 July 2015. In addressing the submissions received from the community, Government agencies, key stakeholders and interest groups, the SSDA was formally amended and an amended environmental impact statement (EIS) and associated documentation was submitted to the DPE in November 2016.

The SSDA and supporting information lodged with the DPE in April 2015 contemplated a two stage development and construction of an EfW Facility having a total combined fuel capacity of 1.35 million tonnes of fuel per annum (proposing to treat 1.105 million tonnes in two stages). The SSDA proposed at that time that construction of the second stage of the development which would achieve the maximum processing capacity would be contingent upon the availability of suitable fuel and the satisfactory performance and compliance of Stage 1.

The SSDA and the proposal for a two stage development were supported by modelling addressing expected air quality impacts and the potential for human health risks, among other supporting consultant assessments. Air quality scenarios were modelled to demonstrate expected compliance with European standards. The modelling was carried out using the assumption of the maximum capacity of the EfW Facility namely both Stage 1 and Stage 2 operation (four lines).

An amended EIS was submitted to the DPE in November 2016 responding to the submissions received by the DPE from the exhibition of the EIS. In accordance with discussions between the proponent and the NSW EPA, air quality modelling was reviewed incorporating actual data derived from currently operating European facilities using comparable technology and broadly similar fuel waste streams, this was included in the amended EIS. The air quality modelling was carried out using the baseline assumption of both Stage 1 and Stage 2 operation of the EfW Facility incorporating four processing lines, two in each stage.

This four line operation which represents the maximum future operation of the EfW Facility was modelled to demonstrate the ability to achieve satisfactory compliance with European Union (EU) Industrial Emissions Directive (IED; Directive 2010/75/EU) requirements.

The amended EIS was placed on exhibition between 9 December 2016 and 1 March 2017.

This report identifies, discusses and addresses the submissions received by the DPE from the exhibition of the amended EIS.

### 1.1.2. Response to Submissions

This Response to Submissions (RtS) report sets out responses to the 1,043 submissions received and clarifies the presentation of the supporting modelling information so as to make it directly and specifically referable to the SSDA as amended.

A key amendment to the SSDA confirmed in this RtS report and documentation is that the application seeks approval for only Stage 1 construction and operation of the EfW Facility for processing of 552,500 tonnes of waste per annum only. The proposal has been designed with an engineering capacity of between 405,000 and 675,500 tpa with an optimum expected throughput of 552,500 tpa. The construction and operation of Stage 2 of the EfW Facility will be the subject of a separate and future development application.

In order to fully address and respond to the issues raised in submissions on the amended EIS, this RtS report includes amendments to the EfW proposal, an updated Project Definition Brief (PDB) prepared by Ramboll and revisions to the technical reports that support the proposal for the Stage 1 development only.

The proposed fuel source (waste feedstock) has not changed from that described in the EIS and amended EIS documentation. The waste fractions have been more closely and specifically identified with audits being carried out by independent Waste Auditors approved by the NSW EPA. The audits have verified a range of factors in relation to the residual fuel waste stream including the fractional component percentages, the chemical composition of those fractions, the degree of homogeneity brought about by the recycling process and the absence of materials which would be adverse to the proper operation of the facility.

Technical sampling and laboratory analysis of waste streams has been undertaken to inform this RtS and to determine and define waste source composition and availability. This includes waste audits to determine fuel source fractional composition and chemical analysis. The results of the testing are provided as part of this report and have been used to confirm the waste quantities to be processed and the Net Calorific Value (NCV) of the fuel as 12.3 MJ/kg. This is consistent with the details presented in the EIS and amended EIS and as such there is no change to the proposal in relation to this issue.

Fuel waste will be sourced from the neighbouring Genesis Materials Processing Centre (MPC) and provided only by facilities where appropriately regulated resource recovery processes have been undertaken in accordance with the NSW EfW Policy guidelines and where fuel quality is consistently demonstrated. In both cases the residue waste fuels will be subject to Genesis inspection and validation processes and will enter the proposed EfW Facility via conveyor or via truck using the internal service road.

Fuel streams identified by Mike Ritchie and Associates (MRA) are of the same types which are currently received at Genesis either as materials which are residue from other bonafide resource recovery processes or which are subjected to resource recovery processes at Genesis.

Additional assessment has been undertaken by MRA to confirm the availability of the waste source proposed. The results demonstrate that the quantity of waste required to fuel the EfW Facility as proposed can be sourced within the Metropolitan Levy Area (MLA) , this has been determined as 552,500 tonnes of waste per annum. This assessment has been undertaken in accordance with the Resource Recovery Criteria specified in the NSW Energy from Waste Policy. The waste source availability results confirm that:

- There is sufficient waste available to supply the facility, and
- There is predicted population growth in the MLA which will result in increased waste sources, and
- The ongoing operation of the EfW Facility will not monopolise the waste market nor will it negatively impact the growth of other resource and energy recovery initiatives.

The size and location of the laydown pads has been reconfigured to reduce the vegetation removal required on the site and therefore significantly reduce the potential ecological impact of the proposal.

### **1.1.3. Department of Planning & Environment Correspondence**

Following a review of the previous RtS report submitted on 28 July 2017, the Department of Planning & Environment issued correspondence dated 18 August 2017 which recommended that TNG revise the RtS report to further describe, justify and assess the refinements to the SSDA and the proposal as detailed below.

The EIS and amended EIS present an assessment of the maximum potential an EfW Facility comprised of two stages. This RtS presents an assessment against the Stage 1 development only being the development the subject of the SSDA.

A full list of the project amendments and outcomes of the updated technical reports are detailed within this RtS report and are to be read in conjunction with the updated PDB and the updated technical reports submitted as **Appendices A – AA**.

Where only minor amendments to the assessments or reporting was required to address the issues raised in the Department's correspondence, an addendum letter has been prepared and is appended to the relevant technical report appended to this RtS report and when read together these articulate updated findings for Stage 1 of the EfW Facility only. We note historical studies or baseline information that was submitted with the EIS or amended EIS has not been updated as part of this RtS report.

In summary of the amendments to the proposal and the additional work undertaken, the potential environmental and social impacts of the EfW Facility have been reassessed and reviewed and generally found to be consistent or reduced as a result of the Stage 1 development only.

This report and the supporting technical input confirm that any potential impacts arising from the operation of the proposed EfW Facility are able to be managed and mitigated through the proposed operational and environmental management controls.

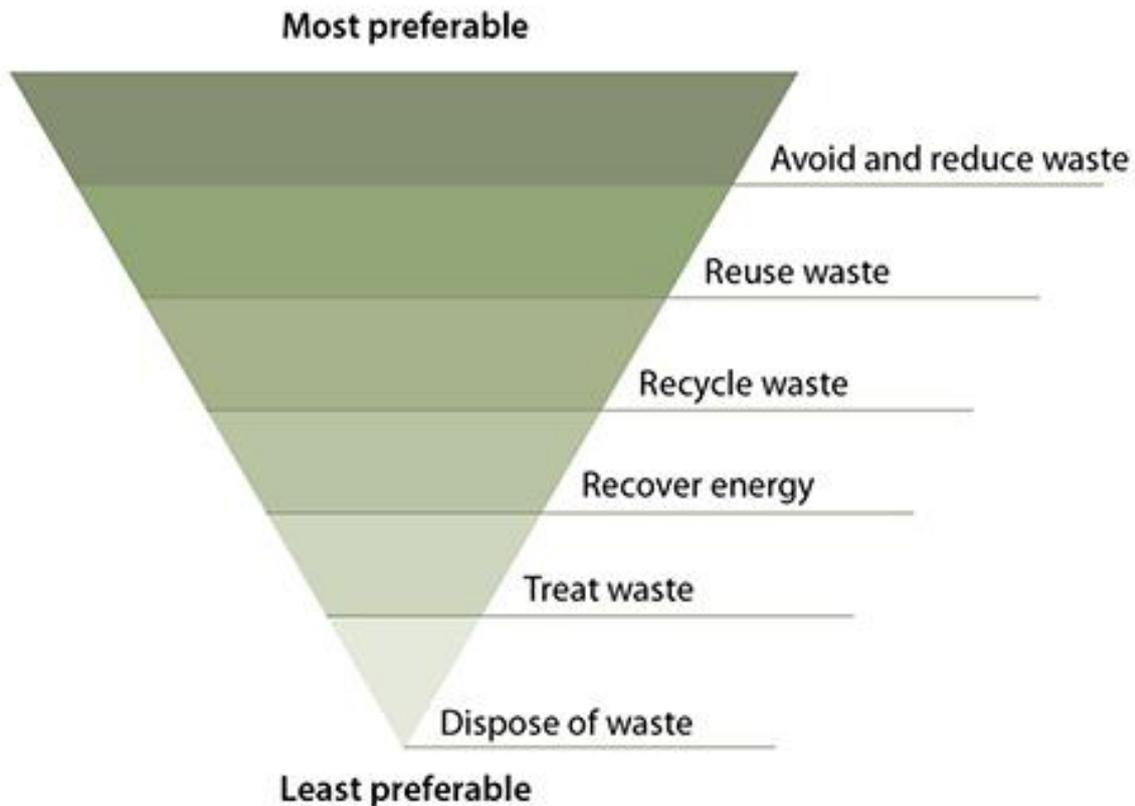
## 1.2. ENERGY FROM WASTE: A SUSTAINABLE ALTERNATIVE

Continued population growth across the Sydney metropolitan area is contributing to an increase of waste materials associated with the building and construction industry, as well as the operation of commercial and industrial premises. Despite continual improvements in waste recycling and material reuse, a portion of all waste streams cannot be reused or recycled as it is either too small or too dirty. These residuals wastes are presently landfilled.

Waste modelling undertaken in the MLA for the project has identified that approximately 1,625,000 tonnes of residual wastewas disposed of by landfill in the 2016-2017 Financial Year that could have been rendered suitable for energy recovery (referred to as eligible feedstock). This statistic highlights the significant role an EfW Facility, as proposed by this application, can play in maximising the efficient and sustainable use of resources in line with NSW EfW Policy.

EfW delivers a better resource recovery outcome than waste treatment and disposal alone, as depicted in the principles of the waste hierarchy from the NSW EPA. The TNG proposal seeks to generate energy from waste in accordance with the resource recovery priorities established by the waste hierarchy.

Figure 1 – The Waste Hierarchy (EPA, NSW).



### 1.3. PROJECT BENEFITS

The proposed EfW Facility has been designed to be a major contributor to the diversion of waste from landfill, reduction in potential methane emissions and provision of low carbon, renewable energy to deal with NSW waste challenges.

The proposal is expected to deliver a number of economic, social, and environmental benefits for the community and NSW economy, as outlined below:

- The proposed EfW Facility will introduce to the State of NSW the world's leading technology to break future reliance on landfilling as the sole repository of residual waste.
- The proposed EfW Facility will provide a safe, clean and reliable form of energy generation for Metropolitan Sydney now and in the future, resulting in improved waste management and a reduction in the need for additional landfill sites in the medium term in Metropolitan Sydney.
- The proposed EfW Facility will be capable of delivering baseload electrical power directly into the State's electricity grid.
- The proposed EfW Facility provides a sustainable solution to Sydney's growing levels of waste generation.
- The proposed EfW Facility will result in a net positive greenhouse gas effect, eliminating the emission of approximately 1.5 million tonnes of CO<sub>2</sub> per annum from landfill.
- The development is well separated from residential uses, which minimises any perceived adverse impacts.
- The proposed EfW Facility has been designed to respond to the sites natural topography minimising the visual impact of the facility from the public domain and nearby sensitive land uses.
- The SSDA is supported by a full suite of expert reports and drawings which address all the Director Generals Requirements for the EfW Facility, including strategic planning, waste management, air quality and human health, noise, soils and water, traffic and transport, hazards and risks, flora and fauna, visual, greenhouse gas, and Aboriginal and non-Aboriginal cultural heritage.
- The proposed EfW Facility will generate in the order of 500 direct construction jobs and 55 new jobs during Facility operation, it contributes to energy security and diversity by providing additional low carbon, renewable electricity generating capacity, and supports the use of waste materials destined for landfill, thus saving landfill space and reducing greenhouse gas emissions from decomposing landfill matter.

The proposed development is in the public interest as the proposal has significant importance for the management of waste and clean energy production to the local community and wider Metropolitan Sydney and any environmental impacts will be low and managed within the locality.

## 1.4. PURPOSE AND STRUCTURE OF THIS REPORT

This RtS report (incorporating proposed amendments to the development proposal and associated impact assessment) has been prepared under clause 85 (2) of the *Environmental Planning and Assessment Regulation 2000* (EP&A Regulation).

The RtS report documents and considers the issues raised in the submissions made to the DPE during the public exhibition of the amended EIS and is structured as follows:

- **Section 2: Background.** Sets out the key components of the amended EIS, the amended EIS findings and the approval pathway.
- **Section 3: Proposed Project Amendments.** Details the changes made to the proposal in response to the submissions received and the additional information submitted with this report.
- **Section 4: Further Information Provided.** Details the additional technical investigations undertaken since the amended EIS in response to the submissions received.
- **Section 5: Overview of Submissions.** Provides an overview of the process that was used to analyse the issues raised in submissions, as well as an overview an overview of key issues raised by the community, government agencies and key stakeholders.
- **Section 6: Response to Government Agency and Industry Submissions:** Summarises the issues raised in government agency and key stakeholder submissions. A submission by submission summary and response matrix is included at **Appendix A**.
- **Section 7: Response to Community Submissions:** Details the key issues raised in community submissions and response these issues. A submission by submission summary and response matrix is included at **Appendix B**.
- **Section 8: Updated Response to Director General Requirements:** Provides a review of the DGR's issued for the project and confirms these have been addressed through the Amended EIS and as required in this Response to Submissions Report, which references to the relevant sections.
- **Section 9: Environmental Management Measures:** Incorporates a complete list of Environmental Management Measures that are proposed as part of the development application.
- **Section 0: Conclusion.**

## 2. BACKGROUND

### 2.1. NOVEMBER 2016: THE AMENDED EIS

The project, as presented in the amended EIS involves the development of an EfW Facility within the Eastern Creek Industrial Estate, Eastern Creek. The project includes associated civil works including road construction, tree removal, landscaping and revegetation works.

The following sections briefly describe the key features, strategic context, benefits of the project, and overall project need. Further details are provided in the amended EIS which can be accessed at [http://majorprojects.planning.nsw.gov.au/?action=view\\_job&job\\_id=6236](http://majorprojects.planning.nsw.gov.au/?action=view_job&job_id=6236)

The key features of the TNG EfW Facility as presented in the amended EIS for Stage 1 and 2 included the following:

- Implementation of moving grate energy from waste technology with an engineering capacity to treat up to 1.35 million tonnes of residual waste fuel.
- The thermal treatment of up to 1.105 million tonnes of residual waste fuels would only be implemented if both Stage 1 and Stage 2 (four lines) were ultimately approved and constructed.
- Initial waste processing will be limited to Stage 1 allowing up to 552,500 tonnes of residual waste fuel to be thermally treated per annum. Implementation of Stage 2 will be subject of a separate and future development application.
- The EfW Facility will operate 24 hours a day, seven (7) days a week once completed, for a minimum of 8,000 hours per year. The facility will only be offline to allow for scheduled and periodic maintenance.
- Civil works to include bulk earthworks, road construction and installation and connection to utilities and services.
- Tree removal.
- Landscaping and revegetation works.

The need for this project is driven by the following factors:

- The national need to reduce the generation of greenhouse gases and the state need to help to solve the energy and waste needs of Sydney over the next 50 years.
- To manage or reduce the need for additional landfill sites in Metropolitan Sydney.
- To provide New South Wales with the highest standard of technology in the Energy from Waste sector that is tried and proven successful, to assist in delivering on the targets of the NSW Renewable Energy Action Plan, and align with the EPA NSW Energy from Waste Policy.
- To create a facility capable of delivering baseload electrical power directly into the state's electricity grid;
- To create a significant employment generating land use, consistent with the objectives and intentions of the Eastern Creek Precinct within the broader Western Sydney Employment Lands; and
- To retain high conservation value land.

The proposed facility represents a positive development outcome for the site and surrounding area and is an appropriate and suitable land use that responds to the above needs.

### 2.1.1. The Site

The site at Eastern Creek was selected for the proposed development due to its proximity to the M4 and M7 Motorways and the direct synergies between the proposed EfW Facility and the adjoining Genesis Xero Waste Facility currently in operation which will provide a significant percentage of the waste fuels. Other reasons why the site has been selected include:

- Its proximate location in relation to the residual waste fuel sources available in the Region and from the neighbouring site (with the same corporate owner).
- The topography of the land allows for the tipping hall to be considerably higher than the floor waste storage bunker without requiring volumes of fill material to achieve this.
- Availability of existing supporting infrastructure including:
  - connection to the grid which is less than 1.5kms.
  - availability of water.
  - availability of high pressure natural gas supply .
- Excellent road links and possible future availability of rail links.
- Access to a pool of skilled labour for operations and maintenance.
- Demonstrated ability and record by Genesis Xero Waste Facility to procure appropriate waste materials and to extract valuable resources for re-use, and to deliver a consistent and complying residual waste fuel stream.
- Separation from sensitive residential receivers.

Given the proximity, availability and capacity of road links associated with the Precinct, the location is ideally suited to utilise a range of potential waste sources across Western Sydney in addition to the adjacent Genesis Xero Waste Facility.

### 2.1.2. Key Impacts Identified in the Amended EIS

The amended EIS for the project identified the key environmental and social impacts (positive and negative) during the construction and operation of the EfW Facility.

The amended EIS provided a detailed re-assessment from the original EIS but nevertheless continued to produce modelling of the potential for environmental and health impacts based upon the maximum potential capacity of both Stage 1 and Stage 2 being a four line facility.

Based upon this background, the amended EIS included clear and aligned management mitigation and offset measures that would be implemented as part of the proposed development. Even though the modelling related to the larger two stage (four line) facility the impacts of the project on key issues, such as local air quality, hazard and risk, soils and contamination, greenhouse gases, and human health were predicted to be either 'low' or 'low to moderate' in significance.

The revised technical reports included within this RtS report quantify and demonstrate the potential impacts of the Stage 1 (two line) facility only. This RtS report identifies the issues raised during the consultation on the amended EIS and documents how the issues raised have been addressed.

## 2.2. APPROVAL PATHWAY

TNG is currently seeking approval for a two line Energy from Waste facility to satisfy:

- A State Significant Development (SSD) consent under the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act).
- The requirements of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) in relation to impacts of the proposed action on matters protected under the Act.

The approval processes under the EPBC Act and the EP&A Act are being undertaken in parallel and the amended EIS addressed both the Commonwealth's EIS guidelines as well as the Secretary for NSW DP&E's Director-General's for the project.

The amended EIS was placed on public exhibition on 9 December 2016. Subsequent to the initial exhibition period, two (2) extensions were granted by the DPE. Exhibition closed on 1 March 2017.

Exhibition of the application involved notices in the local paper and direct (letter) notification to around 4,000 residents living within the vicinity of the site. Submissions were invited to be submitted on line via the DPE's major project register.

During exhibition, the TNG consultant team engaged directly with Council and the Communities of Minchinbury, in the Blacktown Local Government Area and Erskine Park, in the Penrith Local Government Area. The intent of these community consultation forums was to provide residents and the general public an opportunity to ask questions of key technical experts with a view to resolving or addressing concerns.

A revised CIV report has been prepared based on the amended development description described in this RtS report and is attached at **Appendix C**. This confirms the proposal is classified as a State significant development under Part 4 of the EP&A Act and *State Environmental Planning Policy (State and Regional Development) 2011*.

### 3. PROPOSED PROJECT AMENDMENTS

In response to the submissions received, the following sections outline the key amendments made to the project as detailed in the amended EIS, pursuant to clause 55 of the *Environmental Planning and Assessment Regulation 2000*.

Taking into account the proposed amendments, the overall purpose of the project and the general project parameters remain consistent with the original proposal (as presented in the amended EIS). Therefore, they can be assessed as amendments under the current application.

The key clarification provided in this RtS report is that the SSDA is seeking approval for construction and operation of Stage 1 only for treatment of 552,500 tonnes per annum of residual waste fuels. The plant has an engineered design capacity of between 405,000 and 675,500 tpa with an optimum expected throughput of 552,500 tpa.

The construction and operation of Stage 2 of the EfW Facility will be subject to a future and separate State significant development application. The EfW Facility built form has been designed in anticipation of a future application for expansion, this built form and any increase in capacity of the facility will be subject to further assessment and approval in respect of any application for expansion.

The background assumption of a Stage 1 and Stage 2 facility upon which the modelling, assessments and reports were submitted with the amended EIS is generally considered to remain valid as presenting a robust assessment for any potential environmental or health impacts. A revised set of technical reports have been prepared and are appended to quantify and demonstrate the potential environmental or health impacts for the development and operation of Stage 1 of the EfW Facility.

The TNG consultant team have reviewed the potential environmental and social impacts of the EfW Facility, as presented in this RtS report. The conclusions made in this RtS report and the supporting technical input (Appendices A – AA) confirms that any potential impacts remain able to be mitigated and managed through the proposed operational and environmental management controls.

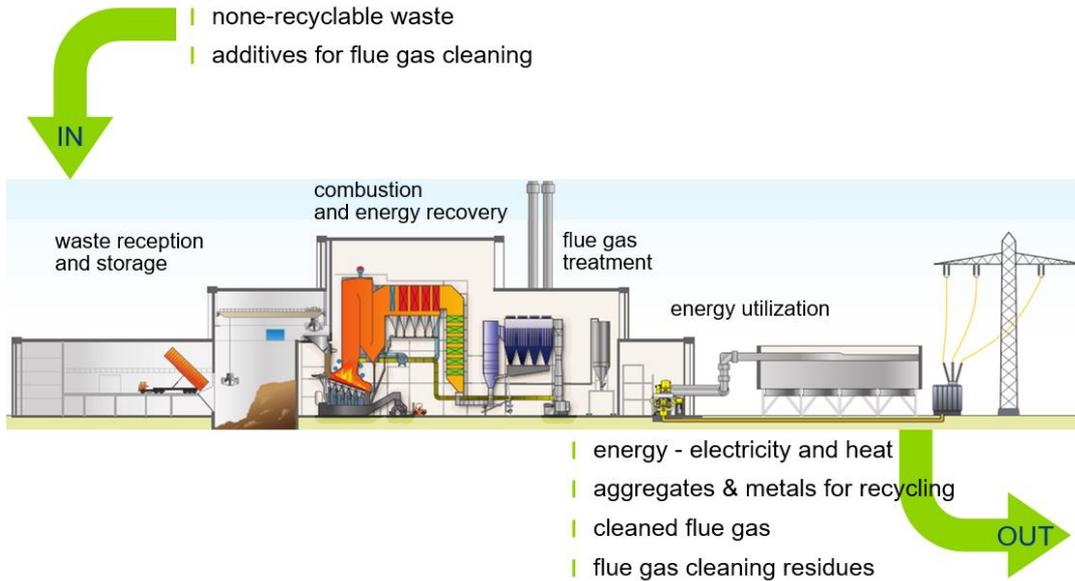
The following sections detail the amended proposal. It is important to note that the operational basis of the EfW Facility has not changed from the original EIS.

#### 3.1. DESCRIPTION OF AMENDED PROPOSAL

The construction and operation of the EfW Facility remains consistent with the original application, process, and technology detailed in the original and amended EIS. The process is diagrammatically depicted at Figure 2.

The amendments to the SSDA as presented in this RtS report do not seek to change the operating parameters or processes associated with the Energy from Waste facility functions. This is confirmed in the updated Project Definition Brief (September 2017) attached at **Appendix D**.

Figure 2 – Schematic diagram of Energy from Waste Facility operation (HZI, 2016)



The ultimate EfW Facility (Stage 1 and Stage 2) that was assessed under the amended EIS had a design capacity to treat up to 1.35 million tonnes of residual waste fuels. The design capacity formed the basis of all environmental and technical assessment as the ‘maximum capacity scenario’.

The amendment to the proposal is detailed in **Section 3.1.1** below.

### 3.1.1. Stage 1: This Application

Through the exhibition and assessment of the amended EIS questions were raised by the NSW EPA regarding the availability of waste to achieve the maximum treatment volume. The amended EIS identified that the EfW Facility would be developed in two stages with Stage 2 to be subject to future assessments. The following statement is extracted from page 25 of the amended EIS:

*‘construction and operation will be phased. Initial waste processing will be limited to phase 1 allowing up to 552,500 tonnes of residual waste fuel to be thermally treated per annum. Implementation of phase 2 will be subject to the proponent satisfying the Environmental Protection Authority of the availability of eligible waste fuels’*

Through this RtS report and pursuant to clause 55 of the *Environmental Planning and Assessment Regulation 2000*, the proponent, TNG, clarifies that the SSDA (NSW DPE reference: SSD 6236) seeks approval only for Stage 1 of the EfW Facility. Any expansion of the facility to accommodate an additional two lines in a future Stage 2 is to be the subject of a separate and future development application.

The SSDA is seeking development consent for the **construction and operation of Stage 1 only**, and for the treatment of 552,500 tonnes per annum of residual waste fuels (engineering capacity for approximately 405,000 to 675,500 tpa with an optimum expected throughput of 552,500 tpa). This will involve the following plant and systems as illustrated in **Figure 3-8** and the revised volume of plans at **Appendix E**:

- Tipping Hall and fuel storage.
- Waste Bunker.
- Combustion Line 1.
- Combustion Line 2.
- Two independent boilers.
- Flue Gas Treatment systems.
- One stack.

- One turbine.
- One air cooled condenser.
- Associated auxiliary equipment (including two emergency generators).
- Control room, workshop, offices and amenities.
- Laydown areas.

The proposed EfW Facility will utilise moving grate incinerator technology fed by two (2) combustion lines and associated boilers, utilising air cooled condenser (ACC) units, flue gas treatment systems (optimised SNCR) and associated residue and reagent storage silos and tanks, emissions stack and associated emissions monitoring systems and steam turbines and generator housed within a turbine hall powered by two auxiliary diesel generators.

Moving grate technology has been selected based on its capacity to handle a wide range of fuel types. While others elements of the technology have been selected to respond to achieve the highest possible level of environmental performance.

The construction and operation of Stage 1 is to be undertaken in two (2) broad phases of construction works as set out in the preliminary Construction Environment Management Plan (CEMP) (submitted with the amended EIS at Appendix BB) and confirmed in the addendum letter provided at **Appendix F** as follows:

- Site Preparation and Enabling Works: Site/ground preparation, bulk earthworks, piling and foundations, services location and reticulation, internal and external road works, car parking and other civil infrastructure.
- Main Construction Works: Structural Works

The revised main construction works include the following built elements:

Table 1 – Structural Works (Stage 1)

Element	Width	Length	Height
Tipping Hall	108	50	20
Waste Bunker	98	31	46 (included 8m below ground level)
Boiler House	50	58	43
Flue Gas Treatment	50	57	34
Stack with Two Inner Flues	Outer diameter 3.1		100
Turbine Hall	34	46	25
ACC	51	51	24
Bottom Ash Collection Area	50	16	17
Sub Station (4000sq.m)	63	50	20
Office Block	15	31	11
Workshop	32	35	16.5
Control Room	10	38	38

<b>Element</b>	<b>Width</b>	<b>Length</b>	<b>Height</b>
Weighbridge (in)	40	16	10
Weighbridge (out)	38	15	10
Fire Water Tank	14.7	13.7	9
East Amenities	32	6.5	8
West Amenities	19	6	4.5

In the first phase of construction works the substation, detention basins and back-up systems will also be constructed, along with all site preparatory works to enable the operation of the facility including vehicle access, laydown areas and site landscaping.

All other elements of the proposal are consistent with the amended EIS unless specified in the sections below.

**Figure 3 – 8** below detail the site and EfW Facility layouts.

Figure 3 – General site layout (source: Kriskis Taylor Architects; 2017)

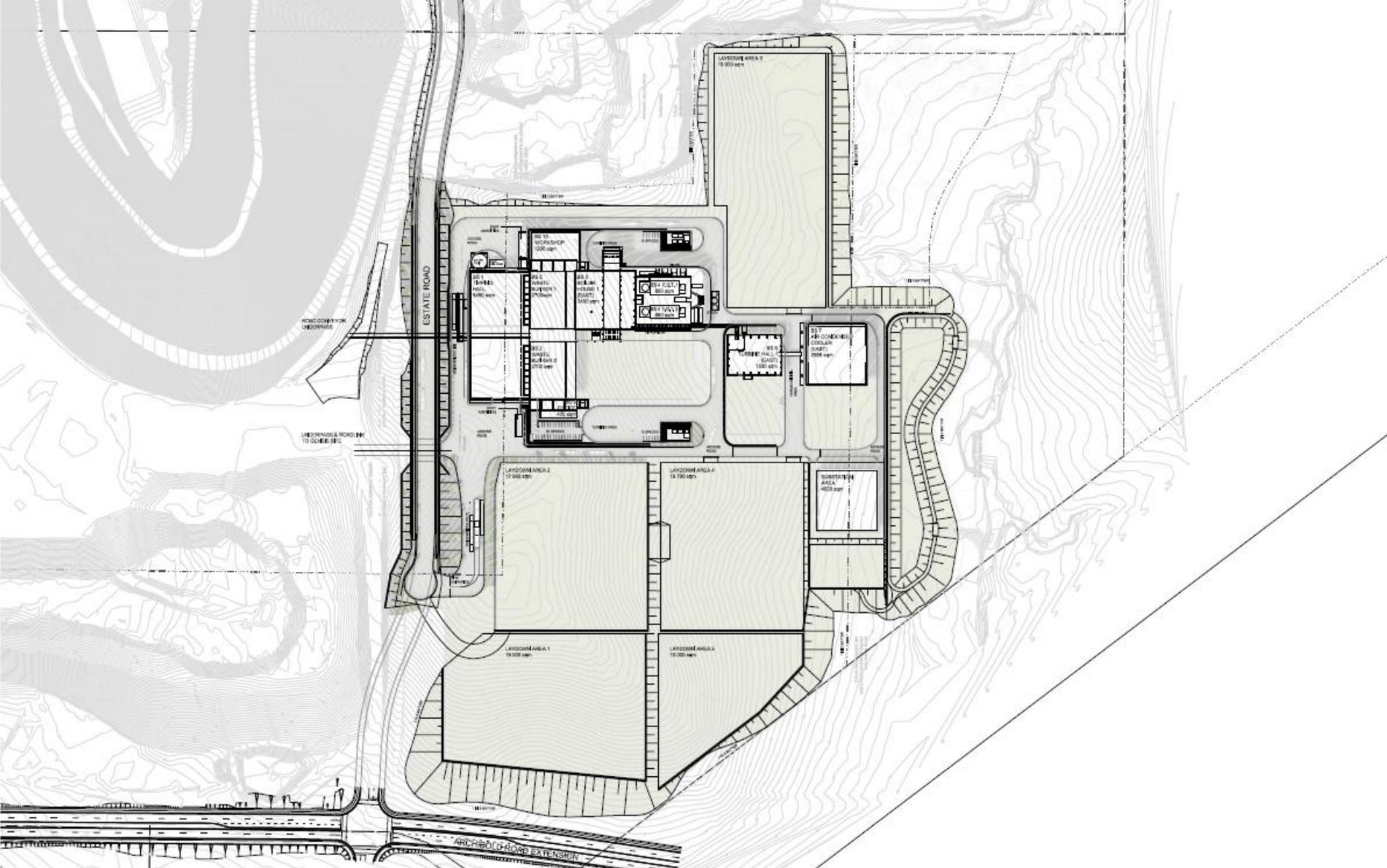


Figure 4 – Building layout and use (source: Krikis Taylor Architects, 2017)

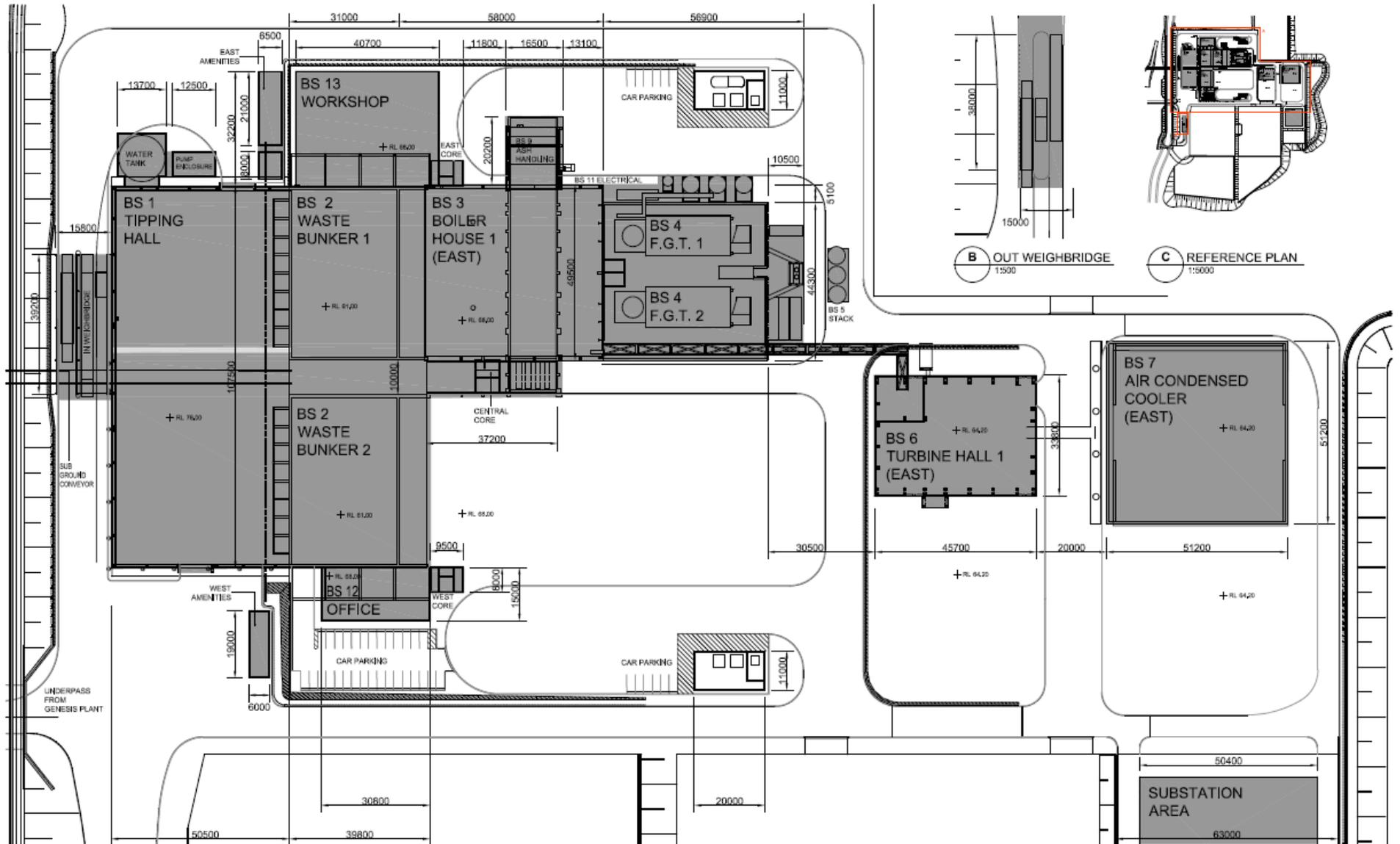


Figure 5 – Western Elevation (source: Krikis Taylor Architects, 2017)

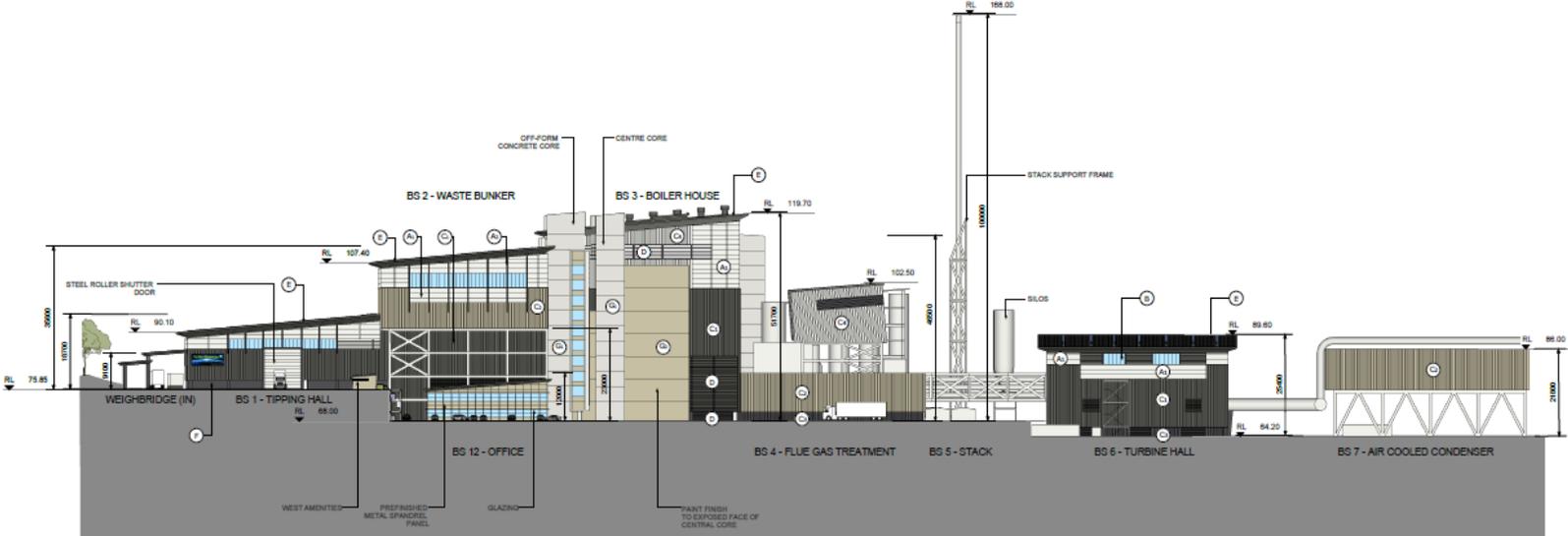


Figure 6 – Eastern Elevation (source: Krikis Taylor Architects, 2017)

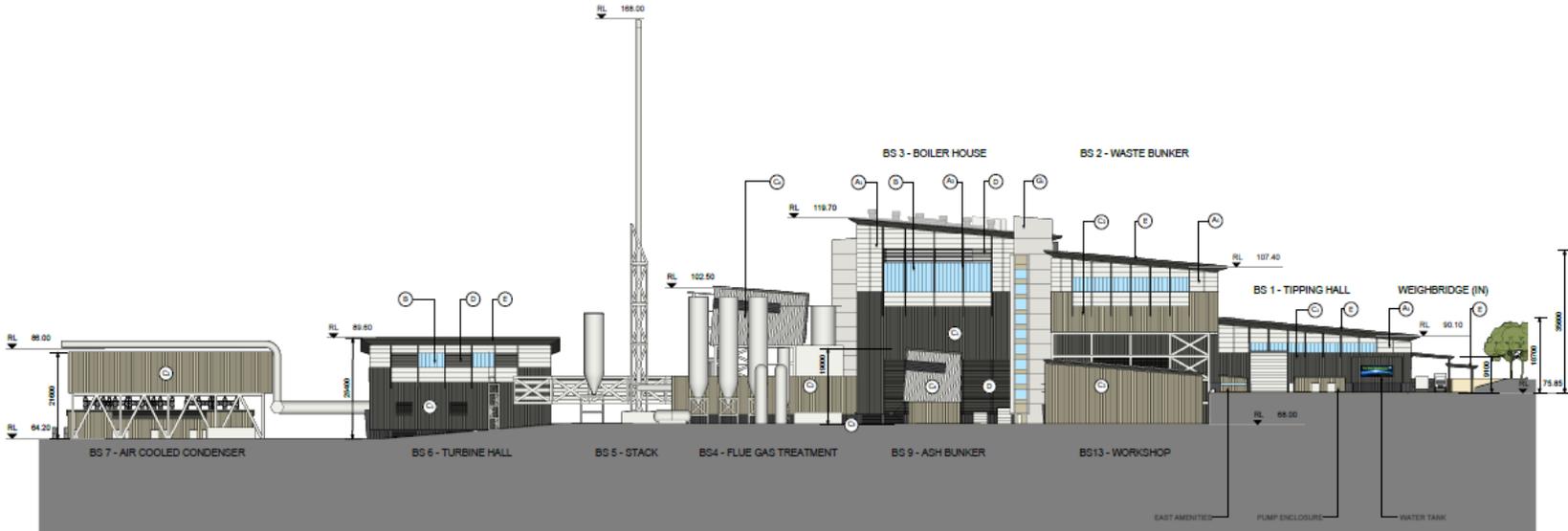


Figure 7 – Southern Elevation (source: Krikis Taylor Architects, 2017)

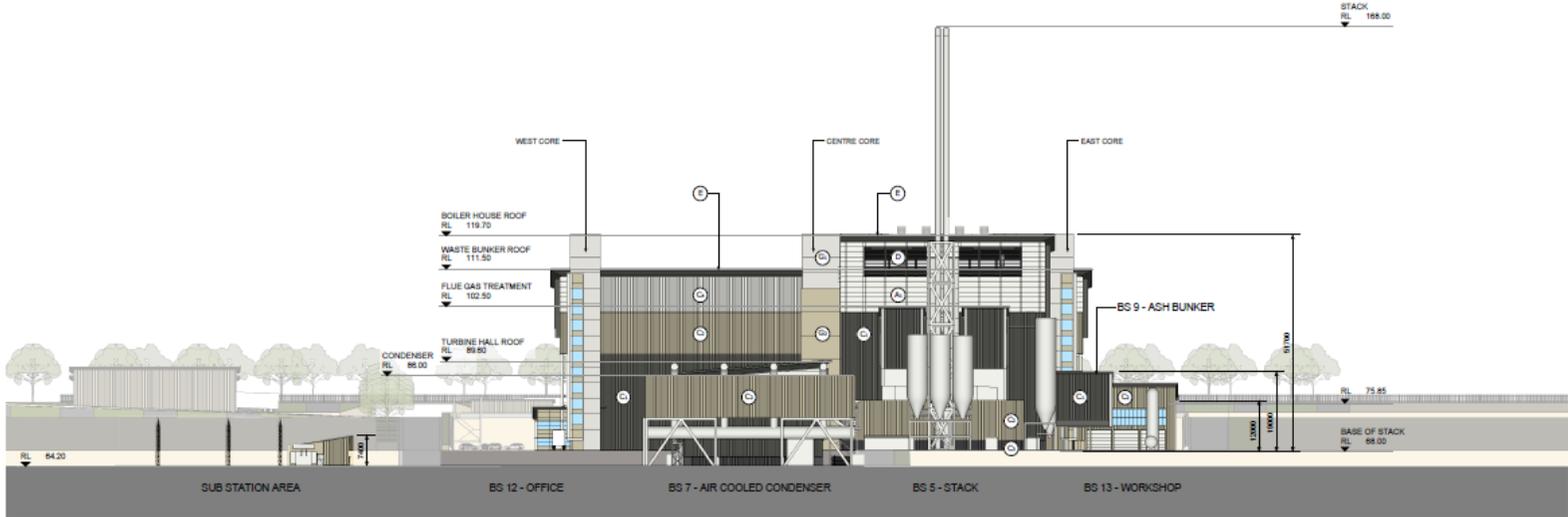
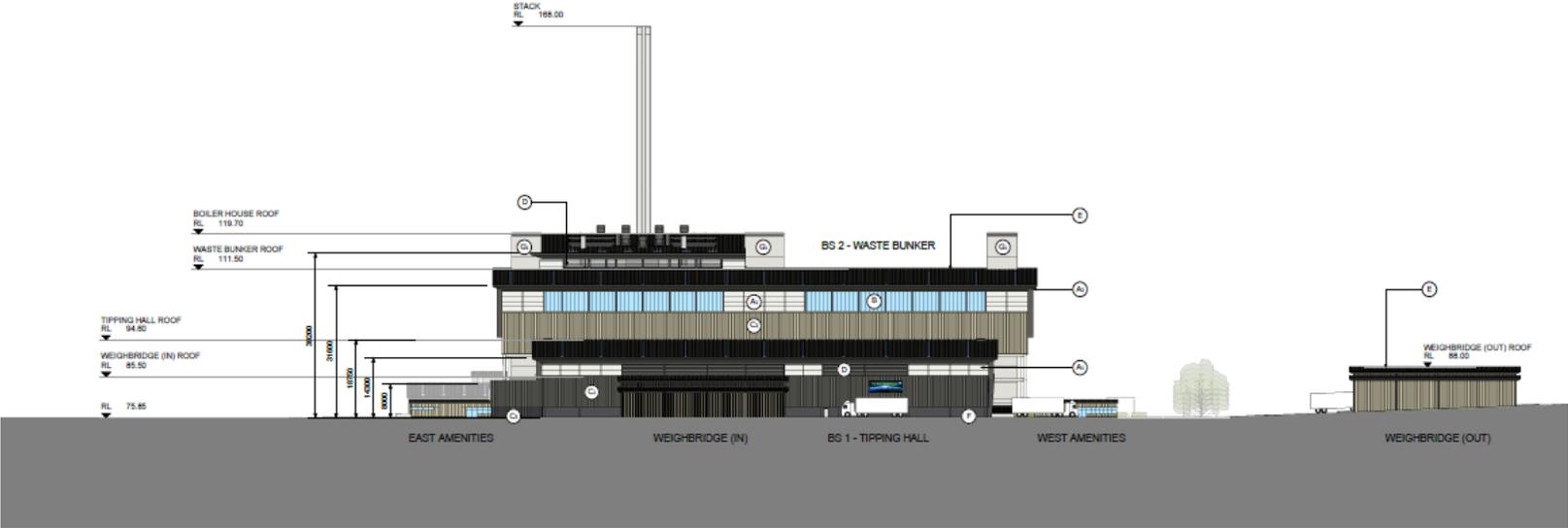


Figure 8 – Southern Elevation (source: Krikis Taylor Architects, 2017)



## 3.2. VEGETATION RETENTION

In the amended EIS a proposal had been advanced by the proponent to preserve flora within the site and to provide measures to enhance and protect the riparian areas of the Ropes Creek tributary.

Through ongoing consultation with the NSW Office of Environment and Heritage (OEH), the proposal has been further amended to reduce the areas of vegetation proposed to be removed to accommodate the EfW Facility and to further minimise ecological impacts. The proposed amendments have been incorporated as part of this revised RtS report and developed in conjunction with the project ecologist, Abel Ecology, and are presented in the Biodiversity Offset Strategy and further addendum letter attached at **Appendix G**. The following sections set out the key components of the amendments to the proposal.

### 3.2.1. Reduced laydown pads

The laydown pad areas are required to facilitate the construction and initial operation of the EfW Facility. These areas will be used to assemble plant and undertake building construction and ongoing maintenance and service access to the facility. The eastern pads are required to support the construction and installation of the eastern section of the facility as this area would otherwise be inaccessible based on the proposed order of construction staging.

The proposed configuration of the pads has been redesigned to reduce the vegetation removal required for their construction and avoid biodiversity impacts as shown in **Figure 9** and as follows:

- Pad 1 – Area: 19,000sqm (new pad in unaffected area, no protected vegetation removal required)
- Pad 2 – Area: 17,961sqm (no change)
- Pad 3 – Area: 19,000sqm. A 23,764sqm reduction to pad size, southern extent reduced.
- Pad 4 – Area: 16,789sqm (no change)
- Pad 5 – Area: 10,000sqm (new pad in unaffected area, no protected vegetation removal required)

The pad dimensions have been developed in consultation with the technology provider HZI and Brookfield Multiplex to ensure optimal functionality of the development site and taking into consideration the unique site topography and ecological attributes identified.

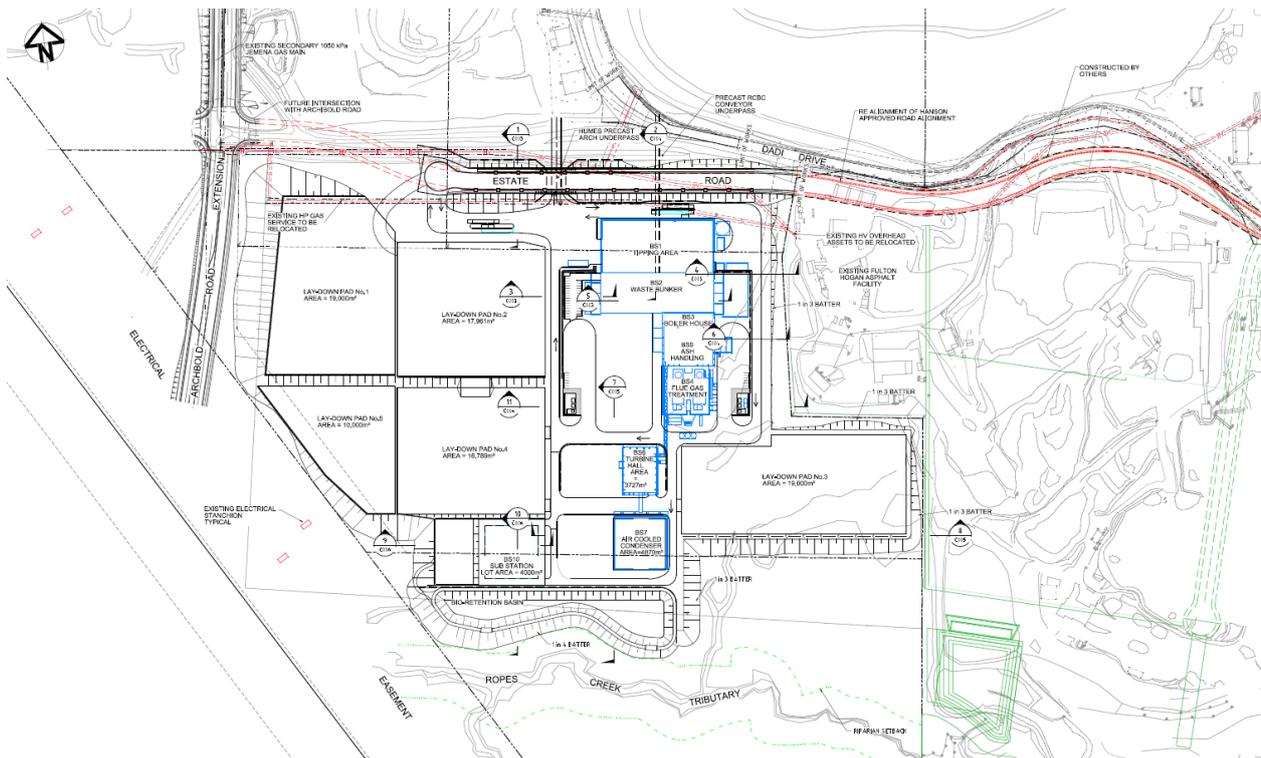
The proposal as presented in the amended EIS required the removal of 2.89 hectares of River Flat Eucalypt Forest (RFEF). The 23,764sqm reduction to Pad 3 has reduced the required vegetation removal by 2.32 hectares (80%). The area of RFEF now proposed to be removed is 0.57 hectares.

The amendments to the pad configuration result in the following reductions to vegetation removal:

- Cumberland Plain Woodland, north eastern section of the site: 0.27 hectares (no change).
- RFEF, south eastern section of the site: 0.57 hectares (2.32 hectare reduction).

The amendments to the configuration of the laydown pads result in minor changes to the bulk earth works proposed. This is fully addressed at Section 3.3 of this report and in the updated cut and fill plan prepared by AT&L Engineers and included at **Appendix H**.

Figure 9 – Proposed amendments to the Laydown Areas (Proposed General Arrangement Plan: AT&L)



### 3.2.2. Ecological Offset Strategy

An Ecological Offset Strategy has been developed by Abel Ecology in consultation with OEH. A further addendum letter to this Ecological Offset Strategy. These documents are attached at **Appendix G**.

The Abel Ecology strategy determines the equivalent number of biodiversity credits required, based on a total of 1.3 hectares of vegetation removal from the previous RtS submission, this has further been supplemented with with an addendum letter to reflect a total vegetation removal of 0.84 hectares. As an agreed approach with OEH a comparable site with similar ecosystem characteristics and vegetation quality was chosen as a basis for the calculation and identification of applicable offsets.

This strategy relies upon a like for like Western Sydney site within The Hills Shire Local Government Area, Kellyville South Public School, using a requirement of 22.5 credits per hectare of clearing proposed for the River-Flat Eucalypt Forest (HN528) or Cumberland Plain Woodland (HN526) vegetation. On this basis, the proposed offset strategy proposes 18.9 credits to offset the vegetation removal.

Further, it is noted the portion of RFEF outside the riparian area has increased and therefore the area of RFEF available as an on-site offset has increased.

The offset strategy proposes the following with regards to acquisition of the 18.9 credits:

- Purchase HN528 and/or HN526 credits available publically for other sites, as available.
- Use the published and accepted methods e.g. NSW Biodiversity Offsets Policy for Major Projects (OEH September 2014) and Biobanking Methodology to generate offsets on the site in areas not proposed for development.

All reasonable attempts will be made to secure the required offsets and be documented to the satisfaction of the relevant authorities. The use of the applicable policy documents will ensure that the offset strategy implemented meets the required size, area to boundary ratios, location, nature and likely viability.

### 3.2.3. Riparian Revegetation

It is confirmed in the Offset Strategy that the proposed compensatory planting within the Ropes Creek Tributary riparian corridor does not form part of and is in addition to the offset strategy.

The riparian area, defined as the 40 m riparian zone and an additional 10 m buffer on both sides of the Ropes Creek Tributary, within the site will be revegetated consistent with the NSW Office of Water Policy.

## 3.3. CIVIL AND STORMWATER MANAGEMENT

A stormwater management plan and civil design package has been prepared by AT&L.

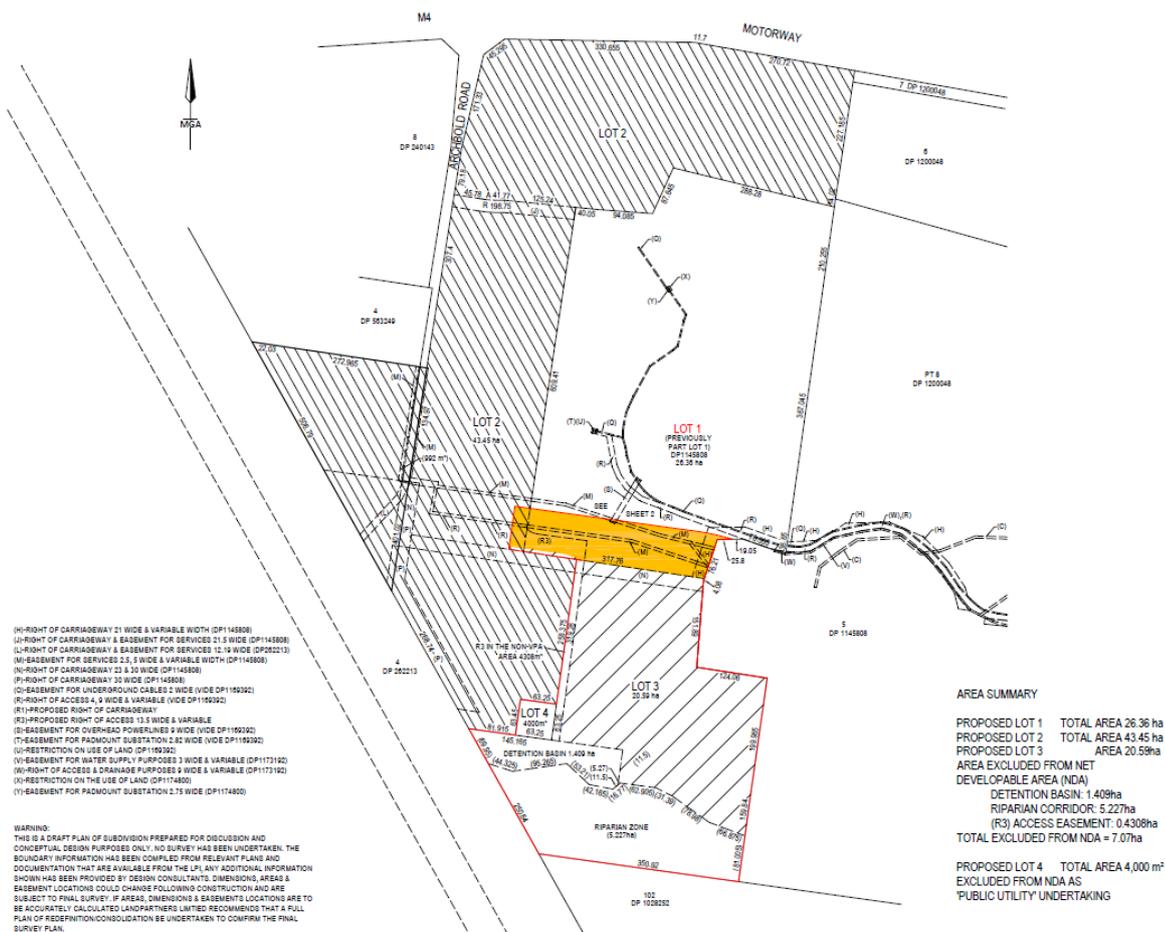
As noted at Section 3.2, the amendments to the configuration of the laydown pads result in minor changes to the bulk earth works proposed by the application. The civil works plans have been updated by AT&L to account for the modifications to the earthworks models, drainage and quality models, and are attached at **Appendix H**.

## 3.4. SUBDIVISION

An amended subdivision plan has been developed to support the preparation, execution and registration of an appropriate Voluntary Planning Agreement for the purpose of guaranteeing the collection of contributions to ensure the delivery of infrastructure.

The amended subdivision plan is shown in **Figure 10** and attached at **Appendix I**.

Figure 10 – Amended Plan of Subdivision



The amended subdivision plan is for administration purposes only and has no implications for adjacent landowners or impacts on amenity, the environment or the like.

## 4. FURTHER INFORMATION PROVIDED

### 4.1. WASTE SOURCE AND COMPOSITION

Fuel waste composition has been raised by members of the community and both waste source and composition has been raised by the NSW EPA as a matter for clarification.

The availability of suitable wastes for use as fuel is identified in Section 4.4 of this report.

This section sets out an overview of the waste streams and the composition of the feedstock to be processed at the Facility. The updated Project Definition Brief, September 2017 (PDB) at **Appendix D** provides the full details of this analysis and the background testing that has been undertaken to inform the analysis.

The feedstock fuel for the facility will be sourced from the neighbouring Genesis MPC. Fuel will be sourced and provided from other facilities where it can be demonstrated that regulated resource recovery processes have been undertaken in accordance with the NSW EfW Policy guidelines and where fuel quality is consistently established.

In all cases, quality control procedures engaged by the Genesis Recycling Facility will be employed to ensure:

- Compliance with the NSW EPA Energy from Waste Policy in respect of the extent of the resource recovery required to have been carried out.
- Consistent fuel quality and the exclusion of unacceptable materials from the fuel residue waste stream.

#### 4.1.1. Waste Types

The following fuel types have been identified as the main sources of fuel feedstock for the EfW Facility:

- Chute Residual Waste (CRW) from the Genesis Plant Output.
- General Solid Waste [non putrescible] currently Landfill Facility Direct Input.
- Material Recovery Facility waste (MRF) from qualified resource recovery facilities (currently Genesis Landfill Facility Direct Input).
- Floc waste from car and metal shredding and resource recovery carried out by others.
- Commercial and Industrial (C&I) residual after resource recovery carried out by Genesis or by others operating bona fide resource recovery facilities.
- Other specified waste fractions (SWF) compliant with EfW Policy (this includes insulation, carpet/underlay, compounds, asphalt, inert incl. non-hazardous building waste).

Based upon the fuel types listed above, a fuel (feedstock) composition has been developed. This is based on typical values for each of the proposed fuels and an estimated fuel mix. The feedstock will always be mixed as part of the normal operational process to produce as homogenous an input as possible.

#### 4.1.2. Resource Recovery Criteria

The Resource Recovery Criteria (**Table 1**) have been addressed by the MRA report. The feedstock review that assesses availability and eligibility for waste sources has been undertaken in strict accordance with the Resource Recovery Criteria specified in **Table 1** of the NSW Energy from Waste Policy.

#### 4.1.3. Waste Audits

Independent waste audits have been undertaken by NSW EPA accredited Waste auditors to determine the macroscopic compositional attributes and calorific value of the eligible feedstock to be accepted at the facility. The waste audits provide a clear picture across the five (5) defined waste stream and are included within the MRA report attached at **Appendix J**. The updated PDB details the sampling methodology and interprets the results to clearly set out the macroscopic composition and chemical analysis for each of the five waste streams.

Each of the waste audits produced a fractional analysis of the waste in each waste stream (**Figure 11**) and a chemical analysis of the materials present (**Figure 12**). The chemical analysis results, performed at a NATA approved laboratory, are also attached at **Appendix J**.

Figure 11 – Proposed Waste Streams Material Composition (Updated PDB, Ramboll September 2017)

	CRW	MRF	Floc Waste	Mixed C&I	Specified Waste	Design Fuel Mix
Fuel Mix	19.90%	12.06%	14.73%	40.93%	12.37%	100.00%
Compositional Analysis						
Paper/Cardboard	3.76%	22.00%	0.39%	20.42%	0.00%	11.82%
Wood/Timber	64.55%	3.09%	2.98%	16.87%	85.65%	31.16%
Plastic	7.38%	29.04%	21.42%	16.69%	0.00%	14.96%
Metal (Ferrous and non-ferrous)	1.88%	4.63%	1.41%	3.34%	0.00%	2.51%
Organic (not wood/timber)	11.78%	32.21%	15.71%	23.21%	14.35%	19.82%
WEE (electronic waste)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Hazardous	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Glass	0.11%	4.34%	0.00%	1.70%	0.00%	1.24%
Other* (including earth and building materials)	10.53%	4.69%	58.09%	17.77%	0.00%	18.49%
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

\* Other defines earth and building materials including:

- Insulation
- Carpet/underlay
- Compounds (excl. plastic and metal)
- Asphalt
- Inert incl. non-hazardous building waste

Figure 12 – Proposed Waste Streams Chemical Composition (PDB, Ramboll September 2017)

	CRW	MRF	Floc Waste	Mixed C&I	Specified Waste	Design Fuel Mix
Chemical Analysis						
Carbon (C)	38.54%	44.18%	23.45%	25.66%	36.96%	31.53%
Hydrogen (H)	4.61%	6.09%	4.17%	3.32%	4.66%	4.20%
Oxygen (O)	25.20%	19.29%	7.99%	18.10%	33.09%	20.02%
Nitrogen (N)	0.77%	0.42%	0.96%	0.73%	0.56%	0.71%
Sulphur(S)	0.18%	0.07%	0.26%	0.16%	0.22%	0.18%
Chloride (Cl)	0.37%	0.32%	0.52%	0.06%	0.09%	0.23%
Ash	14.72%	19.04%	49.50%	21.04%	4.63%	21.70%
Water (H2O)	15.60%	10.59%	13.15%	30.92%	19.78%	21.43%
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
<b>NCV MJ/kg</b>	<b>14.71</b>	<b>18.79</b>	<b>11.00</b>	<b>9.41</b>	<b>13.24</b>	<b>12.30</b>

The design fuel has been calculated based on the expected waste fractions (expressed in **Figure 12**) and has a Net Calorific Value (NCV) of 12.3 MJ/kg (equivalent to 12,300 kJ/kg). This is consistent with the feedstock fuel presented in the amended EIS and supporting technical documents.

Of particular importance, the waste audits and analysis demonstrate:

- An absence of hazardous materials or special wastes.
- A high degree of homogeneity as a result of the extensive degree of processing to which the materials are subject during resource recovery.
- The Quality Control processes to be implemented will maintain chlorine levels well below 1%.
- The Quality Control processes to be implemented will ensure Treated Timber Waste and PVC continues to be sent to landfill, i.e. not used as feedstock for the Facility.
- The chemical profile of floc waste demonstrated by the audits is comparable to European results, and given positive results in European examples for processing floc waste, the proposal is supported and provided for in the Facility design.

## 4.2. ADEQUACY OF TECHNOLOGY

There is no change to the technology proposed to be implemented in the EfW Facility from that presented and assessed in the amended EIS.

### 4.2.1. NSW EfW Policy

The NSW Energy from Waste Policy section 4 provides;

*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*

Concerns were raised in response to the amended EIS that although the proponent's technology provider (HZI) was able to demonstrate 400 operating plants which it has established using the same technology as that proposed here, nevertheless a specific example had not been given that any one specific plant in a similar jurisdiction was treating like waste streams.

This issue was further clouded by the differing nomenclature used for different waste streams in different jurisdictions. Construction and Demolition (C&D) waste in Europe is often source or site separated and the C&D residue from that process often then becomes part of the nominally named Commercial and Industrial (C&I) waste stream.

European facilities described as receiving residual C&I waste in practice receive a combination of fractional waste streams (including floc waste) under the general description of C&I waste.

The proponent has addressed this issue by abandoning descriptive nomenclature and instead undertaking a detailed analysis designed to identify the chemical building blocks of the waste fuel.

The testing and analysis has been performed in relation to the waste streams in order to:

- Identify the fractional components of the residual waste streams
- Isolate typical chemical characteristics of the fractional components
- Inform the expected emissions data
- Enable a comparative assessment with operating facilities elsewhere in the world.

The resulting fractional and chemical analysis (as presented by Ramboll in the PDB at **Appendix D**) have been used to calculate the behaviour and final output state of the input elements based on the results of comparable plants. The waste audits and resulting waste stream composition and chemical analysis prove the adequacy of the technology to process the waste stream and capability of the facility to achieve the guaranteed emission based on the waste audits.

From this the Project Engineer Ramboll was able to nominate the Ferrybridge facility in the United Kingdom as a facility using the same technology, and Ferrybridge is of a comparable size and treating alike waste stream.

### 4.2.2. Reference Facilities

Additional information has been provided regarding appropriate reference facilities to compare technology implemented, scale of facility and feedstock composition in the PDB at **Appendix D**. The further analysis carried out through the waste audits has confirmed the appropriateness of the reference facilities originally presented and provides a clear comparison of feedstock composition and therefore calculated NCV.

The Ramboll analysis of reference facilities is demonstrated within the updated PDB and includes a comparison of the proposed facility and international facilities (8 in total) with regards to capacity, NCV, technology, air pollution control employed, chemical composition and feedstock composition.

In summary, Ramboll finds that all relevant design parameters of the proposed facility are well within comparable plants which are successfully in operation. As a result, the technology option pursued, being moving grate technology with semi dry flue gas treatment, was selected based on its capacity to handle a wide range of fuel types and variation of feedstock and is fully suitable for this application.

## 4.3. ASBESTOS

Asbestos has not been raised as an issue by technical reviews of the proposal. However, it is a concern of the community and has highlighted a matter to be addressed in providing a response to submissions.

The matter of asbestos was not specifically addressed in the amended EIS as asbestos was not recognised as having the potential to occur and cause adverse impacts at the facility. This is for two key reasons which are explained within this section and supported by technical information provided at **Appendix D** and **Appendix K**– in both the Pacific Environment and Ramboll Technical Memos.

### 1. Fail safe control mechanisms of the facility

The failsafe mechanisms of the operation of the EfW Facility has been designed to ensure the waste screening process is undertaken to a high level of quality assurance to minimise any risk that asbestos will enter the plant. If any asbestos is present it will be identified during the Genesis Quality Assurance processes which includes visual inspection and sorting, separation and will then go to landfill.

The waste audit reports that have been undertaken (attached at **Appendix J**) clearly demonstrate the absence of asbestos from the audited samples. Further, the strict regime of Quality Assurance procedures already in place at the Genesis facility provide a continuing high degree of confidence that unacceptable hazardous materials will be entirely excluded from the fuel waste stream.

### 2. Behavioural properties of Asbestos mean it will not enter the atmosphere and pose a health risk

Asbestos is a natural fibrous mineral used as construction material with good insulating and fire resistance properties. Bonded asbestos is typically found in construction and demolition wastes in sheet or pipe form.

Unless broken or pulverised it usually safe to handle under certain conditions. Fibrous or friable asbestos previously used as pipe lagging or a wall or floor insulator is more difficult to disguise and almost never enters the mixed waste stream being instead in larger quantities and much more likely to be landfilled directly.

Genesis operates existing exclusion provisions to ensure that bonded asbestos pieces do not enter the recovered resources stream. Those same processes will be used to exclude any pieces from the residual waste fuel stream.

Asbestos has a melting point of  $>1,500^{\circ}\text{C}$  and is chemically resistant to acids. For technical applications the fibres typically have a length of 10-20 mm and a diameter of approximately three micrometres (one micrometre is one thousandth of a millimetre).

When asbestos is processed by crushing or grinding the fibres break and release fine fragments with a fibre length above 5 micrometres. The health hazard of asbestos lies in the inhalation of these particles, not in the chemical properties of asbestos.

In the unlikely event that asbestos did enter the EfW Facility it will not burn, vaporize or vitrify due to its high melting temperature. Depending on the form of asbestos the following will occur:

- Tightly bounded asbestos (in concrete bound materials) will remain bonded and leave the furnace via the bottom ash in larger pieces.
- In case of non or only slightly-bonded asbestos materials the material will remain on the grate and then also leave the furnace with the bottom ash. In the bottom ash extractor, it will be quenched with water and embedded in the clay-like matrix of the bottom ash and not be further released.
- In the unlikely event that fibres were entrained with the flue gas. Larger fibres will deposit in the boiler and be removed with the boiler ash. Very fine particles will be entrained to the flue gas treatment and then fully removed by the baghouse filter. Baghouse filters in semi-dry systems have excellent removal efficiency of near to 100% for particles larger than 0.1 micrometre. As asbestos particles will never have a diameter below 3 micrometres it will be fully removed and leave the plant via the APC residues.

**Ramboll and Pacific Environment have confirmed, that even if asbestos enters the facility (extremely unlikely), it will be fully removed and leave the plant either with the bottom ash or APC residues this residue will then be placed in the land fill.**

## 4.4. WASTE SOURCE AVAILABILITY

The NSW EPA has requested that the issue of waste availability be addressed, i.e. confirmation that there are sufficient volumes of waste available to feed the proposed EfW Facility. This exercise has been undertaken by MRA Consultants in accordance with the Resource Recovery Criteria of the EfW Policy Statement (set out in Table 1 of the policy). The findings and figures presented in the MRA report are proposed to replace previous data submitted regarding waste availability.

The MRA report dated (September 2017) has been based on current data and does not rely on dated figures (a key concern of the ARUP review). Tables as Appendices in the MRA report demonstrate the methodology for the calculation of all waste streams proposed to be received at the Facility. The data states the deemed resource recovery rates and includes these in the composition calculation for all proposed waste streams. Resulting in a clear representation of the eligible feedstock anticipated to be received by the facility taking into account the potential for material that is unsuitable for feedstock.

The MRA report, provided at **Appendix J**, demonstrates that there are sufficient tonnes of waste available in the Sydney MLA for energy recovery that satisfy the EfW Policy Statement. Appendix B of the MRA report documents the total amount of waste processed in the MLA, the total amount of eligible waste in the MLA and how the eligible waste meets the appropriate criteria. This includes data source references and mass and balance diagrams.

The key findings using waste data from the 2016-2017 Financial Year are:

- 5,022,000 tonnes of waste from the categories specified in the EfW Policy are processed in the MLA.
- 551,200 tonnes are eligible for energy recovery for Stage 1 of the proposed facility (no MSW), this will increase to 582,700 by 2019.
- An additional 1,625,000 tonnes of eligible feedstock, that was landfilled without being processed for resource recovery, may have been eligible for energy recovery.
- The available waste identified meets the Resource Recovery Criteria and therefore is eligible for feedstock at the proposed facility.

While the eligible tonnes generated in the MLA in FY17 from C&D and C&I sources (551,200 tonnes) are currently 1,300 tonnes short of the proposed capacity of Stage 1 (552,500 tonnes), taking into account the projected growth, by FY19 these tonnes will have increased to an estimated 582,700 annual tonnes.

The following tables set out the eligible tonnes to be processed at the Facility based on existing operations (**Figure 13**) and planned expansions (**Figure 14**). These figures are based on actual FY16 data (**Figure 13**) and future projections based on fully substantiated waste market trends (**Figure 14**) to be processed in actual planned facilities controlled by the proponent.

Figure 13 – Waste Source Availability: Existing facility and eligible tonnes (MRA Report, 2017)

Facility	Facility type	Classification of waste received and activities undertaken	Eligible tonnes in FY16 (t)
Genesis EC (excl. the Genesis Material Processing Centre)	Recycling centre	Accepts separated waste streams. Most of these materials undergo recycling on-site and are transformed into valuable products. Some are processed off-site by specialised recyclers.	751
Genesis Material Processing Centre (MPC)	Mechanical recycling plant	Accepts mixed construction and demolition waste. This waste is recovered for recyclables.	41,978
Genesis EC Landfill	Landfill	Accepts residual from material recovery facilities (MRFs) and metal recycling plants as well as separated waste streams and landfills.	120,954
Genesis Alexandria	Transfer station	Accepts mixed construction and demolition waste. The waste is recovered for recyclables.	15,714
<b>SUBTOTAL</b>			<b>179,397</b>

Figure 14 - Waste Source Availability: Planned facilities and eligible tonnes (MRA Report, 2017)

Facility	Description of expansion	Additional eligible tonnes p.a. (t)
Genesis MPC	Increase input stream by 210,700 tonnes p.a.	52,262
Genesis EC (exl. MPC)	Increase receipt of textiles and waste wood	67,559
C&I Dirty MRF	Build processing facility for mixed C&I waste (a \$5 mil EPA grant was awarded and a modification to the site has been approved) <sup>6</sup>	226,162
Genesis EC Landfill	Increase receipt of shredder floc	27,120
<b>SUBTOTAL</b>		<b>373,103</b>
<b>GRAND TOTAL</b> (tonnes per annum)		<b>552,500</b>

With regard to future increases in waste volumes to be allowed for expansion of the facility, MRA has projected the estimated eligible tonnes generated in the MLA over a 25-year time horizon. The most recent NSW waste data report (NSW EPA, 2015) contains biennially reported data from 2003 to 2013. The data indicates that waste generation has experienced growth over the reported years. The waste generation trends from this dataset were applied to MRA's estimated eligible tonnes resulting in a projection that the amount of waste eligible for energy recovery will continue to grow.

This review of waste source and availability in the MLA confirms that **there is sufficient eligible feedstock to enable Stage 1 construction and operation of the EfW Facility and sustain its operation into the future.**

Any future growth will require the market to divert waste currently being directly landfilled, from landfill and to processing for resource recovery. In terms of general growth trends, MRA notes:

- The EFW Policy Statement requires all eligible feedstock to be pre-processed to remove recyclables and hazardous material.
- Therefore, incentivising the development of additional processing and recycling facilities that have the capacity to process more waste.
- This allows more waste to be processed to increase the availability of eligible feedstock.
- As a result of processing more waste, the proportion of recyclable materials recovered are increased.
- MRA estimate an additional amount of eligible feedstock for energy recovery within the MLA at 1,625,000 tonnes.

## 4.5. SCENARIO MODELLING

Taking into account the technical matters raised in submissions and further liaison with Government authorities (NSW DPE & EPA), the project consultants defined parameters (assumptions and inputs) to produce further modelling of additional operational scenarios and refine the previously modelled scenarios.

The scenario parameters have been amended in accordance with the technical advice and queries raised through the submission process. These include the following inputs and assumptions that have been revised or confirmed and are presented in the updated modelling:

- Waste source and composition.
- Waste mixing process.
- Flue gas treatment.
- Operational controls for inputs.
- Operational controls for outputs.
- Stack parameters.
- Screening criteria.
- Concentrations used (VOC's – explanation and justification and inclusion of worst case).
- Operation hours.
- Potential for fugitive emissions from tipping hall.

### 4.5.1. Upset Scenarios

As a result, new modelling has been undertaken for two additional scenarios (4 and 5):

4. Upset operating conditions – i.e. reduced efficiency and/ or complete failure of systems.
5. Diesel Generators – includes the operation of two emergency generators when power is lost, this is most representative of upset conditions.

These scenarios account for 'worst case conditions' as stated. Causes of upset conditions, the associated emission consequences, indications of occurrence and remedies are detailed by Ramboll (PDB, 2017) in **Table 2**.

Table 2 – Potential Upset Conditions (PDB, Ramboll 2017)

Incident	Root cause	Consequence in Emission	Indication	Remedy
Failure of lime dosing	Dysfunction of the dosing device, the pneumatic conveying system or clogging of lime in the silo or ducts.	Gradual increase of HCl and SO <sub>2</sub> emissions over time (within 15-20 minutes). Due to the remaining lime in the system and the in system there is sufficient time for the operator to take necessary actions.	Alarm caused by increased HCl and SO <sub>2</sub> emission in stack.	Restart lime dosing system  actuate anti-clogging system in silos  Switch to the reserve dosing and conveying system
Failure of activated carbon dosing	Dysfunction of the dosing device, the pneumatic conveying system or clogging of	Gradual increase of mercury emissions over time (within several hours). No relevant increase of dioxins and furans	Alarm caused by no usage of activated carbon	Restart lime dosing system  actuate anti-clogging system in silos

Incident	Root cause	Consequence in Emission	Indication	Remedy
	activated carbon in the silo or ducts.	emissions due to remaining active carbon in the system and high recirculation rate.		Switch to the reserve dosing and conveying system
Failure of filter bags	Gradual wear of bags (mainly seam), wrong installation, manufacturing defect(s) of bags or cages.	Gradual increase of dust and heavy metals during in short spikes whenever cleaning of bags is in operation (note: the complete rupture of a bag is in extremely rare incident)	Dust peaks during online cleaning, alarm as a result of increasing dust emissions in stack	Monitoring the emission to detect relevant filter compartment  replacement of damaged bag (possible during continuous operation of the plant)
Failure of SNCR system	Breakdown of pumps, failure of piping, clogging of nozzles	Increase of NOx emission	Alarm due to increased NOx emissions	Change to standby pump  repair piping  Unblock nozzles (possible during continuous operation of the plant)
Insufficient combustion conditions	Low combustion temperature, dysfunction of the primary or secondary air system, of the grate or the pusher, blockage in the feed hopper	Increase of CO and VOC emissions	Alarm due to low furnace temperature and/or increased CO/VOC emissions	Start auxiliary burners  if root cause cannot be solved during operation then normal shutdown of plant

These additional scenarios are provided to expand on the scenarios previously modelled and ensure that a wider breadth of possible operating conditions are covered and modelled. The results demonstrate that even with worst case conditions the emissions from the facility can be assessed as acceptable and do not pose an adverse risk to air quality and human health.

## 4.6. UPDATED TECHNICAL REPORTS

The assessment of the the EfW Facility relies on inputs, assumptions and analysis of data across all project investigations and consultant teams.

To this end, all technical reports that support this application have been reviewed for consistency of data and assumptions and updated as necessary. This section provides a brief overview only of the documents that are updated and submitted with this RtS report and documentation package.

The following reports have been updated in order to respond to the submissions received and reflect and quantify the potential impacts of Stage 1 of the EfW Facility only. The analysis and results of these updated reports is expanded upon in later sections of this report in response to the specific issues raised in the Government and community submissions received.

The EfW Facility that has been assessed as part of these updates constitutes the operation and treatment of 552,500 tonnes per annum of residual waste fuels (engineering capacity for approximately 405,000 to 675,500 tpa with an optimum expected throughput of 552,500 tpa). This design capacity and optimum expected throughput forms the basis of all environmental and technical assessment.

#### **4.6.1. Project Definition Brief: Ramboll, September 2017**

The PDB prepared by Ramboll and attached at **Appendix D**, has been comprehensively reviewed and updated to provide further details to respond and clarify matters raised through the exhibition period and reflect the Stage 1 of the EfW Facility only. The PDB sets out the key components of the facility, including details of the plant technology, the operation of the facility, the waste fuel to be received and processed, details of reference facilities and assumed behaviour of materials, the treatment systems to be employed and the control and monitoring systems in place.

The PDB has reviewed and incorporates the following technical advice, reporting and analysis:

- Feedstock Review in accordance with the Resource Recovery Criteria of the NSW EfW Policy Statement (MRA Consulting Group, July 2017).
- Waste Audits undertaken by NSW EPA accredited Waste Auditors.
- Air Quality and Greenhouse Gas Assessment (Pacific Environment, November 2017).
- Human Health Risk Assessment (AECOM, September 2017).

The PDB replaces any previously submitted PDB.

#### **4.6.2. Plume Rise Assessment: Ramboll, September 2017**

The Plume Rise Assessment prepared by Ramboll has been reviewed and updated based on revised stack parameters and Stage 1 of the EfW Facility only and is included at **Appendix L**. The outcomes of the Plume Rise Assessment have been reviewed in the context of airspace operations and aviation safety.

#### **4.6.3. Best Available Techniques Evaluation: Ramboll, September 2017**

The Best Available Techniques Evaluation as prepared by Ramboll and attached at **Appendix M**, has been supplemented with an addendum letter to confirm requirements for Best Available Techniques for Stage 1 of the EfW facility is met.

#### **4.6.4. Air Quality and Greenhouse Gas Assessment: Pacific Environment, November 2017**

The Air Quality and Greenhouse Gas Assessment, prepared by Pacific Environment, has been updated. The revised assessment, dated November 2017, is included at **Appendix N**.

The assessment has been updated to cover the matters raised in the exhibition period and reflect Stage 1 of the EfW Facility only. In particular, the updates take into account the waste source compositional fractions, the chemical analysis undertaken, the agreed emissions modelling parameters and assumptions and modelling of two additional scenarios.

The updated modelling has been cross-checked for consistency with the results of the following documents and aligns with the reports:

- Project Definition Brief (Ramboll, September 2017).
- Feedstock Review in accordance with the Resource Recovery Criteria of the NSW EfW Policy Statement (MRA Consulting Group, July 2017).
- Waste Audits undertaken by NSW EPA accredited Waste Auditors.
- Human Health Risk Assessment (AECOM, September 2017).

The outcomes and interpretation of the updated results are detailed in later sections of this report in response to the specific issues raised in the Government and community submissions received.

The Air Quality and Greenhouse Gas Assessment replaces the previously submitted assessment (July 2017) as part of the originally submitted RtS report.

#### **4.6.5. Human Health Risk Assessment: AECOM, September 2017**

An updated Human Health Risk Assessment has been prepared by AECOM (September 2017) and is attached at **Appendix O**.

The updated assessment has been revised to cover those matters raised in the exhibition period and reflect Stage 1 of the EfW facility only. In particular, the updates take into account the waste source compositional fractions, the chemical analysis undertaken, the agreed emissions modelling parameters and assumptions and modelling of two additional scenarios.

The updated modelling has been cross-checked for consistency with the results of the following documents and aligns with the reports:

- Project Definition Brief (Ramboll, September 2017).
- Feedstock Review in accordance with the Resource Recovery Criteria of the NSW EfW Policy Statement (MRA Consulting Group, July 2017).
- Waste Audits undertaken by NSW EPA accredited Waste Auditors.
- Air Quality Air Quality and Greenhouse Gas Assessment (Pacific Environment, November 2017).

The Human Health Risk Assessment replaces the previously submitted assessment (July 2017) as part of the originally submitted RtS report.

#### **4.6.6. Noise and Vibration Assessment: Pacific Environment, August 2017**

The Noise and Vibration Assessment, prepared by Pacific Environment, includes a description of all noise sources such as construction, operational, on and off-site traffic noise and a quantitative noise impact assessment including a cumulative impact assessment.

An update to the report has been conducted to address the issues raised in the exhibition period and reflect Stage 1 of the EfW facility only. The assessment is included at **Appendix P**. The updated report includes updated receivers, location and modelling, additional detail on emission calculations, modelling of low frequency noise impacts.

#### **4.6.7. Odour Report: Pacific Environment, September 2017**

The Odour Assessment, prepared by Pacific Environment, includes monitoring of odour emissions and a quantitative assessment of potential odour impacts as a result of the proposed EfW Facility.

The Odour Assessment has been updated based on the dispersion modelling for Stage 1 of the EfW facility only. This assessment is included in **Appendix Q**.

#### **4.6.8. Ozone Impact Assessment: Pacific Environment, September 2017**

The Ozone Impact Assessment, prepared by Pacific Environment, has been updated based on the dispersion modelling and single stack parameters for Stage 1 of the EfW facility only. This assessment is included in **Appendix R**.

#### **4.6.9. Visual Impact Assessment: Urbis, September 2017**

The Visual Impact Assessment as prepared by Urbis has been updated. The revised assessment, dated September 2017 is included at **Appendix S**.

This assessment has been updated to consider the built form, massing and views of Stage 1 of the EfW facility only. In particular, the update reflects the single stack scenario of the development.

#### **4.6.10. Concept Landscape Plan: Site Image, September 2017**

The Concept Landscape Plan and report as prepared by Site Image has been updated to reflect Stage 1 of the EfW facility only and is attached at **Appendix T**.

This update reflects the revised laydown areas and identifies landscaping over the area that has previously identified as accommodating future Stage 2 development area.

#### **4.6.11. Updated SIDRA Modelling, Traffic**

Traffic have updated the SIDRA modelling and provided an additional response directly to RMS following the exhibition period. A further addendum letter is provided by Traffic (September 2017) to assess the traffic generation and impacts of Stage 1 of the EfW Facility only.

The revised data updates the lane geometry, phasing, and intersection priority assumptions used in the modelling and attached at **Appendix U**.

#### **4.6.12. Preliminary Hazard Analysis Peer Review: Core Engineering, June 2017**

The Preliminary Hazard Analysis, prepared by RawRisk, submitted with the application has been reviewed by Core Engineering to ensure it aligns with the current scope of the project. A technical advice note is provided by Core Engineering to confirm this review is satisfactory, at **Appendix V**.

This review is supplemented by an addendum letter (September 2017) which demonstrate how the potential impacts of Stage 1 of the EfW Facility have been addressed.

#### **4.6.13. Bushfire Assessment: Abel Ecology, September 2017**

An updated Bushfire Assessment, prepared by Abel Ecology, is attached at **Appendix G**. The updated assessment reflects Stage 1 of the EfW facility only and increased retention of forest vegetation.

The review is supplemented by an addendum letter providing information relevant to the previous Flora and Fauna Assessment (April 2015), Bushfire Assessment Report (June 2014), and Response to Letter from OEH (July, 2017).

#### **4.6.14. Airspace Operations Assessment: Aviation & Airspace Design Solutions, September 2017**

A revised Airspace Operations Assessment undertaken by Aviation & Airspace Design Solutions has been prepared and is attached at **Appendix W**. This assessment has reviewed the potential for impacts on prescribed airspace based on Stage 1 of the EfW Facility only and single stack operation.

The assessment has been cross-checked for consistency with the results of the revised Plume Rise Assessment (Ramboll, September 2017).

#### **4.6.15. Perched Groundwater and Surface Water Assessment: Consulting Earth Scientists, October 2017**

A Perched Groundwater and Surface Water Assessment was undertaken by Consulting Earth Scientists and is attached at **Appendix BB**. This assessment reviewed the groundwater impacts of the site and adjacent sites and water quality.

#### **4.6.16. Other Addendum Updates**

In addition to the above updated technical reports, the following documents have been updated via addendum letters to assess and reflect the operational requirements and potential impacts of and mitigation measures for Stage 1 of the EfW Facility only.

These letters generally constitute updates which were not directly raised by industry or community submissions and confirm that impact of Stage 1 of the EfW Facility are consistent with technical reports previously submitted as part of the amended EIS.

- Update to Aboriginal Cultural Heritage Assessment.
- Update to Non-Aboriginal Cultural Heritage Impact Statement.
- Update to Contamination Assessment.
- Minor grammatical update to Waste Management Report.
- Update to Construction Environmental Management Plan.
- Update to CIV report.

Further to this, the Proponent has committed to a number of additions to the submitted Statement of Commitments in response to social license issues. These commitments relate to the devliery of additional

community benefit and ensure transparency and verification of the residual waste fuel stream to the regulatory bodies. These commitments are detailed in supplementary letters submitted to the DPE on 21 October and 11 December 2017, respectively and are provided at **Appendix CC**.

#### 4.6.17. Presentation of Air Quality and Human Health results

The presentation of the modelled results within the Pacific Environment Air Quality and Greenhouse Gas Assessment have varied throughout the application process. Generally, this is a direct result of key changes in assessment methodology and external reviews and feedback by the NSW EPA and technical consultants.

The following high-level summary explains why these values may vary between the EIS, amended EIS and this RtS report.

- Different scenarios have been assessed across different documents, with more scenarios evaluated in response to stakeholder feedback.
- Pacific Environment (2015) relied on modelling in-stack emission limits, as opposed to ‘real world’ measurements
- Stack exit parameters changed between Pacific Environment (2015) and subsequent documents which reflects engineer and design refinements.
- Model setup has changed between Pacific Environment (2016) and Pacific Environment (2017) to accommodate stakeholder feedback received in response to the exhibition of the amended EIS.
- Dispersion modelling between Pacific Environment (July 2017) and Pacific Environment (August 2017) now based on the evaluation of a single stack.
- Importantly, while values presented in results tables have varied across documents, for the reasons stated above, the central conclusion of the air quality assessment has not changed since 2015, namely that in-stack emission limits presented, maximum ground level concentrations of key air quality metrics are anticipated to meet ambient air quality criteria and thus be sufficiently protective of environmental impacts

The following sets out a detailed explanation of changes in the assessment methodology between the Pacific Environment Assessments in chronological order:

1. Pacific Environment (**2015**): Pacific Environment prepared an air quality assessment for the proposed TNG EfW Facility entitled: “Energy from Waste Facility – Air Quality and Greenhouse Gas Assessment”. This document was published as part of the original EIS for the project. The modelling was based on emissions that were derived from the European Union (EU) Industrial Emissions Directive (IED; Directive 2010/75/EU) half hourly or daily in-stack concentration limits only.
2. Pacific Environment (**2016**): Pacific Environment revised the air quality assessment and it was exhibited as part of the amended EIS. This assessment included an update to the stack discharge assumptions including stack exit parameters and volumetric flow rate. In addition, at the request of the NSW EPA, the assessment adopted emissions that were based on in-stack concentration measurements from similar facilities around the world.
3. Pacific Environment (**July 2017**): Pacific Environment completed a further revision of the air quality assessment based on the response to submissions, which provided additional feedback from the NSW EPA, and incorporates comments from an internal peer review. This document references a staged approach to the approval pathway. The modelling completed incorporated a number of updates which include:
  - New meteorological file that replaces all calm periods in meteorological input file with 0.5 m/s wind speeds (to address internal peer reviewer comments).
  - Terrain information based on the higher resolution STRM1 data set (to address internal peer reviewer comments).
  - Updated emissions for the expected and upset scenarios, including the adoption of the UK Environment Agency metals data (to address the NSW Department of Health’s peer review comments).
  - Addition of the regulatory IED limits scenario, similar to that originally completed within Pacific Environment (2015).

4. Pacific Environment (**November 2017**): Pacific Environment revised the air quality assessment to assess the potential impacts associated with the operation of two combustion lines reporting to a single stack with a total engineering capacity of up to 675,000 tonnes annually and a planned operation to treat 552,500 tonnes per annum of residual waste fuel for the facility. Based on this single stack scenario, dust deposition rates, stack limits and modelling assumptions were updated. In particular, the dust deposition modelling outputs were amended as follows:
  - Revised particle diameter size and density of emission being released from an overly conservative geometric mean particulate diameter of 10 µm to 1µm.

This was based on information provided from Ramboll on the particulate size distribution emissions from an equivalent facility in Germany as referenced in the revised air quality assessment (**Appendix N**).

In addition to the above, it is noted that in previous versions of the air quality assessment there was a numerical error in the deposition calculations (all concentration predictions used for air quality assessment were unaffected). This error was identified and has subsequently been rectified within the current deposition results adopted within the air quality assessment and utilised in the HHRA.

### **Variation to HHRA**

The results of the updated air quality assessment have varied the outcomes of the previous HHRA (July 2017) based on the updated dust deposition modelling outputs and single stack scenario.

The revised HHRA (September 2017) utilises these updated modelling parameters provided in the November 2017 iteration of the AQA to provide a quantitative assessment based on air and particulates (dust). The HHRA requires the deposition of particulate-phase pollutants (dioxins/furans, PAHs and all metals) to be calculated, and as such the changes made to the current iteration of the air quality assessment (November 2017) has resulted in a variation to results in the revised HHRA (September 2017).

In summary, taking into account the updated modelling parameters, the addition of two modelling scenarios as suggested by the submissions and the updated modelling for Stage 1 of the EfW Facility only, the outcomes of the AQA and HHRA generally remain consistent with the original assessment. This demonstrates the robustness of the assessment and data input into the modelling. Further discussion on the modelling scenarios and impact of the AQA and HHRA are discussed in detail at Section 6.11 and 6.12 .

## 5. OVERVIEW OF SUBMISSIONS

### 5.1. GOVERNMENT & INDUSTRY SUBMISSIONS

A total of 26 submissions were registered under Government Agency and Industry. Two (2) submissions were recorded against Blacktown City Council. However, submission reference 190761 is noted to be a proforma community submission and has therefore not been considered in the analysis or response to submissions section of this report.

As set out in the table below of the submissions received in this category, 21 were of objection and five (5) were comments.

Table 3 – Summary of Government Agency and Industry Submissions

Government Agency		Industry		Other	
Object	Comment	Object	Comment	Object	Comment
9	4	11	0	1*	1
13		11		2	
Total number of submissions considered for analysis		26 submissions			

\* not included in analysis of issues

#### 5.1.1. Referencing Submissions

Submissions made by Government and Agencies or by and on behalf of Industry were each allocated a discrete reference number by the DPE. Notwithstanding this, as they have been identified by organisation name these have been used in the discussion and identification of issues.

#### 5.1.2. Summary of Key Issues and Sub-Issues

The 20 submissions raising objection to the proposed development have been analysed to determine the distribution of concerns. One (1) objection, submitted by Hillsong Connect Group (Bungarribee, NSW) specified no reason for objection, while the groups objection is noted, the basis for the objection cannot be analysed and has been excluded from consideration below. A response is provided in the detailed assessment table, noting the groups response.

The detailed outcome of the submission analysis is set out in Table 4. Of the 33 key areas of concerns raised across the 20 objections received, 14 matters were raised by only one (1) submitter. With primary matters of concern generally related to health risk, air quality, source of waste, ecological impacts, noise, traffic and parking, waste source and process.

Notably, over 96 per cent of concerns were raised by less than 50 per cent of the submissions received from Government and Industry.

Table 4 – Summary of Key Issues – Government Agency and Industry

Key issue	No. of submissions raising issue	% of submissions raising key issue
Air quality concerns (pollution, ozone, GHG)	12	60
Human health risks	8	40
Source and availability of waste fuel	6	30
Ecological impacts	6	30

<b>Key issue</b>	<b>No. of submissions raising issue</b>	<b>% of submissions raising key issue</b>
Noise concerns	5	25
Traffic and parking impacts	4	20
Consistency with waste hierarchy	4	20
Management of by-products	4	20
EfW as “renewable energy” (Impact of proposed development on other waste management methods and facilities)	4	20
Odour concerns	3	15
Visual Amenity	3	15
Screening of incoming waste	3	15
Community engagement	3	15
Hazard & Emergency	2	10
Rigour of Assessment (EIS gaps)	2	10
Employment: general & ECPP targets	2	10
Planning (justification, zoning)	2	10
Suitability of proposed location	1	5
Operational and monitoring procedures	1	5
Technology	1	5
NSW framework suitability	1	5
General Opposition (no reason)	1	5
Opposition due to civil dispute	1	5
Location	1	5
Environmental impacts (non-specific)	1	5
Cumulative amenity impacts (lack of assessment)	1	5
Misleading statements	1	5
Aboriginal archaeology	1	5
Engineering (stormwater, roads, retaining)	1	5
Airspace	1	5

Key issue	No. of submissions raising issue	% of submissions raising key issue
Contributions	1	5
Service capacity	1	5

## 5.2. COMMUNITY SUBMISSIONS

The NSW Department of Planning and Environment (DPE) received a total of 1,017 community submissions between 9 December 2016 to 1 March 2017.

Of the 1,017 submissions, 188 submissions were identified as proformas, using 20 different stylistic submission templates. An additional 24 submissions were recorded as part-proformas, in that they referenced proforma submission text but provided additional comments for the purpose of analysing and identifying issues, all proforma submissions have been considered together as a single submission. Those adopting a part proforma style have been considered individually.

16 submissions were identified as duplicates, and as such these submissions have not been included in the total analysis.

Table 5 – Overview of Submissions

Parameter	No. submissions recorded
<b>Total community submissions</b>	1017
<b>Submissions in support</b>	2
<b>Submissions in objection</b>	1011
<b>Comments on the proposal</b>	4
<b>Proforma submissions</b>	188
<b>Proforma templates</b>	20
<b>Part-proforma submissions</b>	24
<b>Duplicates</b>	16
<b>Total number of submissions considered for analysis</b>	<b>814</b>

### 5.2.1. Receipt of Submissions

Each community submission was assigned an individual number by DPE. If a submission has been specifically referred to in this report, it has been referenced by its individual submission number assigned by the DPE rather than by name.

Submitters can contact DPE to obtain their individual submission number or access DPE's website ([http://majorprojects.planning.nsw.gov.au/?action=list\\_submissions&job\\_id=6236&title=EIS%20-%20Website%20Submissions&type=2](http://majorprojects.planning.nsw.gov.au/?action=list_submissions&job_id=6236&title=EIS%20-%20Website%20Submissions&type=2)).

Due to the volume of community submissions received, not all individual submissions have been referenced throughout the report, however, the content of each community submission has been carefully reviewed and captured. The issues raised have been categorised according to key issues (e.g. health, location, air quality) and sub-issues (e.g. asthma, proximity to residential areas, emissions). This approach means that while the exact wording of issues raised by community members is not referenced, the intent and issues raised have

been identified. Section 5.2.2 provides a summary of the key issues and sub-issues raised by the community while Section 7 of this report provides a detailed discussion of the issues raised and a response. Submissions which have been identified as a proforma supporting the submission of Blacktown City Council can view a response to the issues raised in Section 6 of this report or alternatively the summary attached at **Appendix A**.

A list of all individual community submissions and corresponding responses is attached at **Appendix B**.

The amended EIS was exhibited in accordance with the *Environmental Planning and Assessment Act 1979* (EP&A Act) and this report seeks to fulfil the submissions reporting and response requirements.

### 5.2.2. Summary of Key Issues and Sub Issues: Community

Table 6 identifies the key issues raised in submissions from the community, with most submissions raising a number of issues. As illustrated in the table, the top five issues raised by the community were:

- Human health risks;
- Air quality;
- Suitability of location;
- Concerns regarding operational and monitoring procedures; and
- Environmental impact.

**Table 6** also identifies the percentage of submissions that raised each key issue.

Table 6 – Community Submissions Key Issue Analysis

Key Issue	No.of Submissions Raising Issue	% of Submissions Raising Key Issue
Human health risks	493	59.2
Air quality concerns	393	49.6
Suitability of proposed location	360	43.2
Uncertainty surrounding proposed operational and monitoring procedures	127	15.2
Environmental impacts	89	10.7
Traffic impacts	84	10.1
Odour concerns	61	7.3
Impact on property values	80	9.6
Proponents operational history	50	6.0
Gaps in the EIS	41	4.9
Noise concerns	51	6.1
Visual impact	22	2.6
Social and economic impacts	32	3.8
Inadequacy of technology	40	4.8

<b>Key Issue</b>	<b>No.of Submissions Raising Issue</b>	<b>% of Submissions Raising Key Issue</b>
Impact of proposed development on other waste management methods and facilities	22	2.6

In reviewing and collating the community submissions, a number of sub-issues have also been identified. These sub-issues relate to the key issues identified in **Table 6** and provide further detail on the nature of the issue identified in the submissions. **Table 7** identifies the sub-issues identified under each key issue.

Table 7 – Community Submissions Sub-Issue Analysis

<b>Key Issue</b>	<b>Sub-Issue</b>
<b>7.1 Human health risks</b>	<p><b>7.1.1</b> Impact of pollutants on human health.</p> <p><b>7.1.2</b> Correlation of pollutants with specific health concerns including: cancer, cancer clusters, asthma, other respiratory conditions, autoimmune disorders, birth defects.</p> <p><b>7.1.3</b> Evidence emission/pollutants associated with the facility are harmful to human health.</p> <p><b>7.1.4</b> Admission of human health risks by the proponent.</p> <p><b>7.1.5</b> No safe level of exposure to dioxins.</p> <p><b>7.1.6</b> Time-lag and delayed onset of symptoms</p> <p><b>7.1.7</b> Children's health.</p>
<b>7.1 Air quality concerns</b>	<p><b>7.2.1</b> Adequacy and feasibility of mitigation measures.</p> <p><b>7.2.2</b> Uncertainty of emissions profile.</p> <p><b>7.2.3</b> Exacerbation of existing poor air quality conditions.</p> <p><b>7.2.3</b> Cumulative impact of emissions with proposed and future development in the Penrith/Blacktown LGA (airport)</p> <p><b>7.2.4</b> PM2.5 ultrafine and nano particulate monitoring.</p> <p><b>7.2.5</b> Increase in emissions during potential facility shutdown periods.</p> <p><b>7.2.6</b> Impact on ground level ozone</p> <p><b>7.2.7</b> Impact of emissions produced by additional vehicles.</p> <p><b>7.2.8</b> Smoke and smog.</p>
<b>7.3 Suitability of location</b>	<p><b>7.3.1</b> Proximity to sensitive receivers (inclusive of residents, schools, open spaces, aged care homes and the like).</p> <p><b>7.3.2</b> Proximity to Prospect Reservoir and larger water catchment.</p> <p><b>7.3.3</b> Alternative site location in less populated areas.</p>

<b>Key Issue</b>	<b>Sub-Issue</b>
	<b>7.3.4</b> Scale of the proposal.
<b>7.3.4 Uncertainty surrounding proposed operational and monitoring procedures</b>	<p><b>7.4.1</b> Nature of waste profile.</p> <p><b>7.4.2</b> Possibility of hazardous waste sources.</p> <p><b>7.4.3</b> Concerns current state and national environmental legislation and regulatory frameworks are not sufficient in regulating the proposed development.</p> <p><b>7.4.4</b> Concerns regarding consequences of a facility shut-down.</p> <p><b>7.4.5</b> Safety risks.</p>
<b>7.5 Environmental impacts</b>	<p><b>7.5.1</b> Impact on endangered ecological communities and vulnerable species.</p> <p><b>7.5.2</b> Contamination of soil and water by emissions/pollutants.</p> <p><b>7.5.3</b> Potential existing site contamination that has not been addressed.</p> <p><b>7.5.4</b> Contribution to climate change</p>
<b>7.6 Traffic impacts</b>	<p><b>7.6.1</b> Impact of additional vehicles on road congestion.</p> <p><b>7.6.2</b> Traffic safety.</p> <p><b>7.6.3</b> Accuracy of traffic report.</p>
<b>7.7 Odour concerns</b>	<p><b>7.7.1</b> Cumulative odour impact.</p> <p><b>7.7.2</b> Prior existence of offensive odours.</p> <p><b>7.7.3</b> Non-air tight design of facility.</p> <p><b>7.7.4</b> Odour from smoke and fumes.</p>
<b>7.8 Impact on property values</b>	<p><b>7.8.1</b> Reduction in land value.</p> <p><b>7.8.2</b> No compensation for loss in value.</p>
<b>7.9 Proponents operational history</b>	<p><b>7.9.1</b> History of EPA breaches.</p> <p><b>7.9.2</b> History of construction operations outside of permitted hours.</p> <p><b>7.9.3</b> Credibility of proponent due to inconsistencies in previous EIS.</p> <p><b>7.9.4</b> Nature of proponent's political donations.</p>
<b>7.10 Gaps in the EIS</b>	<p><b>7.10.1</b> Inadequacy of emissions modelling and air quality reports.</p> <p><b>7.10.2</b> Uncertainty regarding the storage and disposal of residual ash.</p> <p><b>7.10.3</b> Quality and accuracy of human health risk assessment.</p>

Key Issue	Sub-Issue
	<p>7.10.4 Incomplete soil and water contamination assessments are incomplete (unspecified).</p> <p>7.10.7 Flood management is inadequate.</p> <p>7.10.6 Modelling does not consider worse case scenarios.</p> <p>7.10.5 Failure to respond to SEARS requirements.</p> <p>7.10.8 EIS is not able to be understood by the average layman</p>
<p><b>7.11 Noise concerns</b></p>	<p>7.11.1 Noise from 24-hour operation.</p> <p>7.11.2 Construction noise.</p> <p>7.11.3 Noise from air conditioning units.</p> <p>7.11.4 Increased traffic noise from additional vehicles.</p>
<p><b>7.12 Visual impact</b></p>	<p>7.12.1 Impact of light from the proposed facility.</p> <p>7.12.2 Visibility of stacks from residential properties.</p>
<p><b>7.13 Non-compliance with international and/or national regulations</b></p>	<p>7.13.1 Contravenes United Nations Commission on Human Rights.</p> <p>7.13.2 Contravenes the Stockholm Convention.</p> <p>7.13.3 Contravenes the EP&amp;A Act of 1990.</p> <p>7.13.4 Non-compliance with the Broader Western Sydney Draft Structure Plan 2013</p> <p>7.13.5 Non-compliance with the Renewable Energy (Electricity) Act 2000 which excludes plastics and wood.</p>
<p><b>7.14 Social and economic impacts</b></p>	<p>7.14.1 Social impact of changing community structure.</p> <p>7.14.2 Economic impact of reduced tourism to areas such as Wet n Wild, Western Sydney Parklands and National Parks.</p> <p>7.14.3 Economic impact of worsening health on business operations.</p> <p>7.14.4 Increased shared health costs.</p> <p>7.14.5 Cost of operations.</p> <p>7.14.6 Cost of taxpayer funding for continual air pollution monitoring and baseline studies.</p> <p>7.14.7 Impact on Aboriginal Heritage.</p>
<p><b>7.15 Inadequacy of technology</b></p>	<p>7.15.1 Concerns international facilities are being phased out.</p> <p>7.15.2 Facility shutdown at 37 degrees.</p>

<b>Key Issue</b>	<b>Sub-Issue</b>
<b>7.16 Impact of proposed development on other waste management methods and facilities</b>	<p><b>7.16.1</b> Proposed facility will reduce recycling and recycling innovation.</p> <p><b>7.16.2</b> Proposed facility will monopolise the waste management industry.</p> <p><b>7.16.3</b> Additional waste will need to be imported to ensure continued operation.</p>
<b>7.17 Consultation process</b>	<b>7.17.1</b> Extent of community notification was inadequate.
<b>7.18 General</b>	<p><b>7.18.1</b> Concern there is no benefit of the facility to the local community.</p> <p><b>7.18.2</b> General concern that the EfW Facility would negatively impact on the quality of life of residents</p> <p><b>7.18.3</b> Perception of Western Sydney as a ‘dumping ground’.</p> <p><b>7.18.4</b> Concern that local community opinions are not considered in the planning process.</p> <p><b>7.18.5</b> General concern regarding concepts of intergenerational equity and the precautionary principle.</p> <p><b>7.18.6</b> General concern there is a lack of transparency from the proponent.</p> <p><b>7.18.7</b> General confusion surrounding the concept of energy from waste as ‘green, renewable energy’</p> <p><b>7.18.8</b> General concern information regarding the proposal has been misappropriated by the proponent.</p> <p><b>7.2.7</b> Concern independent reviews, local Councils and the State Government agencies do not support the proposal.</p>

Sub-issues most frequently reported under the top five (5) key issues reported above are as follows:

- **Human health risks:**
  - Impact of pollutants on human health.
  - Specific health concerns including: cancer, asthma, birth defects and other respiratory conditions.
  - Health risks associated with dioxins and nano-particulates.
- **Air quality:**
  - Cumulative impact of future development and operation of the facility on existing poor air quality conditions.
  - Uncertainty of emissions profile and predictions.
  - Monitoring and emission of PM2.5 ultrafine and nano particulates.
- **Suitability of location:**

- Proximity to sensitive receivers.
- Proximity to Prospect Reservoir and larger drinking catchment.
- Alternative site location in less populated areas.
- **Concerns regarding operational and monitoring procedures:**
  - Nature and profile of waste source.
  - Lack of State or National regulatory frameworks applicable to the proposed development.
  - Adequacy of monitoring procedures and efficiency of the EPA.
- **Environmental impact**
  - Clearing of endangered ecological communities.
  - Potential drinking water contamination.

### **5.3. SUMMARY OF SUBMISSION OUTCOMES**

Based on the review and analysis of the submissions made by Government Agency, Industry and the broader community summarised above and considered in detail in **Appendix A** and **Appendix B**, the primary issues of concern have been identified as:

- Risk to human health.
- Air Quality.
- Waste availability.
- Pre-processing of and management of waste fuel materials.

## 6. RESPONSE TO GOVERNMENT AGENCY & INDUSTRY SUBMISSIONS

This section of the RtS report details the key issues and sub-issues raised by within submissions made by government and industry during the exhibition period of the amended EIS.

Due to the level of detail provided in the submissions received, a detailed breakdown of each of the key issues raised is also provided in **Appendix A**.

The content of each government agency and industry submission has been carefully reviewed and captured. This section of the report sets out the key issues raised by category and provides a response to the submission issues. Where the response relies on the assessment of technical matters by the project team consultants, a summary is provided and the reader is directed to the supporting technical document for a full analysis of the issue. Given the number of technical matters raised, their complexity and the reliance on specialist consultants, this report provides a high level assessment based on the technical information commissioned.

### 6.1. PROJECT NEED AND JUSTIFICATION

A number of submissions queried the need for the project, and the requirement to demonstrate justification for why the proposal should proceed.

#### **Response:**

The need for the project has been questioned and by extension the suitability of the location and proximity to sensitive uses is also questioned.

Section 5 – *Justification and Analysis of Feasible Alternatives* of the amended EIS outlines the objectives for the project and provides reasoning behind why the proposed facility is a positive development outcome. Broadly, the project can be justified on the basis that it provides a sustainable solution to waste disposal and renewable energy generation. The key factors which have influenced the project are detailed below:

- The need to reduce the generation of greenhouse gases and help to solve the energy and waste needs of Sydney over the next 50 years.
- To manage or reduce the need for landfill in the Metropolitan Sydney.
- To provide New South Wales with the highest standard of technology in the Energy from Waste sector that is tried and proven successful, assists in delivering on the targets of the NSW Renewable Energy Action Plan, and aligns with the EPA NSW Energy from Waste Policy.
- To create a consistent source of green energy directly into the state's electricity grid.
- To create a significant employment generating land use, consistent with the objectives and intentions of the Eastern Creek Precinct within the broader Western Sydney Employment Lands.
- To retain high conservation value land.

NSW is taking positive steps to improve its waste management practices and increase landfill diversification through various means. The NSW Energy from Waste Policy Statement recognises that:

*'the recovery of energy and resources from the thermal processing of waste has the potential, as part of an integrated waste management strategy, to deliver positive outcomes for the community and the environment.'*

The MRA report demonstrates that were an additional 730,900 tonnes of eligible feedstock, that was landfilled without being processed for resource recovery, that may have been eligible for energy recovery. Therefore, looking at both the volume of waste currently landfilled in New South Wales and forecasts regarding volume of landfilled waste in the near future there is a clear demand and need for energy recovery facilities in New South Wales to utilise waste that is currently going to landfill and causing diversion of the same.

In response to the concern for the need for the project. The following elements detail the potential net benefit and contribution to the community and the environment:

- Energy security and diversity by providing additional low carbon, renewable electricity generating capacity.
- Maximising energy recovery from waste in accordance with the NSW Energy from Waste Policy Statement 2014.
- Making use of Residual Waste Fuel obtained from the processing of various sources of municipal solid waste (MSW), commercial and industrial (C&I), construction and demolition waste (C&D).
- Complementing recycling initiatives by accepting waste after these processes have been carried out, thereby forming part of an integrated waste management system.
- Supporting the positive use of waste materials that would otherwise be disposed of to landfill, saving valuable landfill space and also reducing greenhouse gas emissions (including methane) that would otherwise have been generated from the breakdown of the waste material had it gone to landfill.
- Providing the State of NSW with the world's leading technology to break reliance on landfilling in the future.
- Providing the technology and infrastructure to Sydney and the State of NSW to explore the possibility of prohibiting combustible wastes from Landfills completely at an appropriate time in the future.
- The preservation of Landfill space for more contaminated wastes that cannot be thermally treated such as contaminated soils and asbestos.
- Providing electricity generating capacity at an existing related waste infrastructure site located in close proximity to the National Electricity Grid for connection and export of the electricity produced.
- The development will create in the order of 500 direct on site construction jobs during the construction and commissioning phase. 55 new jobs will be created when the facility is operational, plus several hundred indirect jobs.

In accordance with the above, the proposed development is considered to positively contribute to the environment in reducing landfill volumes and provide electricity generating capacity. Beyond the clear energy and landfill benefits, the project will also provide key employment generation and fulfil a demand for waste infrastructure.

Further, as described in Section 5.1.3 – *Demand for Waste Infrastructure* within the amended EIS, landfill capacity has been significantly depleted since 2010 and the proposed facility is well placed to provide the required Class 2 General Solid Waste management capacity. The proposed facility will help take the strain off Sydney's Class 2 landfills, as any waste processed through it will also be diverted from a large extent from landfill, further preserving valuable landfill void.

## **6.2. PLANNING AND LEGISLATIVE FRAMEWORK**

The following section will respond to matters raised in relation to:

- Consistency with State level planning policies, relevant to the assessment and determination of the application.
- The current New South Wales policy setting for the management of Air Quality and emissions.

### **6.2.1. State Environmental Planning Policies**

#### **6.2.1.1. Consistency with SEPP 33 – Hazardous and Offensive Development**

One (1) submission commented that the proposal fails to consider relevant matters prescribed by SEPP 33; including consideration of the future use of Jacfin owned land south of the development site.

**Submission Reference:** Allens/Jacfin (194827)

## Response:

The EfW Facility has taken into account the matters considered relevant under *SEPP 33 – Hazardous and Offensive Development*. As described in Section 8.3.4 – *State Environmental Planning Policy No. 33 – Hazardous and Offensive Development* of the amended EIS, the proposed development, if unregulated by mitigating measures has the potential to be hazardous. An extract of this section is provided below:

*‘Potentially hazardous industry’ is defined as follows:*

*A development for the purposes of any industry which, if the development were to operate without employing any measures (including, for example, isolation from existing or likely future development on other land) to reduce or minimise its impact in the locality or on the existing or likely future development on other land, would pose a significant risk in relation to the locality:*

*(a) to human health, life or property, or*

*(b) to the biophysical environment,*

*and includes a hazardous industry and a hazardous storage establishment.*

*The proposed development, if unregulated by mitigating measures, has the potential to be hazardous.’*

As such, in accordance with the provisions of Clause 12 of SEPP 33, a preliminary hazard assessment and assessment of potential human health impacts was undertaken. Overall the proposal poses a low and acceptable risk to human health and none of the hazard scenarios identified would impact over the site boundary.

The outcomes of this preliminary hazard assessment and human health assessment are described in detail at Section 4.6.12 and Section 6.11 respectively of this report.

The suitability of the location of the site and feasible alternatives are addressed within Section 6.3.3 of this report.

In consideration of the likely future use of land south of the development site, the site is included within the IN1 General Industrial zone. Given the characterisation of the locality, the nature of this use is not out of place. We note that the storage of goods and materials considered to be hazardous is not uncommon in the operation of industrial premises and the facility will not be receiving the delivery of hazardous material.

The EfW Facility has addressed all matters for consideration under SEPP 33.

### 6.2.1.2. Consistency with SEPP WSEA (2009)

Two (2) submissions raised concerns that the proposal is inconsistent with the job targets and objectives outlined in the *State Environmental Planning Policy (Western Sydney Employment Area) 2009* and associated Precinct Plan.

- The facility will generate only 55 permanent jobs, which is short of the target of 925 jobs for the site, based on the size of the site and target under the Precinct Plan.
- Burning resources stifles resource sustainability initiatives and costs jobs in the recycling and product reuse industries.

**Submission Reference:** Allens/Jacfin (194827) | The Colong Foundation for Wilderness (185285)

## Response:

It is not necessary for development categorised as State Significant to demonstrate consistency with local development control plans, or in the case of the subject site – the Eastern Creek Precinct Plan which is deemed as a development control plan.

Summary of surrounding ‘major projects’ approved with an employment density below the control has not been considered as a limiting factor in the assessment and determination of the previous applications on neighbouring land. In particular, the adjacent Hanson’s site that was granted concept approval based on a density of 105 jobs for a site with an area of 27 hectares, that should have delivered in the order of 1,215 jobs.

Irrespective of the above, the control is located within a deemed development control plan (DCP). Under the provisions of the EP&A Act, the provisions of a DCP are to be applied flexibly where it can be demonstrated

that despite a 'non-compliance' the proposal achieves the objectives of the control. In this regard we note that the objectives of this specific control, include:

- (a) *Establish a high quality industrial Precinct that provides diversity in employment opportunities and economic development to benefit Blacktown and Central Western Sydney.*
- (b) *Provide a range of development consistent with the provisions of SEPP 59 and having regard to the location of the site in close proximity to the junction of the M4 Motorway and the M7 Motorway.*
- (c) *Provide for a range of community services that service the daily convenience needs of the local workforce and visitors, and the needs of local businesses and activities.*
- (d) *Enhance the skill of the local workforce through the provision of appropriate facilities for the training of apprentices, and ongoing training and development.*
- (e) *Contribute to the increased levels of skill matching with the local workforce.*
- (f) *Development should aim to achieve a minimum employment density target of 45 jobs per in order to achieve the overall projected on-site employment forecast of approximately 20,000 jobs for the whole precinct*

The proposed EfW Facility is an extension of the existing recycling and waste management facility located immediate north of the project development site. The location of the facility has been chosen based on the positive synergies of proximity to Genesis, these synergies are enhanced by the proximity of the site to major road transport corridors that ensure no vehicles are required to utilise residential local roads to access the site.

The facility will employ approximately 55 full-time employees on site. This number does not include those already employed at the Genesis Facility and those additional workers who will be employed in recycling and resource recovery activities and who will deliver fuel materials to the site and also indirect employment via support services such as maintenance workers and short-term contractors. As set out in Section 6.5 in response to "skills availability" in the context proof a performance a range of education, training and skills are required to operate and maintain the facility.

An ongoing training program (refer to **Appendix X**) is offered to employees to ensure current and ongoing skills building. The range of jobs is consistent with the range of education and training backgrounds of residents with the immediate areas of the Blacktown and Penrith LGAs, with an increasing professional workforce supported and complemented by skilled and semi-skilled labour force.

It is worth noting that typical employment density within the precinct area has been based on the potential to generate approximately 20,000 jobs on site, which would yield an employment density of approximately 45 jobs per hectare. The EfW Facility will comprise a relatively small portion of the total developable area of the subject site, approximately 24,300sqm for Stage 1. Given this, we consider the application of 45 jobs per hectare to be an inadequate control to measure employment density for the facility.

We note the nature of the area to be developed for the facility (i.e. adjacent landfill) is ideally suited to the operation of the proposed EfW Facility. The facility will not prevent adjacent lands within the precinct from achieving the desirable employment densities based on the outcomes of the preliminary hazard analysis and human health risk assessment.

It is important to reiterate that the proposed EfW Facility will not remove capacity or waste materials from recycling facilities and therefore will not 'cost' jobs in this industry. The facility will treat residual waste fuels that would otherwise enter landfill and not be recycled. Waste availability and management has been discussed in detail at Section 4.1 of this report.

Further, recycling will remain as the key cost-effective approach to dealing with waste material. It is important to note that the subdivision of land results in an efficient use of employment lands and facilities the effective operation of the facility.

## 6.3. CHARACTERISATION AND PERMISSIBILITY

### 6.3.1. Land Use Zone and Zone Objectives

Several matters have been raised by various submitters in relation to the land use zones applying to the site and the role of the zone objectives in the assessment of the application.

In summary, the primary matters raised are as follows:

- Consistency with the zone objectives is required for the purposes of informing permissibility
- Inappropriate definition of land use as '*electricity generating works*'
- The ropes creek tributary is not appropriately zoned to ensure long term protection.
- Electricity generating works are prohibited in the IN1 General Industrial Zone.
- Proposal does not represent a high standard of development to meet the urban design objective of the IN1 General Industrial Zone.

**Submission Reference:** Allens/Jacfin (194827) | EPA (197279) | Blacktown City Council (188212) |

#### **Response:**

The concerns around land use zone objectives and the proposed development being an electricity generating use are acknowledged.

As detailed in Section 8.3.2 – *State Environmental Planning Policy (Western Sydney Employment Area) 2009* of the amended EIS, the site is split zoned IN1 General Industrial and E2 Environmental Conservation. It is noted the development site is located wholly on land zoned IN1 General Industrial.

The development is appropriately characterised as '*electricity generating works*', defined under the Standard Instrument as:

**'*electricity generating works*** means a building or place used for the purpose of making or generating electricity'

The identified use is not defined in the Dictionary under SEPP WSEA. Notwithstanding this, the use would be best characterised as 'Industry' that is development permissible with consent under the provisions of the IN1 General Industrial Zone.

Further, the use is permissible under clause 34(1) of State Environmental Planning Policy (Infrastructure) 2007 (ISEPP) as electricity generating works are permitted to be carried out by any person within a prescribed industrial zone, including IN1 General Industrial.

In response to the concerns raised as applicable to the land use zones, please see detailed response to each point below:

- Section 8.3.2.2 – *Zone Objectives* of the amended EIS addresses the consistency of the proposed EfW Facility with the objectives of the IN1 General Industrial zone. In summary, the development is consistent with each objective of the zone through the delivery of additional employment, environmental assessments concluding that the proposal will not contribute to adverse effects, and is part of an integrated waste management response that only utilises residual waste materials if it does not prejudice the sustainability of other enterprises.
- The Ropes Creek tributary is zoned E2 Environmental Conservation. No works are proposed to be undertaken within the E2 Environmental Conservation zoned land and it is considered this will not be impacted by the proposed EfW Facility and will continue to be protected.
- As described above, the development is characterised as '*electricity generating works*' which would be considered as 'Industry' under SEPP WSEA and permissible with consent under the provisions of the IN1 General Industrial Zone. This is consistent with the ISEPP as electricity generating works are permitted to be carried out with a prescribed industrial zone.
- Notwithstanding that the project has been the focus of extensive assessment by technical experts particularly matters associated with air quality and human health in the design of a facility that has a high

standard of development. The proposal incorporates a high standard of visual and environmental quality as detailed within the architectural drawings and the visual assessment included within the amended EIS.

- The proposed development has made careful materials selection and appropriate siting of the of the facility to minimise visual impact from the public domain and adjoining land uses. It is considered that the architectural treatments are consistent with high quality design for an industrial development of this nature within an industrial zone.
- This is explored in detail at Section 6.15 of this report. The design of the building has been ultimately informed by the functional requirements of the energy from waste process and the spatial requirements to house the plant and equipment. Notwithstanding, the facility comprises a range of building sizes and shapes that allow for a diverse built form and architectural interest.
- This has been explored in the design of the facility through the expression of functional components combined with a varied pallet of materials and finishes. The design incorporates articulation of the massed form to reduce the bulk and scale of the building which results in a contemporary visual aesthetic.

### 6.3.2. Characterisation of Development

The submission prepared by Allens on behalf of Jacfin submits that the proposed development is a 'hazardous and offensive industry' within the meaning of *State Environmental Planning Policy No 33- Hazardous and Offensive Development* (SEPP33).

The above is based on the following grounds:

- If the facility is unable to obtain an environmental protection license from the EPA to authorise the processing of waste at the facility and associated emissions, it is deemed as an 'offensive industry' and therefore prohibited in the IN1 General Industrial Zone.

#### Response:

It is pre-emptive to categorise the proposed EfW Facility as a 'hazardous and offensive industry' based on an inability to gain necessary licenses.

The State Significant Development (SSD) approval process itself involves the NSW EPA as a consultative body to the NSW Department of Planning and Environment. Where an Environment Protection License will be required for the proposed development to operate, the Director-General of the DPE must consult with the EPA when preparing environmental assessment requirements and when making a determination on the project proposal.

Following planning approval, the EPA cannot refuse to issue an Environment Protection License if it is necessary for carrying out the approved SSD and the license must be substantially consistent with the development consent.

The proposed EfW Facility is expected to achieve all necessary licenses from the EPA to commence operation of the facility. Based on this, the proposal will not be considered a hazardous and offensive industry and therefore permissible with consent within the IN1 General Industrial Zone.

We note that the license will detail operating parameters for the facility, including expected emission limits consistent with all prior assessment and modelling and legislative requirements. Further, the license will be consistent with the development approval.

### 6.3.3. Site Suitability

A number of submissions were concerned that the amended EIS fails to adequately assess the suitability of the site, and alternative locations. Specifically, the following comments were made:

- No adequate assessment of alternative locations or consideration for likely future land uses surrounding the development.
- Amended EIS did not consider alternative sites as a means of minimising potential health and amenity risks.
- Failure to consider alternative locations is contrary to the requirements of the Director-General's Environmental Assessment Requirements (DGRs) for the development.

- Location, and in particular the proximity to residential areas and sensitive sites such as schools and sporting fields is not appropriate.
- Potential unacceptable impact on Pepkor South East Asia distribution centre

A thorough justification of site suitability for the proposed development with regard to the issues raised is provided below.

**Submission Reference:** Penrith City Council (194814) | Allens/Jacfin (194827) | McKees Legal Solutions/ Pepkor (189443)

**Response:**

**Existing Genesis MPC facility**

The opportunity to provide synergies with the Genesis MPC facility was a major consideration in the selection of the site. The capacity of the location and the ability to share infrastructure with the Genesis Xero Waste facility allows for improved operations and production. It is considered that facilities and services will be shared over the lifetime of the development.

Specifically, another location would lack these synergies and place additional pressure on traffic impacts on public roads and risk associated with the transfer of waste.

**Accessibility**

The location is ideal from a vehicular accessibility perspective. The site is located west of the corner of the M4 Motorway and Wallgrove Road, where the M4 Motorway intersects the M7 Motorway. The location allows use of the existing estate road from Honeycomb Drive to enter the facility.

Based on this, the site is well-connected to the regional and local road network which is already utilised by the existing MPC facility.

**Summary**

The site selection process has been thoroughly considered and detailed in the EIS. In summary, significant advantages of the site location include:

- Proximity to Genesis MPC, which maximises operational efficiency and provides the opportunity to share infrastructure, such as roads.
- Location within an existing Industrial Precinct (Eastern Creek) in the Western Sydney Employment Area (WSEA).
- Proximity to major regional road networks.
- Proximity and access to the TransGrid substation and use of an existing TransGrid easement for service lines.
- Strategic alignment with the objectives of the 'Plan for Growing Sydney 2014' for the WSEA.

The project is considered to be an appropriate distance from sensitive receivers, including residential areas, whilst also maximising synergies with the Genesis MPC within an existing industrial area. The subject site is also proximal to waste sources within Metropolitan Sydney. Transporting waste to a similar facility in a regional location would increase traffic impacts on the regional road network and not deliver the net positive contribution to the greenhouse gas effect that this proposal offers. It would also distance the facility from the electrical grid, which means Metropolitan Sydney would not receive the full benefit of electricity produced by the facility.

The EfW Facility will operate using set emissions rates which ensures that emission concentrations are at levels appropriate for ensuring air quality, and human health and well-being. Given these factors, the chosen location is considered suitable.

## **Alternative Locations**

The project is an appropriate distance from sensitive receivers, including residential areas. The site is in close proximity to waste sources within Metropolitan Sydney and it was considered that transporting waste to a similar facility in a regional location would increase traffic impacts on the regional road network and not deliver the net positive contribution to the greenhouse gas effect that this proposal offers. Any other location would also distance the facility from the electrical grid, which means Metropolitan Sydney would not receive the full benefit of electricity produced by the facility.

For these reasons, no alternative sites were considered for the development.

## 6.4. APPLICATION & CONSULTATION PROCESS

Blacktown City Council along with several locally operating industries raised matters in relation to the application and consultation process. These are discussed in the following subsections.

### 6.4.1. Community Engagement

As well as general concern regarding the extent of notification, the following specific matters were raised by submitters:

- Nearby businesses were not notified of the proposal.
- Inadequate level of community engagement due to 'hurried' nature of project.
- The community consultation process should be undertaken again with revised project information.

**Submission Reference:** Penrith City Council (194814) | Parliament x3 Members (191167) | McKees Legal Solutions/ Pepkor (189443)

#### Response:

Public exhibition and consultation of the proposed EfW Facility has been undertaken in accordance with the requirements under the *Environmental Planning and Assessment Act 1979*. The original SSD DA in April 2015, was exhibited from 27/05/2015 to 27/07/2015. Subsequent to this, the scope of the development was amended to respond to matters raised by assessment authorities and the community, accordingly this resulted in the lodgement of the amended EIS and documentation which was exhibited from 09/12/2016 to 01/03/2017.

Through the above exhibition periods, in addition to the standard exhibition requirements the below consultation items were undertaken:

Table 8 – Detailed Summary of Consolation Actions

Date	Item
April 2013	<p><b>Project website</b> A dedicated website (<a href="http://www.tngnsw.com.au">www.tngnsw.com.au</a>) has been created to offer general information on the proposal, together with a project flyer and video. In addition, frequently asked questions were uploaded to provide responses to general questions. As the Energy from Waste facility is a new concept to NSW the website focuses on educating the visitor on how the technology operates and creates 'green' energy.</p>
Ongoing	<p><b>1800 community line and project email</b> A dedicated, toll-free 1800 community information line (180 252 040) and email address (<a href="mailto:info@tngnsw.com.au">info@tngnsw.com.au</a>) was established from the inception of the consultation to provide an immediately available and central point of contact for stakeholder and community enquiries. Both the information number and email address have been promoted via the website and on all communications collateral including the media release and project flyer.</p>
December 2013	<p><b>Key stakeholder correspondence</b> Correspondence has been sent via post and/or email to identified key stakeholders and community groups. Distributed in early December 2013, the correspondence included a project overview and flyer with the offering of a personal briefing should they request it. This was also followed up by direct phone calls to some key stakeholders offering a personal briefing.</p>

Stakeholder category	Identified stakeholder
NSW Government	Director General of Department of Premier and Cabinet Premier and Minister for Western Sydney Minister for Environment and Heritage Minister for Resources and Energy Minister for Western Sydney Parliamentary Secretary for Western Sydney Shadow Minister for Energy Shadow Minister for Environment and Climate Change Shadow Minister for Western Sydney
Federal Members	Federal Member for Chifley Federal Member for McMahon
NSW State Members	Member for Blacktown Member for Mount Druitt Member for Mulgoa Member for Smithfield
State Government agencies	Land Partners NSW Department of Planning and Infrastructure NSW Environment Protection Agency NSW Trade and Investment Sydney Water
Local government	Blacktown City Council and Councillors Penrith City Council and Councillors Western Sydney Regional Organisations of Councils
Industry peak bodies	Master Builders Association Sustainable Energy Association of Australia Waste Management Association of Australia
Environmental peak bodies	Total Environment Centre
Indigenous peak bodies	Deerubbin Local Aboriginal Land Council
Business Chambers	NSW Business Chamber Regional Development Australia – Sydney Western Sydney -Sydney Business Chamber
Community groups	Blacktown District Environment Group Minchinbury Jets Minchinbury Residents Action Group Spartan Blacktown Football Club Western Sydney Conservation Alliance Inc. Whalan Action Group
Surrounding residential neighbours	Erskine Park – 2,000 residents Minchinbury – 2,000 residents
Surrounding business	Aldi Alspec Arbonne Australand Best & Less Capral (formerly OneSteel) Cassons CH2 DHL Supply Chain FedEx Freight Distribution Management Fulton Hogan Goodman Hanson Ingram Micro Jacfin K Mart Ltd Life's Good Macism

4 <sup>th</sup> December 2013	<p>Milton Trading Myer Nover NSW Department of Planning and Infrastructure OfficeMax Ontex Australia Sargents Pies SK Steel Australia Woolworths</p> <p><b>Mailbox drop to 4,000 homes.</b> Two letter box drops were undertaken to inform the nearby residential areas in the suburbs of Minchinbury and Erskine Park about the project. The first was on the proposed facility and the second was an invite to a community information day and site tour. A total of 4,000 residences received the project flyers and a DVD which showed the proposed facility and the project.</p>
22 <sup>nd</sup> February 2014	<p><b>1–5PM Community Information afternoon hosted by TNG.</b> 4-hour information day. General discussion. Introduction and overview of facility. Site tour. Community information day. On the 22<sup>nd</sup> February 2014 a community information afternoon was hosted by TNG. Approximately 32 people were in attendance. The aim of the afternoon was to inform and educate any interested party or individual of the proposed facility. The four-hour information day saw a general discussion upon arrival followed by an introduction and overview of the proposed facility by TNG's Managing Director. The overview included a 10-minute presentation followed by an opportunity for questions and answers. A site tour of the facility was then conducted for the attendees.</p>
26 <sup>th</sup> February 2014	<p>26 February 2014 7-8PM</p> <p>Where: Blacktown Council Chambers</p> <p><b>Presentation to Councillors and Officers</b> – Play video and Q &amp; A session</p>
5 <sup>th</sup> May 2014	<p>Stephen Bali</p> <p>Councillor – Blacktown Council</p> <p>When: Monday, 5 May 2014 4-5 PM Where: Tour of Genesis facility Eastern Creek</p>
6-8 <sup>th</sup> May 2014	<p>Waste Avoidance and Resource Recovery Conference – TNG NSW representatives attended and presented at the above conference. There were 487 delegates in attendance comprising of industry leaders and Government representatives (including delegates from local councils). Environmental Protection Authority EPA representatives from NSW and Victoria were also in attendance.</p> <p>TNG NSW's Managing Director was on a panel where he gave a comprehensive overview of the Energy from Waste facility. Further, a standalone TNG NSW presentation session regarding the Energy from Waste facility was attended by approximately 140 delegates. At this presentation a video was shown followed by a Question and Answer session.</p>

	<p>Finally, TNG NSW had an exhibition stand throughout this 2-day Conference showing the 12-minute video and answering questions, queries from the delegates.</p>
2 <sup>nd</sup> Dec 2014	<p>Susan Coulter; Mayor Blacktown; Stephen Bali; Kerry Robinson; Glennys James; Darryl Watkins</p> <p>Subject: Genesis facility Eastern Creek and EfW – Consultation meeting</p> <p>When: Tuesday, 2 December 2014 2:30-3:30 PM</p> <p>Where: Porirua Room, Blacktown City Council</p>
7 <sup>th</sup> July 2015	<p>Blacktown Council and DoP Consultation meeting</p>
November 2016	<p>Presentation and panel questions at Blacktown City Council, Strategy meeting</p> <ul style="list-style-type: none"> <li>• Blacktown City Council – Mayor, Councillors, the General Manager and relevant Council Officers (including the Policy and Strategy committee) – 23/11/13, 26/11/13, 27/11/13 and 26/2/14</li> <li>• Penrith City Council – Mayor and relevant Council Officers – 18/12/13</li> <li>• State Member for Mount Druitt – 27/11/13</li> <li>• State Member for Blacktown – (briefing and site visit) – 24/1/14</li> </ul>
10 <sup>th</sup> December 2016	<p>11AM - 3PM Genesis Recycling facility.</p> <p>Community Consultation at Eastern Creek and site tour of waste facility (following demonstration outside Genesis).</p>
6 <sup>th</sup> February 2017	<p>7PM Minchinbury Neighbourhood Centre.</p> <p>Blacktown Community Consultation.</p>
16 <sup>th</sup> February 2017	<p>7PM Erskine Park Community Hall.</p> <p>Penrith Community Consultation.</p>
24 <sup>th</sup> February 2017	<p>Mailbox Drop to 5,000 residents</p>
13 <sup>th</sup> April 2017	<p>Community Consultation at Erskine Park Community Hall.</p>
2 <sup>nd</sup> May 2017	<p>Coffs Harbour Waste Conference.</p> <p>TNG NSW representative attended and presented at the above waste conference. There were 585 delegates in attendance comprising of industry leaders and Government representatives (including delegates from local councils). EPA representatives were also in attendance.</p> <p>TNG NSW's Managing Director gave a presentation on the role of Energy from Waste in an integrated waste management strategy. Educational material was distributed.</p>

In addition to the above, an extra mailbox delivery of an updated project description video on individual USBs to 5,000 households was undertaken in early 2017. In all 3 separate videos have been produced and displayed on the Company website since the first project application advising stakeholders and the community of the developments in the planning application.

An additional community consultation session was held at Erskine Park Community Hall, however TNG was not invited to attend. The proponent has maintained a project web page since prior to the lodgement of the initial EIS in 2015. This web page contains a link for members of the public to make comment or ask questions.

Based on the above, and the amount of community submissions received during the exhibition period, it can be deemed that community notification of the proposed development was extensive and adequate for a proposal of this nature and scale.

### 6.4.2. Project Classification and Timeframes

Penrith City Council commented that the classification of the project as 'State Significant Development' removes decision making from Council and the local community and were concerned with the length of process to assess the application and uncertainty regarding the outcome.

**Submission Reference:** Penrith City Council (194814)

#### **Response:**

The submission of Penrith City Council included a high-level summary of matters raised by local community members at a forum held on 20 February 2017. Of the matters raised on the night the classification of the project as State Significant Development is perceived by the community as removing the decision making from Council and the community, and there is concern regarding the length of the process and the uncertainty in the outcome.

The State and Regional Development SEPP defines what development is considered to be State Significant, based on the size, economic value, or potential impacts that a development may have. The proposed EfW Facility is identified as State Significant Development.

Public consultation and involvement forms a pivotal role in the planning process irrespective of the planning pathway followed. In this instance, despite being classified as SSD, the DA has been subject to consultation and notification as described in Section 6.4.1 above. It is important to note that all applications for SSD are publicly exhibited for a minimum of 30 days – this proposal has complied in this regard.

The scale of the project, falls within a class of development that has the potential to have state level implications and as such requires consideration at a higher level that includes local and regional matters.

The classification of the project does not 'remove' local matters from consideration. The consultation and referral process ensures that local matters are addressed in the assessment process. The Department of Planning and Environment considers the following when assessing SSD applications:

- Existing strategic plans and policies (including State, regional and local).
- Feedback and comments from the relevant council(s).
- Specialised and technical input and advice received from Federal and State Government agencies.
- Public submissions received during the exhibition period.

In effect, local issues are a major consideration for the assessment of SSD applications.

In response to timeframes, there are no statutory timeframes for the assessment of SSD applications. In relation to this project, it is considered that the length of the assessment process is the result of complexities with a project of this scale and nature. As such, ongoing technical inputs and reviews of submissions and comments have resulted in a more extensive timeframe.

Notwithstanding the above, since this project has received more than 25 public objections, the Department's recommendation is referred to the independent Planning and Assessment Commission (PAC) for determination.

In summary, the project has undertaken the appropriate development approval pathways as prescribed under the *Environmental Planning and Assessment Act 1979*.

## 6.5. OPERATION

ARUP on behalf of EPA have requested further 'Proof of Performance' details as follows:

*Detailed procedures required on how the proposed facility will be run during commissioning and operational phases by operational staff, including training requirements and qualifications.*

**Submission Reference:** EPA (197270)

### Response:

As described in ARUP's submission on behalf of the EPA, Appendix LL to the amended EIS detailed proof of performance tests and procedures which includes a detailed methodology for guarantee testing etc. but does not include training requirements of operational staff/competency and capabilities of operational staff.

An experienced operator and maintainer will be contracted to oversee the implementation, operation, and maintenance of the facility. We note that once operational, the Stage 1 EfW Facility will provide a total of 55 jobs.

A breakdown of employment role, qualifications, education, and experience that will be required to operate the facility is detailed in **Appendix X**. Key roles and qualifications are summarised in the table below.

Table 9 – Key Roles and Qualifications

Role	Qualification Required	Experience Necessary	Availability in Australia
Operations Manager	Engineering degree or equivalent.	8-10 years and broad knowledge of plant equipment and systems.	Undergraduate and postgraduate engineering courses are provided in the following NSW universities: <ul style="list-style-type: none"> <li>• In search.</li> <li>• Macquarie University.</li> <li>• Southern Cross University.</li> <li>• Sydney Institute of Business and Technology.</li> <li>• The University of Sydney.</li> <li>• University of NSW.</li> <li>• University of Newcastle.</li> <li>• University of Technology, Sydney.</li> <li>• University of Western Sydney.</li> <li>• University of Wollongong.</li> </ul>
Maintenance Manager	Preferred engineering degree or equivalent.	8-10 years in the operation and maintenance of power plant equipment and systems.	
Shift Supervisor	Minimum high school education or equivalent.	5-10 years in power generation with minimum 2-5	

<b>Role</b>	<b>Qualification Required</b>	<b>Experience Necessary</b>	<b>Availability in Australia</b>
	Advanced education in technical field desirable.	years as a Control Room Operator.	widely available throughout Australia.
Senior Mechanic	Forklift operator certification and high school diploma or GED.	5 years as a maintenance mechanic.	High school education and on-the-job training widely available throughout Australia.
Senior E&I Technician	Forklift operator certification and high school diploma or GED.  Must be knowledgeable in using a computerised management system.	2 years as a senior E&I technician.	High school education and on-the-job training widely available throughout Australia.
Mechanic	Ability to read, write and verbally communicate in English.	Minimum 5 years' industrial mechanical experience.	High school education and on-the-job training widely available throughout Australia.
E&I Technician	Minimum high school education or equivalent.	Minimum 4 years as an industrial electrician.	High school education and on-the-job training widely available throughout Australia.
Control Room Operator	Minimum high school education or equivalent and completion of an operator training program.	Thorough knowledge of the principles of operation, function and construction of equipment.	High school education and on-the-job training widely available throughout Australia.
Water Treatment Specialist	Ability to read, write and verbally communicate in English and undergo training course of the routine maintenance of the water treatment system.	General knowledge of the facility.	High school education and on-the-job training widely available throughout Australia.
Plant Operator	Ability to read, write and verbally communicate in English. Previous experience in the operation and maintenance of overhead cranes.	Demonstrate compliance with the current Crane Operator's Job Skill Demonstration Manual.	High school education and on-the-job training widely available throughout Australia.
Weighbridge Attendant/Security Guard	Ability to read, write and verbally communicate in English.	Security guard training must be completed during the first 100 days on the job.	High school education and on-the-job training widely available throughout Australia.

<b>Role</b>	<b>Qualification Required</b>	<b>Experience Necessary</b>	<b>Availability in Australia</b>
Tipping Floor Attendant/IBA Loading Operator	Ability to read, write and verbally communicate in English.	Physically able to perform manual labour.	High school education and on-the-job training widely available throughout Australia.
Environmental Health & Safety Manager	High school diploma or GED. Must have completed the Occupational Safety and Health Administration Industrial 30-hour course.	5-8 years of relevant experience in a power generation or manufacturing environment. Knowledge associated with a Bachelor's degree in environmental compliance and/or health & safety.	High school education and on-the-job training widely available throughout Australia.

Essentially, an EfW Facility is a small thermal power plant that is fuelled by waste, in this sense it will be sufficient to recruit people who have qualifications and experience in operating and maintaining fossil-fuelled power plants, especially coal-fired power plants. All of which have similar auxiliary and support systems. Australia has a multitude of these plants in operation and it is deemed that there will be a suitable employment pool to draw upon.

Modern EfW facilities are designed to be able to run in a fully automated fashion. The proposed EfW Facility will utilise a fully automated control system. The role of the operations team will be of a supervisory and monitoring role and to facilitate backup services in case of malfunction.

All personnel will be fully supported by HZI, the technology producers and suppliers. As the original equipment manufacturer for all the key EfW technologies including waste feed path, combustion system, grate, boiler, and the flue gas treatment and emission control equipment, HZI is uniquely qualified to assist the plant in achieving high levels of performance, reliability, and availability.

HZI will be responsible for plant operations and management of the EfW Facility. A subsidiary of HZI will be established in Sydney – Hitachi Zosen Inova Sydney Plant Management Company (HSPMC). This locally registered firm will be operating and maintaining The Next Generation EfW Facility with 55 employees and be supported by the broader HZI organisation.

The HSPMC employees will be able to count on the support of the commissioning team consisting of 19 professionals to support them on issues of plant operation. The Eastern Creek O&M Maintenance crew can draw on a pool of 14 outage managers and 6 spare parts professionals from the HZI Switzerland Service department.

The HSPMC local team will also be able to count on the support of a very large and experienced team of professionals in the technical and process consulting disciplines. Thus, a total of 140 professionals and experts from the technical departments CSP, FGT, WSC, EIC, BOP, Civil and the Laboratory from HZI will be available to support the operations and maintenance teams of the HZI-Sydney Plant Management Company.

In the practical disciplines, such as human resource management and for legal matters a combined team of 11 professionals is available to support the HSPMC administration.

HZI have provided further information on the training, competency and capabilities which will be implemented in the operation of the facility (refer to **Appendix X**).

The training concept and structure applied for the EfW Facility is proposed as follows:

- Basic Course Group 1.
- Systems Training Group 1.
- Train the Trainer Group 1.

- Coaching Main Courses Groups.
- Specialist Courses.
- Hands-on Training.

Training will be applied via an interactive training system (ITS), which has been designed specifically for the needs of the EfW Facility. This is a self-paced tutorial for PCs (e-learning) which will be used alternatively with practical methods such as on-the-job learning, familiarity, and contact with specialists to achieve competency.

The following conditions and general requirements are required for staff in order to undertake training:

- *Shift managers have operational experience with similar plants and water-steam-cycles. They have been starting up and shutting down such plants under their own responsibility.*
- *Shift managers and other leading staff have the ability to train their colleagues. They have a basic knowledge of technical English.*
- *The employees are experienced technical professionals. They work according to the operating manual and record executed jobs and interventions.*
- *The employees are sensitised concerning health and safety. They use their personal protective equipment professionally.*
- *Ideally, the employees don't suffer from acrophobia, claustrophobia or allergic reaction to dust. They tolerate the burden of walking up and down on site.*
- *The staff holds all legally required certifications, as for boiler attendants, electricians, welders, etc.*

Detailed content and methodology for each course structure is outlined in **Appendix X**. At the end of the course training, staff receive a final report and certificate based on the evaluations at each level of the course.

The above details confirm the proof of performance details of the EfW Facility including the required personnel, qualification, experience, and training components of the facility. All operational staff will receive adequate training in addition to existing qualification requirements and will be fully supported by HZI and an ongoing network of specialists and technical professionals.

## 6.6. WASTE SOURCE AND COMPOSITION

The submissions made by the NSW DPE, the NSW EPA, as supported by the ARUP Technical Memo, and Blacktown and Penrith City Councils seek clarification and a further evidence base for the proposed waste profile, the specific matters are listed below and are addressed in full in this section of the report.

- Waste Source Composition – further detail on characterisation of waste
- Waste Source Availability to sustain the scale
- Impact on higher order resource and energy recovery process
- Consistency with the EfW Policy, specifically with regard to the Resource Recovery Criteria and thermal criteria
- Reference facility analysis and the justification for the scale of the proposal
- Demonstrate the ability of the proposed technology to process the waste

**Submission Reference:** EPA (197270) | Allens/Jacfin (194827) | Blacktown City Council (188212) | EPA (197270) | Penrith City Council (194814)

### Response:

This section sets out in depth overview of the waste streams and the composition of the feedstock to be processed at the facility. The updated Project Definition Brief, September 2017 (PDB) at **Appendix D** provides the full details of this analysis and the background testing that has been undertaken to inform the analysis.

The feedstock fuel for the facility will be sourced from the neighbouring Genesis MPC and from residual waste following resource recovery carried out at bona fide recycling facilities. Fuel will be provided only by Facilities

where appropriately regulated resource recovery processes have been undertaken in accordance with the NSW EfW Policy guidelines and where fuel quality is consistently demonstrated.

In all cases quality control procedures engaged by the Genesis Recycling facility will be employed to ensure:

- Compliance with the NSW EPA Energy from Waste Policy in respect of the extent of the resource recovery required to have been carried out.
- Consistent fuel quality and the exclusion of unacceptable materials from the fuel residue waste stream.

The key waste streams are identified as:

The following fuel types have been identified as the main sources of fuel feedstock for the facility:

- Chute Residual Waste (CRW) from the Genesis Plant Output.
- General Solid Waste [non-putrescible] currently Landfill Facility Direct Input.
- Material Recovery Facility waste (MRF) from bona fide resource recovery facilities (currently Genesis Landfill Facility Direct Input).
- Floc waste from car and metal shredding and resource recovery carried out by others.
- Commercial and Industrial (C&I) residual after resource recovery carried out by Genesis or by others operating qualified resource recovery facilities.
- Other specified waste fractions (SWF) compliant with EfW Policy which include earth and building materials such as insulation, carpet/underlay, compounds (excl. plastic and metal), asphalt, and inert incl. non-hazardous building waste.

It is confirmed that the proposal **does not seek approval for receiving or processing of MSW**.

Based upon the fuel types listed above, a fuel (feedstock) composition has been developed. This is based on typical values for each of the proposed fuels and an estimated fuel mix. The feedstock will always be mixed as part of the normal operational process to produce as homogenous an input as possible.

### 6.6.1. Resource Recovery Criteria

The Resource Recovery Criteria (Table 1) have been addressed by the MRA report. The feedstock review that assesses availability and eligibility for waste sources has been undertaken in strict accordance with the Resource Recovery Criteria specified in Table 1 of the NSW Energy from Waste Policy.

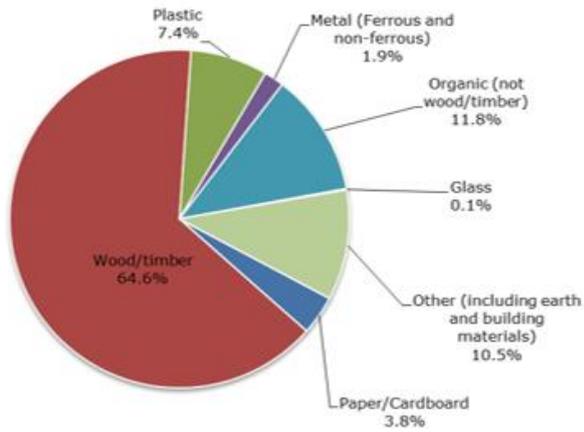
### 6.6.2. Waste Audits

Independent waste audits have been undertaken by NSW EPA accredited Waste auditors, EC Sustainable, to determine the macroscopic compositional attributes and calorific value of the eligible feedstock to be accepted at the facility. These audits were conducted over a period of five (5) days collecting multiple samples from the Chute Residual Waste stream (i.e. the processed material from Genesis MRF, destined for landfill) and material delivered to Genesis landfill from other, third party, NSW Environmental Protection Authority (EPA) accredited MRFs.

The waste audits provide a clear picture across the five (5) defined waste stream and are attached at **Appendix J**. The updated PDB details the sampling methodology and interprets the results, summarised as follows:

- Chute Residual Waste

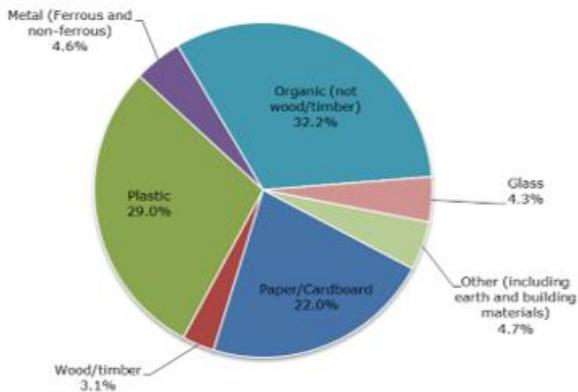
Figure 15 – CRW: Macroscopic Composition and Chemical Analysis (Updated PDB, Ramboll September 2017)



	unit	TNG
Carbon (C)	%	38.5
Hydrogen (H)	%	4.6
Nitrogen (N)	%	0.8
Sulphur (S)	%	0.2
Chloride (Cl)	%	0.4
Oxygen (O)	%	25.2
Ash	%	14.7
Water (H <sub>2</sub> O)	%	15.6
<b>NCV</b>	<b>MJ/kg</b>	<b>14.7</b>

- Materials Recycling Facility Residual stream

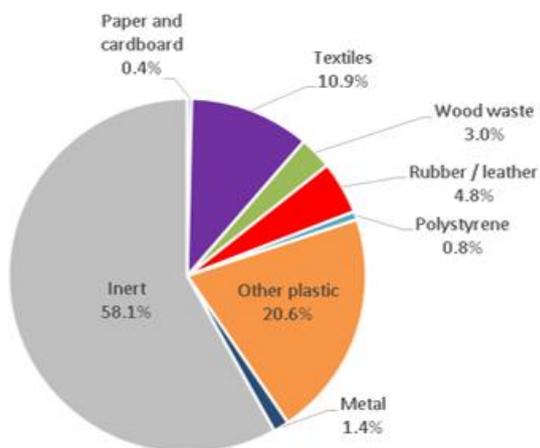
Figure 16 – MRF: Macroscopic composition and chemical analysis (Updated PDB, Ramboll September 2017)



	unit	TNG
Carbon (C)	%	44.2
Hydrogen (H)	%	6.1
Nitrogen (N)	%	0.4
Sulphur (S)	%	0.1
Chloride (Cl)	%	0.3
Oxygen (O)	%	19.3
Ash	%	19.0
Water (H <sub>2</sub> O)	%	10.6
<b>NCV</b>	<b>MJ/kg</b>	<b>18.8</b>

- Floc stream

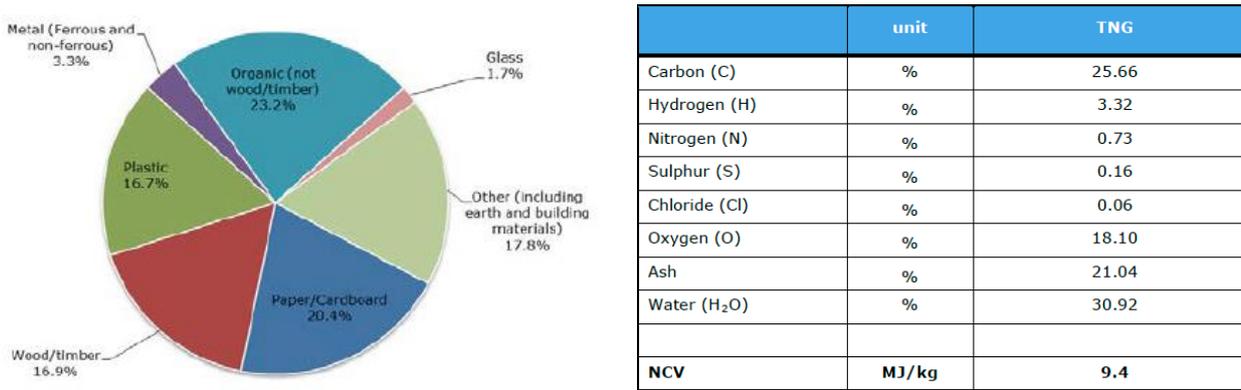
Figure 17 – Floc: Macroscopic Composition and Chemical Analysis (Updated PDB, Ramboll September 2017)



	unit	TNG
Carbon (C)	% (db)	27.0*
Hydrogen (H)	% (db)	4.8
Nitrogen (N)	% (db)	1.1
Sulphur (S)	% (db)	0.3
Chloride (Cl)	% (db)	0.6
Bromine (Br)	% (db)	0.01
Oxygen (O)	% (db)	9.2
Ash	% (db)	57.0
Water (H <sub>2</sub> O)	% (ar)	13.2
Total PAH	mg/kg (db)	20
Total PCB	mg/kg (db)	14
<b>NCV</b>	<b>MJ/kg</b>	<b>11.0</b>

- Commercial and Industrial (C&I) stream

Figure 18 – C&I: Macroscopic composition and chemical analysis (Updated PDB, Ramboll September 2017)



- Special waste fractions

The Genesis Quality assurance processes are demonstrably effective at largely excluding PVC from C & D resources recovered for re-sale. Currently those quality assurance processes separate and remove PVC from recovered materials and the separated PVC currently forms part of CRW.

Despite this concentration of PVC in CRW, the PVC component by weight was shown in the recent audits to be approx. 0.65% by weight, resulting in a chlorine content of 0.37% in the CRW. In effect this result is achieved by excluding PVC from recovered resources and concentrating it in to CRW. By applying the same separation processes to CRW as are currently applied to resource recovery even this small component can be reduced significantly.

In all other waste fractions, the chlorine content is between 0.06% and 0.52%. There is therefore a high degree of confidence that in respect of any single waste fraction and the waste in total as an average will not contain more than 1% chlorine.

Each of the waste audits produced a fractional analysis of the waste in each waste stream (**Figure 19**) and a chemical analysis of the materials present (**Figure 20**). The chemical analysis results, performed at a NATA approved laboratory, are attached at **Appendix J**.

Figure 19 – Proposed Waste Streams Material Composition (Updated PDB, Ramboll September 2017)

	CRW	MRF	Floc Waste	Mixed C&I	Specified Waste	Design Fuel Mix
<b>Fuel Mix</b>	<b>19.90%</b>	<b>12.06%</b>	<b>14.73%</b>	<b>40.93%</b>	<b>12.37%</b>	<b>100.00%</b>
<b>Compositional Analysis</b>						
Paper/Cardboard	3.76%	22.00%	0.39%	20.42%	0.00%	11.82%
Wood/Timber	64.55%	3.09%	2.98%	16.87%	85.65%	31.16%
Plastic	7.38%	29.04%	21.42%	16.69%	0.00%	14.96%
Metal (Ferrous and non-ferrous)	1.88%	4.63%	1.41%	3.34%	0.00%	2.51%
Organic (not wood/timber)	11.78%	32.21%	15.71%	23.21%	14.35%	19.82%
WEE (electronic waste)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Hazardous	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Glass	0.11%	4.34%	0.00%	1.70%	0.00%	1.24%
Other* (including earth and building materials)	10.53%	4.69%	58.09%	17.77%	0.00%	18.49%
<b>Total</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>

\* Other defines earth and building materials including:  
 - Insulation  
 - Carpet/underlay  
 - Compounds (excl. plastic and metal)  
 - Asphalt  
 - Inert incl. non-hazardous building waste

Figure 20 – Proposed Waste Streams Chemical Composition (PDB, Ramboll September 2017)

	CRW	MRF	Floc Waste	Mixed C&I	Specified Waste	Design Fuel Mix
Chemical Analysis						
Carbon (C)	38.54%	44.18%	23.45%	25.66%	36.96%	31.53%
Hydrogen (H)	4.61%	6.09%	4.17%	3.32%	4.66%	4.20%
Oxygen (O)	25.20%	19.29%	7.99%	18.10%	33.09%	20.02%
Nitrogen (N)	0.77%	0.42%	0.96%	0.73%	0.56%	0.71%
Sulphur(S)	0.18%	0.07%	0.26%	0.16%	0.22%	0.18%
Chloride (Cl)	0.37%	0.32%	0.52%	0.06%	0.09%	0.23%
Ash	14.72%	19.04%	49.50%	21.04%	4.63%	21.70%
Water (H2O)	15.60%	10.59%	13.15%	30.92%	19.78%	21.43%
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
<b>NCV MJ/kg</b>	<b>14.71</b>	<b>18.79</b>	<b>11.00</b>	<b>9.41</b>	<b>13.24</b>	<b>12.30</b>

The design fuel has been calculated based on the expected waste fractions (expressed in **Figure 12**) and has a Net Calorific Value (NCV) of 12.3 MJ/kg (equivalent to 12,300 kJ/kg). This is consistent with the feedstock fuel presented in the amended EIS and supporting technical documents.

Of particular importance, the waste audits and analysis demonstrate:

- An absence of hazardous materials or special wastes.
- A high degree of homogeneity as a result of the extensive degree of processing to which the materials are subject during resource recovery.
- The Quality Control processes to be implemented will maintain chlorine levels well below 1%.
- The Quality Control processes to be implemented will ensure Treated Wood Waste continues to be sent to landfill, i.e. not used as feedstock for the facility.
- The chemical profile of floc waste demonstrated by the audits is comparable to European results, and given positive results in European examples for processing floc waste, the proposal is supported and provided for in the facility design.

### 6.6.3. Waste Mixing and Homogenisation

Several submissions have raised concern regarding the potential variance in the waste fuel profile and the ability to achieve a homogenised design fuel per load. It is noted that these concerns are linked to

- The impact of a variable fuel waste on the emissions profile;
- The capacity of the facility to tolerate variable fuel loads; and
- The need to increase the temperature of the second combustion chamber from 850 degrees to 1,100 degrees where there is greater than 1% polychlorinated materials (e.g. PVC).

#### Response:

The extensive homogenisation which results from the intense resource recovery processes together with the process of mixing fuels prior to incineration (as set out in this section) contributes to a more efficient burn process and an overall less chance of unexpected spikes during the incineration.

TNG has intentionally selected moving grate EfW technology for its capacity to effectively treat and manage a wide range of fuel waste materials.

The mixing and homogenisation of the different waste streams remains an important aspect of the operation of an energy from waste facility and therefore it is given a very high importance. When the waste is tipped in to the bunker it has to be picked up by the crane grab so to keep the delivery area free and allow further waste deliveries. During times with low delivery it is the duty of the crane driver (or in the case of an automatic crane of the automation system) to thoroughly mix the waste by picking it up and dropping it in a different place of the storage area in the bunker. This ensures a thorough mixing of the different waste fractions. To be fed to the combustion system the waste is again picked up by the crane grab.

As a result, any waste is picked and offloaded at least 2-3 times before being fed into the combustion process and therefore is well mixed. Therefore, the concentrations of the fractions within different waste streams will be well homogenised when being fed to the combustion process.

#### 6.6.4. By-product: Treatment and Destination

Several submissions have raised concern in relation to the classification and disposal of the waste by-products generated by the thermal treatment process. In summary, these issues include:

- Legacy issues of disposing of ash to landfill
- APC residue – expected profile, classification and disposal
- Disposal locations
- Disposal of carbon and methane products;
- Disposal of ash is expensive and a potential risk to human health.

#### Response:

The PDB sets out the disposal methods for the residues produced as a by-product of the operation of the facility. These are summarised as follows:

Bottom ash – the burnt-out residue from the combustion process. Bottom ash from the grate is quenched with water and moved by conveyor to the enclosed ash storage bunker where it is stored prior to being transported off-site. The conveyor passes under a magnetic separator to remove ferrous materials. All incinerator bottom ash would be sent to the adjoining Genesis facility or other licensed facilities for aggregate and road base production. This will not contain any asbestos fibres in the event they got into the facility.

Boiler ash – boiler ash of the horizontal pass will be conservatively disposed of with the APC residues, unless it can be proven to be reusable following rigorous testing procedures in compliance with EPA regulations. The composition of the ash from the first vertical passes is similar to the bottom ash and they can be disposed of together.

Flue Gas Treatment (FGT) residues – also known as APC residues, comprise fine particles of ash and residues from the FGT process. APC residue is collected in bag filters and will contain fly ash and reaction products from the hydrated lime scrubber and spent activated carbon. Due to the heavy metals involved in FGT, this material is classified as restricted solid waste. It will be stored in dedicated enclosed silos located adjacent to the flue gas area before being transported via a sealed tanker to an appropriate offsite disposal facility.

Ferrous metals – to be removed from the bottom ash by means of magnetic separators and discharged to into bins which are then transported offsite to metal recycler.

It is important to note that testing and monitoring procedures will be undertaken with EPA regulations.

## 6.7. WASTE SOURCE AVAILABILITY

The NSW EPA have requested that the issue of waste availability be addressed, i.e. confirmation that there are sufficient volumes of waste available to feed the proposed EfW Facility. This exercise has been undertaken by MRA Consultants in accordance with the Resource Recovery Criteria of the EfW Policy Statement (set out in Table 1 of the policy). The findings and figures presented in the MRA report are proposed to replace previous data submitted regarding waste availability.

The more recent MRA report has been based on current data and does not rely on dated figures (a key concern of the ARUP review). Tables as Appendices in the MRA report demonstrate the methodology for the calculation of all waste streams proposed to be received at the facility. The data states the deemed resource recovery rates and includes these in the composition calculation for all proposed waste streams. Resulting in a clear representation of the eligible feedstock anticipated to be received by the facility taking into account the potential for material that is unsuitable for feedstock.

The MRA report, provided at **Appendix J**, demonstrates that there are sufficient tonnes of waste available in the Sydney MLA) for energy recovery that satisfy the EfW Policy Statement. Appendix B of the MRA report documents the total amount of waste processed in the MLA, the total amount of eligible waste in the MLA and how the eligible waste meets the appropriate criteria. This includes data source references and mass and balance diagrams.

The key findings using waste data from the 2017 Financial Year are:

- 5,022,000 tonnes of waste from the categories specified in the EfW Policy are processed in the MLA.
- 551,200 tonnes are eligible for energy recovery for Stage 1 of the proposed facility (no MSW), this will increase to 582,700 by 2019.
- An additional 1,625,000 tonnes of eligible feedstock, that was landfilled without being processed for resource recovery, may have been eligible for energy recovery.
- The available waste identified meets the Resource Recovery Criteria and therefore is eligible for feedstock at the proposed facility.

While the eligible tonnes generated in the MLA in FY17 from C&D and C&I sources (551,200 tonnes) are currently 1,300 tonnes short of the proposed nominal volume throughput of Stage 1 (552,500 tonnes), taking into account the projected growth, by FY19 these tonnes will have increased to an estimated 582,700 annual tonnes.

The following tables set out the eligible tonnes to be processed at the facility based on existing operations (**Figure 21**) and planned expansions (**Figure 22**). These figures are based on actual FY16 data (**Figure 21**) and future projections based on fully substantiated waste market trends (**Figure 22**) to be processed in actual planned facilities controlled by the proponent.

Figure 21 – Waste Source Availability: Existing Facility and Eligible Tonnes (MRA Report, 2017)

Facility	Facility type	Classification of waste received and activities undertaken	Eligible tonnes in FY16 (t)
Genesis EC (excl. the Genesis Material Processing Centre)	Recycling centre	Accepts separated waste streams. Most of these materials undergo recycling on-site and are transformed into valuable products. Some are processed off-site by specialised recyclers.	751
Genesis Material Processing Centre (MPC)	Mechanical recycling plant	Accepts mixed construction and demolition waste. This waste is recovered for recyclables.	41,978
Genesis EC Landfill	Landfill	Accepts residual from material recovery facilities (MRFs) and metal recycling plants as well as separated waste streams and landfills.	120,954
Genesis Alexandria	Transfer station	Accepts mixed construction and demolition waste. The waste is recovered for recyclables.	15,714
<b>SUBTOTAL</b>			<b>179,397</b>

Figure 22 - Waste Source Availability: Planned Facilities and Eligible Tonnes (MRA Report, 2017)

Facility	Description of expansion	Additional eligible tonnes p.a. (t)
Genesis MPC	Increase input stream by 210,700 tonnes p.a.	52,262
Genesis EC (exl. MPC)	Increase receipt of textiles and waste wood	67,559
C&I Dirty MRF	Build processing facility for mixed C&I waste (a \$5 mil EPA grant was awarded and a modification to the site has been approved) <sup>6</sup>	226,162
Genesis EC Landfill	Increase receipt of shredder floc	27,120
<b>SUBTOTAL</b>		<b>373,103</b>
<b>GRAND TOTAL of Table 3 and Table 4 (tonnes per annum)</b>		<b>552,500</b>

With regard to future increases in waste volumes to be allowed for expansion of the facility, MRA has projected the estimated eligible tonnes generated in the MLA over a 25-year time horizon. The most recent NSW waste data report (NSW EPA, 2015) contains biennially reported data from 2003 to 2013. The data indicates that waste generation has experienced growth over the reported years. The waste generation trends from this dataset were applied to MRA's estimated eligible tonnes resulting in a projection that the amount of waste eligible for energy recovery will continue to grow.

This review of waste source and availability in the MLA confirms that **there is sufficient eligible feedstock to enable Stage 1 construction and operation of the EfW Facility and sustain its operation into the future.**

Growth will require the market to divert waste currently being directly landfilled, from landfill and to processing for resource recovery. In terms of general growth trends, MRA notes:

- The EFW Policy Statement requires all eligible feedstock to be pre-processed to remove recyclables and hazardous material.
- Therefore, incentivising the development of additional processing and recycling facilities that have the capacity to process more waste.
- This allows more waste to be processed to increase the availability of eligible feedstock.
- As a result of processing more waste, the proportion of recyclable materials recovered are increased.
- MRA estimate an additional amount of eligible feedstock for energy recovery within the MLA at 1,625,000 tonnes.

### 6.7.1. Monopolisation of the Waste Industry and Reduction in Recycling

Some submissions were concerned that the EfW Facility would create a monopoly in the waste management industry as it would be more profitable to burn, rather than recycle or landfill waste and this would disadvantage other operators.

A number of submissions were concerned that overall recycling rates would be reduced by the proposal. There was general concern that if it were cheaper and more efficient to burn waste, there would be a reduced incentive for waste management companies to recycle and reuse waste using sustainable methods.

Several submissions also commented that companies and individuals should be made responsible for recycling, and this would reduce the need for waste incineration.

#### Response:

The concern regarding other waste management operators is acknowledged. It is noted that accepted planning principles, practice and application of the EP&A Act do not recognise matters of economic competition between individual trade competitors as a relevant planning consideration.

Under the current NSW waste levy, it is more profitable to recycle waste than to use waste as a fuel source. As such, the facility will continue to preference the separation of recyclable waste and where possible, recycling material which is fit to be reused in favour of the proposed EfW Facility.

Of the waste loads received by at the Genesis MPC that are classified as containing material capable of being recovered or recycled, it is estimated that, on average, 80% of mixed waste materials are recovered by sorting, separating and processing and made available for resale or reuse by other processors. This is a higher rate than the averages for NSW and exceeds the WARR Strategy criteria.

The aim of the EfW Facility is to generate energy from residual waste, meaning waste which cannot be reused or recycled and would otherwise be diverted to landfill. Given the high recycling rates already achieved by the Genesis facility are anticipated to remain high, it is expected that the proposed EfW Facility will not have a negative impact on recycling rates.

## 6.8. ADEQUACY OF TECHNOLOGY

There has been no change to the technology proposed to be implemented in the facility. The additional testing and analysis has been performed to demonstrate that the proposed technology can adequately handle the proposed waste stream and quantities.

The resulting fractional and chemical analysis (as presented by Ramboll, September 2017) have been used to calculate the behaviour and final output state of the input elements based on the results of comparable plants. The waste audits and resulting waste stream composition and chemical analysis prove the adequacy of the technology to process the waste stream and capability of the facility to achieve the guaranteed emission based on the waste audits.

A further addendum to the Best Available Techniques Evaluation prepared by Ramboll and attached at **Appendix M** confirms that based on the Stage 1 development of the EfW Facility only the design, emissions and energy efficiency of the facility still achieve the requirements of the The Best Available Techniques (BAT) as defined in the document "Reference Document on the Best Available Techniques for Waste Incineration" dated August 2006 (BREF).

### 6.8.1. Reference Facilities

Additional information has been provided regarding appropriate reference facilities to compare technology implemented, scale of facility and feedstock composition. The further analysis carried out through the waste audits has confirmed the appropriateness of the reference facilities originally presented and provides a clear comparison of feedstock composition and therefore calculated NCV.

The Ramboll analysis of reference facilities is demonstrated within the updated PDB and includes a comparison of the proposed facility and international facilities (8 in total) with regards to capacity, NCV, technology, air pollution control employed, chemical composition and feedstock composition.

In summary, Ramboll finds that all relevant design parameters of the proposed facility are well within comparable plants which are successfully in operation. As a result, the technology option pursued, being moving grate technology with semi dry flue gas treatment, was selected based on its capacity to handle a wide range of fuel types and variation of feedstock and is fully suitable for this application.

## 6.9. BIODIVERSITY AND OFFSETS

The submission received from the Office of Environment and Heritage (OEH) concerns the resulting loss of biodiversity from the site as a result of the proposed vegetation removal.

The submission requests a justification for the need for the vegetation removal and if vegetation is proposed to be removed, requests an appropriate offset strategy to be developed.

OEH state in the submission that the revegetation works of the Ropes Creek Tributary riparian corridor shall not form part of the proposed offsets.

### Response:

In response to the issues raised, and through ongoing consultation with OEH, the proposal has been amended to significantly reduce the areas of vegetation removed, avoiding ecological impacts and where these cannot be avoided proposes a robust offset strategy to mitigate these assessed impacts.

The proposed amendments have been developed in conjunction with the project Ecologist, Abel Ecology, and are presented in an Offset Strategy document and further addendum letter attached at **Appendix G**. The following sections set out the key components of the proposal to address the OEH and DPE comments.

### 6.9.1. Reduced Laydown Pads

The laydown pad areas are required to be constructed for the purpose of supporting the implementation of the project. These areas will be used to assemble plant and undertake building construction and ongoing maintenance and service access to the facility. In particular, the eastern pads are necessary to support the construction and installation of the eastern section of the development as this area would otherwise be inaccessible based on the proposed order of construction staging.

The original proposal required the removal of 2.89 hectares of River Flat Eucalypt Forest (RFEF). The 23,764sqm reduction to Pad 3 has significantly reduced the required vegetation removal by 2.32 hectares (80%). The area of RFEF now proposed to be removed is 0.57 hectares.

The amendments to the pad configuration result in the following reductions to vegetation removal:

- Cumberland Plain Woodland, north eastern section of the site: 0.27 hectares (no change)
- River Flat Eucalypt Forest, south eastern section of the site: 0.57 hectares (2.32 hectare reduction)

### 6.9.2. Ecological Offset Strategy

An Ecological Offset Strategy has been developed by Abel Ecology through consultation with OEH, attached at **Appendix G**.

The Abel Ecology strategy determines the equivalent number of biodiversity credits required, based on a total of 1.3 hectares of vegetation removal, this has further been supplemented with an addendum letter to reflect a total vegetation removal of 0.84 hectares. As an agreed approach with OEH a comparable site with similar ecosystem characteristics and vegetation quality was chosen as a basis for the applicable offsets.

This strategy relies upon a like for like Western Sydney site within The Hills Shire Council, using a requirement of 22.5 credits per hectare of clearing proposed for the River-Flat Eucalypt Forest (HN528) or Cumberland Plain Woodland (HN526) vegetation. On this basis, the proposed offset strategy proposes 21 credits to offset the vegetation removal.

The offset strategy proposes the following with regards to acquisition of the 18.9 credits:

- Purchase HN528 and/or HN526 credits available publically for other sites, as available.
- Use the published and accepted methods e.g. NSW Biodiversity Offsets Policy for Major Projects (OEH September 2014) and Biobanking Methodology to generate offsets on the site in areas not proposed for development.

All reasonable attempts will be made to secure the required offsets and be documented to the satisfaction of the relevant authorities. The use of the applicable policy documents will ensure that the offset strategy implemented meets the required size, area to boundary ratios, location, nature and likely viability.

### 6.9.3. Riparian Revegetation

It is confirmed in the offset strategy proposed that the compensatory planting with the Ropes Creek Tributary riparian corridor does not form part of the offset strategy.

The riparian area, defined as the 40 m riparian zone and an additional 10 m buffer on both sides of the Ropes Creek Tributary, within the site will be revegetated consistent with the NSW Office of Water Document.

### 6.9.4. Bushfire

In response to the increased retention of forest vegetation as resulting from the amended development description for the Stage 1 development of the EfW Facility only, a revised Bushfire Assessment has been undertaken by Abel Ecology and included at **Appendix G**.

This assessment confirms that based on the Stage 1 development, the site is not sterilised by bushfire threat and therefore the facility is able to be constructed with appropriate mitigation measures as follows:

- Building construction for all aspects of the buildings excluding windows will need to be minimum FRL 30/30/30 where separation of 55m from forest is not achieved;
- Openable portions of windows are to be screened with metal mesh maximum 2mm aperture, where separation of 55m from forest is not achieved;
- Water requirements. Fire hose reels must be provided, which is capable of reaching all extremities of the proposed development.
- Grass batters between the facility and forest are to be mown as lawn.

These measures are consistent with the previously outlined measures in earlier iterations of the Bushfire Assessment and the amended EIS.

## 6.10. SOIL AND WATER

Several matters were raised by the EPA in relation to the Soil and Water Assessment and previous response to EPA comments. The following key matters were identified as needing to be addressed:

- A diagrammatic location of sampling points has not been provided.
- Include reference to full list of heavy metals being tested.
- An explanation is required to detail the reasons for not testing any groundwater and verifying the conclusions in the Assessment of Soil and Water Impacts Report.
- hardness correction of heavy metals is problematic as it does not protect all aquatic species. Hardness correction using extreme hardness is again problematic for the site as background hardness does not appear to be well established.

#### Response:

An additional perched groundwater and surface water assessment has been undertaken and is included at Appendix BB.

The assessment indicates that groundwater beneath the site and the adjacent surface waters of Ropes Creek are not currently impacted by the site (or adjacent sites). Further, the assessment concludes that the perched groundwater is extremely hard which suggests that Ropes Creek is likely to also be characterised as extremely hard water reducing the risk of heavy metal toxicity.

The information provided within this assessment including, sampling locations, reference to metals, assessment of copper and further assessment to water quality are considered to satisfy all queries provided by the EPA.

### 6.10.1. Stormwater

The following matters were raised with regard to stormwater:

- An amended stormwater management plan and flood impact study should be prepared.
- The proposal will not meet required infrastructure requirements and does not provide enough detail in relation to potable water and the management of stormwater.
- General concern regarding stormwater treatment.
- The design will need to be amended to show how on-lot stormwater treatment will comply the requirements of the Precinct Plan.

**Submission Reference:** Penrith City Council (194814) | Allens/Jacfin (194827) | Blacktown City Council (BCC) (188212)

#### Response:

The above matters in relation to stormwater treatment and management are acknowledged. As described within Section 16.4.5 – *Surface and Stormwater Management* of the amended EIS, the proposed onsite stormwater management system has been designed to comply with the now repealed SEPP 59 (under direction from BCC) and the requirements of the Eastern Creek Precinct Plan (Stage 3).

Stormwater management parameters have been updated as part of this Response to Submissions Report and changes to the facility design and location of fill pads. These changes are detailed in the revised Civil Infrastructure Report at **Appendix H**.

The stormwater generated from the site will drain to the south into a bio-retention basin to be detained and treated. A pit and pipe system will control the outflow to ensure post developed flows do not exceed pre developed flow for all storms up to the 100 year ARI events. An outlet from the basin will discharge into the existing ropes Creek tributary to the south of the site.

In response to the matters identified for stormwater, the following is detailed:

- The detention basin has been designed to attenuate peak flows over a range of storms from the critical 2 year ARI event up to and including the critical 100 year ARI event. All stormwater generated from the site will discharge into this basin which has a capacity of 10,010m<sup>3</sup>.

Drains modelling was undertaken to confirm capacity of the basin for all storm events. The results indicate compliance with Blacktown City Council guidelines and the Eastern Creek Precinct Plan (Stage 3).

- Water Sensitive Urban Design (WSUD) guidelines were adopted to ensure stormwater quality was met. MUSIC modelling was undertaken to evaluate pollutant loads from the proposed development. It was found that BCC targets are achieved.
- Stormwater quality treatment for the site will ultimately be provided by the proposed WSUD biodiversity basin south of the site. A total surface area of 2,400sq.m of the basin will be dedicated to bio-retention, which will treat runoff from roads. Additional water treatment devices will treat on-lot stormwater runoff.

In summary, the updated Civil Infrastructure Report confirms that a stormwater system consistent with good management practices can be provided for the proposed development.

### 6.10.2. Water Availability and Capacity of Infrastructure

Water availability, consumption rates, and demand are further detailed in the revised Civil Infrastructure Report at **Appendix H**.

Based on the potable water requirements for operations (8000 hours) and staff facilities (365 days per year) for the EfW Facility, the overall operational water demand is 591.92kL/day and is assumed at a constant water use requirement at approximately 6.5L/sec.

The potable water supply is identified as an existing 375mm Ductile Iron Cement Lined (DACL) water main within the access road off Honeycomb Drive to the east of the site which terminates in front of the existing Hanson site. This water main runs across the northern boundary of the site and it is assumed that water for the site can be access from this main.

Based on a feasibility application lodged within Sydney Water, it was identified that there are no issues with a constant 7L/s connection to facilitate TNG operations. It is noted that these details will be confirmed at the Section 73 application stage.

Based on the above, it is confirmed that the site can be suitably serviced by the existing infrastructure in relation to potable water.

### 6.10.3. Transfer of Electricity

In response to the query in relation to the transfer of electricity, it is confirmed that TNG has entered into a Connection Investigation and Negotiation Agreement (CINA) to enable TransGrid to provide an Offer to Connect to the high voltage transmission network, via TransGrid's existing Sydney West 330/132kV Substation facility.

All preliminary investigations undertaken to date confirm that the proposed generator connection to TransGrid's network is feasible.

### 6.10.4. Flooding

As detailed within the revised Civil Infrastructure Report (refer to **Appendix H**), flood modelling carried out by Brown Consulting in March 2010 for Blacktown City Council formed the basis of the existing flood levels for the creek to the south of the site.

The revised report concludes that based on the modelling carried out by Browns, the proposed flood levels of the creek do not adversely affect the proposed site. Flood levels associated with the creek are at least 2m below the proposed finished levels of the site. As such, the site is not identified as being flood affected land and therefore further flood modelling was not undertaken.

## 6.11. HEALTH IMPACTS

The Government and Industry submissions received relating to the potential for impacts on human health generally relate to assumptions and data used in the Human Health Risk Assessment (HHRA), the verification of this data and the scope of scenarios modelled.

A key issue that has been identified is the definition of the fuel feedstock. As a result, the submissions question the conclusions of the HHRA and the extent to which they can be relied upon to determine the potential for impact on human health. Many of these submissions suggested that the impact on human health was unable to be fully determined.

The HHRA has subsequently been updated to reflect the modelled impacts of the amended development description for the Stage 1 development of the EfW Facility only and is included at **Appendix O**.

#### Response:

In response to these matters, first principles of investigation and analysis have been adopted. The fundamental basis was to undertake further data collection and analysis of the proposed waste streams and confirm the composition of the fuel feedstock to be processed at the facility.

The waste source composition results are presented and interpreted within the MRA report (**Appendix J**) and Ramboll updated PDB (**Appendix D**), addressed at Section 4.1 of this report. Together these provide a robust and reliable basis for the modelling assumptions, parameters and resulting conclusions drawn in the updated HHRA.

The HHRA has therefore been revised based on:

- (a) The fractional macroscopic composition and chemical analysis of each waste stream (updated HHRA attached at **Appendix O**).
- (b) Updates based on the revised AQA (November 2017) and revised dust deposition modelling resulting in a geometric mean particular diameter of 1µm.

The modelling was based on Stage 1 of the proposed EfW Facility to demonstrate the proposal is able to meet the required criteria.

Using the refined fuel feedstock, the scenario modelling has been expanded to include a wider range of operational scenarios to assess potential health risks to surrounding identified human receptors (people) that may be exposed to emissions from the proposed EfW Facility. The HHRA assessed the receptors exposure

to air, particulates (dust), ozone, noise and vibration, hazards (i.e. on-site accident scenarios) and soil and water.

It is noted that the submission by the NSW EPA and ENRisk on behalf of the EPA raised a number of matters to be clarified and tested within the HHRA modelling and assessment process.

These are detailed in the summary of submission table (**Appendix A Appendix A**), and the full submission and have been addressed within the HHRA. For brevity, these matters and the response/corrections to the HHRA are not reproduced in this report, rather the HHRA when reviewed as a complete document incorporates and responds to these comments as required and applicable.

The revised HHRA considers the following:

- A total of five potential operating scenarios.
- A chronic health assessment to assess potential long-term exposure.
- An acute health assessment to assess potential short-term exposure.

Key updates to the HHRA include:

- Provide thorough discussion on the mix of waste, associated COPCs, contaminant loading, treatment and operations at the facility.
- Update Scenario 1, Scenario 2 and Scenario 3 with revised GLCs and new GLCs i.e. include Scenario 1 GLCs in Scenario 2 where no POEO limits are available.
- Model two new scenarios – Scenario 4 (IED Limits) and Scenario 5 (operations with diesel generators). Note: Scenario 1 GLCs to be included in Scenario 4 where no IED limits are available.
- Qualitative sensitivity assessments e.g. more chromium III than chromium VI and weighted annual average assessment of Scenario 1, Scenario 2 and Scenario 4.
- Include further discussion on upset conditions (Scenario 3) and why a 10-fold increase in concentrations from Scenario 1 is appropriate.
- Remove CoPCs that made up TVOC in models Scenario 1 to Scenario 3 and replace with benzene. Scenario 4 and Scenario 5 will only include benzene as representative of TVOC.
- Dispersion modelling at Prospect Reservoir and qualitative discussion on potential impacts to human health.
- Review and evaluation of Tier 1 screening criteria.
- Further assessment of potential exposure pathways i.e. demonstrate why the air-to-leaf transfer to COPCs is considered to be negligible.
- Formally update change log to provide to the NSW EPA with the revised HHRA.
- Update to reflect modelling outcomes for the Stage 1 development of the EfW Facility only. This includes a review of in-stack concentration limits for one stack with two waste streams only.

The future operating scenarios have been developed based on the matters expressed through the submission process and by way of discussion with the EPA. These are set out as follows, and defined in full in the HHRA:

1. Normal operating conditions – this is the scenario most representative of the future operating conditions and is based on in-stack concentrations from verified reference facilities.
2. Protection of the Environment Regulation (Clean Air) (POEO) Limit Operating Conditions – using the POEO limits specified and is representative of worst-case impacts for normal operation.
3. Industrial Emissions Directive (IED) limits – assuming that the facility operates to the IED limits, which is representative of the maximum operating conditions of the EFW Facility.
4. Upset operating conditions – i.e. reduced efficiency and/ or complete failure of systems.
5. Diesel Generators – includes the operation of two emergency generators when power is lost.

The conclusions of the amended HHRA are summarised in the following sections. It is important to note that this application is for only Stage 1 of the facility. The assessment of environmental and human health parameters has previously been modelled and assessed as if both Stage 1 and Stage 2 were operating at full capacity.

The revised modelling is based on the nominal volume of residual waste fuels proposed to be treated upon completion of Stage 1 (this application) as 552,500 tonnes which is the optimum expected throughput of the proposed facility. The changes in modelling reflects updates to other technical reports and modelling, including but not limited to:

- Air Quality and Greenhouse Gas Assessment (Pacific Environment, 2017).
- Noise Impact Assessment (Pacific Environment, 2017).
- Odour Assessment (Pacific Environment, 2017).
- Ozone Impact Assessment (Pacific Environment, 2017).

The revised modelling demonstrates the proposed Stage 1 EfW Facility will be within low and acceptable criteria for most complete exposure pathways, as presented in the updated HHRA attached at **Appendix O**.

### Qualitative Assessment

The qualitative assessment of potential risks to human health from odour, noise, ozone, hazards and soil and water were considered to be low and acceptable and did not warrant quantitative assessment within the risk assessment.

### Quantitative Assessment

It is noted that this modelling result is based on the revised dust deposition rates ( $\text{mg}/\text{m}^2/\text{year}$ ) as provided by Pacific Environment which resulted in the risk estimates for all pathways associated with dust deposition to increase (i.e. incidental ingestion of soil, dermal contact with soil, ingestion of home-grown fruit and vegetables, ingestion of home-grown eggs and ingestion of home-grown beef).

For the purposes of this assessment a breast feeding mother was assumed to be exposed via **all** pathways and the cumulative intake was estimated to be below the adopted acceptable risk level. However, due to the low body weight and 100% of food intake being from breast milk for an infant, the risk estimate was calculated as above the adopted acceptable risk level.

However, the potential risk to an infant under Scenario 2 is considered unlikely to be realised as:

- Critically, Scenario 2 is considered redundant as the application as presented is on the basis that the EfW Facility will be regulated to the performance standards set out in Scenario 4, the IED standards. Assessment of Scenario 2 has been carried forward within this revised HHRA assessment and this RTS report only for consistency with historical reporting.
- It was conservatively assumed that a breast feeding mother was exposed to all exposure pathways i.e. inhalation of vapour, direct contact (incidental ingestion and dermal contact) with soil, ingestion of home-grown produce, ingestion of home-grown eggs and ingestion of home-grown beef for 24 hours a day, 365 days per year for 29 years. It is unlikely that a mother would be concurrently exposed to all of these pathways for this prolonged period of time.
- A mother's intake was conservatively based on maximum annual average or grid maximum vapour and dust deposition rates.
- The estimated CoPC concentrations in soil were based on dust deposition rates and not measured concentrations. This is likely to overestimate the CoPC concentrations in soil.
- The fraction of ingested chemical stored in fat was not available for most CoPC and therefore the published value for dioxins was used. This may overestimate the concentrations of metals, PAHs, PBCs and HCB in fat.
- The adopted ingestion rate of breastmilk was the high end range of average intake (enHealth, 2012b).

It is important to note that the proposed EfW Facility is unlikely to operate at POEO emission limits (if at all). The POEO limits referenced in Scenario 2 is considered to be both historical and redundant, since the EfW Facility is designed to meet the more stringent emission limit requirements of the EU IED (reflected in Scenario

4). The Scenario 4 IED limits will form the regulated performance standards for the proposed facility. Therefore, the potential chronic health risk associated with the ingestion of breast milk (infant) is highly unlikely to be realised.

The HHRA has been comprehensively updated to address the concerns raised by submissions and to this end demonstrates that the calculated hazard risk is acceptable for the EfW Facility.

### 6.11.1. Particulate Matter: Nano-Particulates

Penrith City Council relayed that the community were concerned that the emission and potential impacts of particulate matter <2.5 had not been assessed in the amended EIS.

**Submission Reference:** Penrith City Council (194814)

#### **Response:**

The potential impacts associated with emissions of PM<sub>2.5</sub> (defined as particulate with aerodynamic diameter less than 2.5 micrometers, including sub-micrometer particles) is explicitly addressed within Section 9.1 (incremental) and Section 9.2 (cumulative) of the Air Quality and Greenhouse Gas Assessment (attached at **Appendix N**).

Nanoparticles (or ultrafine particles) are particles between 1 and 100 nanometers (equivalent to 1/1000 to 1/10 microns or micrometer) in size. Emissions to air are often referred to as PM<sub>2.5</sub>, meaning all Particulate Matter smaller than 2.5 micron. When measured as emission to air, Nanoparticles therefore form part of the parameter PM<sub>2.5</sub>.

The main emission sources of PM<sub>2.5</sub> from human activities are traffic (mainly diesel engines, wear of tires and brakes, air turbulence on roadways), agriculture and industry. Further there are relevant natural sources as bushfires, dust storms, pollens and sea spray.

PM<sub>2.5</sub> emissions (including nanoparticles) of EfW facilities have been investigated by Ramboll. The investigations all have shown that the emissions of a EfW Facility are very low. In fact, the emissions of PM<sub>2.5</sub> (including nanoparticles) measured at the stack in some plants was below the concentration of ambient air in urban areas.

In summary, it can be said that - irrespective of the air pollution control system - the contribution of a EfW Facility to the PM<sub>2.5</sub>/nanoparticles ground level concentration is negligible (i.e. below 0.1%).

## 6.12. AIR QUALITY IMPACTS

Several matters associated with the impact on air quality from the EfW Facility have been raised by the submissions. Of these submissions, Allens/Jacfin raised numerous concerns related to the outcomes of independent assessments undertaken by Katestone. These concerns, and concerns raised by other submitters are linked to the following:

- Accuracy of the data presented, specifically in relation to fuel mix, receptor locations, ambient air quality levels, and characterisation of conditions.
- Consideration of air quality impacts during upset conditions.
- Confirmation that forecast emissions are valid and attainable.
- Further clarity required for emission limits and the averaging times, including actual fuel and performance of all proposed emission control measures.
- Truck movements contributing to air pollution.
- Need for ongoing air quality monitoring.

**Submission Reference:** Allens/Jacfin (194827) | Greens NSW (191414) | EPA (197270)

#### **Response:**

The Air Quality Assessment has been updated by Pacific Environment in response to the issues raised and as part of this Response to Submissions Report and comments received from the EPA. This revised assessment is included at **Appendix N**.

The conclusions of the amended Air Quality Assessment are summarised in the following sections. It is important to note that this application is for only Stage 1 of the facility. The assessment of air quality parameters has previously been modelled and assessed as if both Stage 1 and Stage 2 were operating at full capacity.

The revised modelling is based on the nominal volume of residual waste fuels proposed to be treated upon completion of Stage 1 (this application) as 552,500 tonnes (engineering capacity for approximately 405,000 to 675,500 tpa with an optimum expected throughput of 552,500 tpa).

The Air Quality Impact Assessment was undertaken having regard to the site context, potential impacts of the proposed development, consideration of statutory requirements, and identification of appropriate mitigation measures. The AERMOD atmospheric dispersion model was selected as a suitable dispersion model to provide modelling predictions for air toxics as assessed against the 99.9<sup>th</sup> percentile prediction, at and beyond the site boundary.

The updated assessment has revised various modelling parameters to address the above comments. These parameter changes are reflected in the resultant emission outputs and are primarily based on the comments from the EPA. The key modelling changes are detailed below:

- New meteorological file that replaces all calm periods in meteorological input file with 0.5m/s wind speeds.
- Refined terrain information based on the higher resolution STRM1 data set.
- Updated emissions for the expected and upset scenarios, including the adoption of the UK EA metals data.
- Addition of the regulatory EU Industrial Emissions Directive (IED) limits scenario.
- Simultaneous modelling of the diesel generators with emissions from the EfW Facility stack.
- Update of adopted background data.
- Update to reflect modelling outcomes for the Stage 1 development of the EfW Facility only. This includes a review of in-stack concentration limits for one stack with two waste streams only.

The following sections detail the response to the key areas as identified in the submission summary at **Appendix A**. These responses should be read in conjunction with the updated Air Quality Assessment at **Appendix N**.

### 6.12.1. Accuracy of Air Quality Data

The concerns in regards to accuracy of air quality data are acknowledged. The AERMOD atmospheric dispersion model used as part of the assessment has been updated as per the above, to address accuracy concerns and provide a detailed analysis of potential emissions of the facility.

Generally, the model has a tendency to over-predict across the range of databases that were evaluated. Based on the updated modelling inputs, cumulative predictions detail no exceedances of the EPA criteria when the EfW contribution is added to maximum background concentration under expected operating conditions.

The data used and input into the dispersion model has been reviewed by the EPA and deemed to be acceptable. As a result, it can be confidently determined that the Stage 1 facility will not exceed emission limits during expected operating conditions.

Further, Northstar was commissioned to undertake a peer review of the Air Quality Assessment as provided by Pacific Environment at **Appendix N**. This peer review will be provided to DPE as an addendum once received.

### 6.12.2. Scenario Modelling and Upset Conditions

The revised air quality assessment and updated dispersion modelling has identified a number of operating scenarios for the EfW Facility and detailed predictions for air toxics. These scenarios are outlined as follows:

- Scenario 1: Expected.
- Scenario 2: Regulatory (POEO Limits).
- Scenario 3: Upset.
- Scenario 4: Regulatory (IED Limits).

- Scenario 5: Diesel Generators.

Emission limits have been revised based on the updated information included in the assessment at **Appendix N**. For dispersion modelling purposes, all scenarios have been modelled such that emissions are released over the entire modelled period (i.e. 8,760 hours of 2013). This allows for worst case meteorological conditions to be accounted for in the ground level concentration predictions. This approach has been adopted for all averaging periods (1 hour over 24/7), thus providing a thorough assessment and conservative approach in consideration of the annual average predictions.

It is acknowledged that upset operating conditions may occur for a number of reasons. During this time, some air quality parameters will increase under specific conditions. For the purpose of addressing the worst-case scenario, an 'upset' condition scenario was tested. The likelihood of this scenario (being the potential for upset conditions to coincide with worse-case dispersion conditions) is less than 0.012%.

Given no emissions data was available in the public domain reflective of conditions during a plant failure event, the approach used to develop the 'upset' scenario was to adopt a ten-fold increase in emissions above the respective IED limit values. This general approach was provided by Ramboll as a conservative estimate of emissions under plant failure conditions. Further refinements were made for specific air quality metrics where such as approach was not deemed valid.

In the case that this worst-case scenario is realised, the modelling indicates that Cd are predicted to exceed the NSW impact assessment criteria. However, as described above the probability of this occurring is extremely low. There are no exceedances of the EPA criteria when the EfW Facility contribution is added to maximum background.

It is important to note that during upset conditions, not all air quality parameters will simultaneously increase, but rather individual parameters may increase given reduced efficiency or complete failure of specific operations. Under any of these circumstances, the operate will reduce or shut-down operations as soon as practicable until expected operations can be restored.

On this basis, the air quality modelling has considered five possible scenarios, including the IED Limits (which are the limits the facility is proposed to operate under) and the upset operating scenario – including worst case.

### **6.12.3. Australian and NSW Policy Context and Protection**

The EfW Facility has been developed to align with the relevant environmental, operational, and safety requirements of Australian and NSW regulatory frameworks. The key performance requirements have been used to inform the development of the design and operation of the facility.

The emissions produced from the EfW Facility are defined by emission limits for waste incineration set by the European Union Industrial Emissions Directive (IED; Directive 2010/75/EU).

The NSW Energy from Waste Policy Statement further requires that any facility will need to meet current international practice as well as satisfy, as a minimum, current emission limits prescribed by the POEO (Clean Air) Regulations and meet international best practice with respect to:

- Process design and control.
- Emission control equipment.
- Emission monitoring with real time feedback to process controls.
- Arrangements for receipt of waste.
- Management of residues.

The Energy from Waste Policy Statement notes that meeting international best practice will ensure that air toxics and particulate emissions are below levels that may pose a risk of harm to the community or environment and specifies technical criteria which must be met.

The technology for the EfW Facility is based on existing facilities in Europe and will incorporate best available technology for flue gas treatment. The flue gas treatment is designed to meet the in-stack concentration limits for waste incineration set by the EU IED, which are generally more stringent than those prescribed within the POEO (Clean Air) Regulations. As such, the air toxins produced by the facility are within acceptable levels under the IED, NSW Energy from Waste Policy, and the POEO (Clean Air) Regulations.

Based on the above requirements and assessment included at **Appendix N**, it is confirmed that the proposed EfW Facility has had regard for the relevant regulatory framework and the identified forecast emissions are valid and attainable.

#### 6.12.4. Reduced Air Quality

In response to the comments around a reduction of air quality within the locality, the revised Air Quality Assessment (at **Appendix N**) has addressed cumulative predictions under the expected operating scenario namely Scenario 4.

In terms of truck movements, the Air Quality Assessment assumes a maximum of 126 trucks would enter the site per day resulting in localised diesel vehicle emissions. These additional emission sources are anticipated to be negligible in view of the location of the building abutting the M4 and M7 motorways. In this sense, such a small change in vehicle numbers is anticipated to make a non-discernible difference in local air quality.

In summary, the cumulative predictions show that there are no exceedances of the EPA criteria when the EfW Facility contribution is added to maximum background concentration under expected operating conditions.

### 6.13. GREENHOUSE GAS EMISSIONS

A number of submissions raised concerns with regard to potential greenhouse gas emissions and adequacy of the impact assessment. Issues included:

- Deficiencies in the greenhouse gas assessment based on upset conditions, receptor locations and meteorological conditions resulting in inconsistencies in the data presented.
- Concern with the greenhouse gas emissions calculation given the incineration of waste categorically producing far more carbon dioxide per unit of energy generated than coal, oil or gas fired power stations.
- Impact on air quality far outweighs any marginal impact on greenhouse gas emissions.

**Submission Reference:** Allens/Jacfin (194827) | Greens NSW (191414) | EPA (197270) | Penrith City Council (194814)

#### Response:

The Greenhouse Gas Assessment has been updated by Pacific Environment (refer **Appendix N**) in response to the issues raised and as part of the Response to Submissions Report and to reflect the Stage 1 development of the EfW Facility only. This updated assessment has considered emissions from landfills, fuel composition, electrical grid submissions, and emission factors in more detail to address the above queries.

The revised modelling is based on the nominal volume of residual waste fuels proposed to be treated upon completion of Stage 1 (this application) as 552,500 tonnes.

The revised assessment has been updated as follows:

- Updated dispersion modelling including a new meteorological input file, terrain information, updated emissions for the expected and upset scenarios, and updated background data.
- Emissions of methane from disposal of waste to landfill are estimated based on the NGER solid waste calculator 2015-16.
- The Scope 2 emission factor for grid electricity in NSW has been plotted for the last 10 years of data presented in the National Greenhouse Accounts Factors and fed into the quantity of GHG calculated by the EfW Facility assuming a 25-year life.
- Emission estimates are based on a range of waste compositions based on waste streams as described by Ramboll in the Project Definition Brief (2017). The assumptions used in these calculations are outlined in the updated assessment.
- Degradable organic carbon (DOC) in the waste for wood 'garden and green' (0.43) provides a conservatively low estimate of GHG emissions from landfilling. This results in a conservatively low estimate of GHG emissions diverted from landfill.

Based on the above updates, the assessment concludes that the EfW Facility (Stage 1) would have a net positive GHG impact, potentially eliminating over a 25-year period between 13.6 to 17.1 Mt CO<sub>2-E</sub>. The emission

intensity for electricity generated from waste incineration is significantly lower than that derived from the current NSW electricity grid.

In direct response to the issues raised, it is clear that the updated dispersion modelling as described in Section 4.5 of this report indicates that even in the upset scenario model that greenhouse gas emissions are a non-factor for the EfW Facility. Further, long term assessment of greenhouse factors assumes a net positive GHG impact overall.

## 6.14. CLIMATE EFFECTS

### 6.14.1. Western Sydney Heat Sink

One objector raised concerned that additional vehicle movements associated with the facility would exacerbate the Western Sydney “heat sink” phenomenon.

**Submission Reference:** Mulgoa Valley Landcare Group (183412)

**Response:**

The term “heatsink” is typically used in electronic fields to describe a passive heat exchanger. The submission provides no evidentiary basis of the alleged phenomena, nor does it providing any information on a causal link that supports the claim.

Urbis has undertaken a literature review to substantiate the claim of a ‘heat sink’. No peer reviewed sources are available to support the allegation. In the absence of supporting technical information from the objector to verify or support the claim, the comments are considered unreasonably prejudicial. There is no evidence of ‘heat sink’ nor that truck movements are responsible, or that the proposed developments vehicle movement contribution would have the alleged impacts.

As the objector has provided no evidentiary basis for their claim and not reputable (or otherwise known source) can be found to be reporting the alleged impact, this claim is considered to be unfounded and therefore unreasonable.

## 6.15. DESIGN QUALITY AND VISUAL AMENITY

A number of submissions raised concerns that the visual impact of the proposal would be unacceptable. The following matters regarding design and visual impact were raised:

- The proposal will result in significant visual impact when viewed from Erskine Park
- Best practice design and architectural features should be incorporated as the current design does not demonstrate this.
- The bulk and scale of the facility will be out of character with surrounding development and visible from a number of surrounding locations.
- The proposed landscaping will be insufficient in reducing the visual impact of the facility.

A response to these matters is provided in the following subsections.

**Submission Reference:** Penrith City Council (194814) | Blacktown City Council (188212) | Allens/Jacfin (194827)

### 6.15.1. Architectural Design

The design of the EfW Facility building has been ultimately informed by the functional requirements of the energy from waste process and the spatial requirements to house the plant and equipment. Notwithstanding, the facility comprises a range of building sizes and shapes that allow for a diverse built form and architectural interest.

This has been explored in the design of the facility through the expression of functional components combined with a varied pallet of materials and finishes. The design incorporates articulation of the massed form to reduce the bulk and scale of the building.

We note that Council was previously comfortable with the design. The following design elements result in a contemporary and visually aesthetic facility.

**Roof form** – A series of mono pitched roofs are used that sleeve above one another and reinforce the north south axis of the building groups. The pitching roofs feature deep 2.5 eave over hangs and deep shadow casting creates the perception of floating roofs.

**Facades** – The façade design of each building component responds to particular functional requirements, whilst applying a consistent, yet sufficiently varied pallet of details, material, and colours. A number of key lines or heights at which façade treatments are changed serve to diminish the apparent bulk of the buildings and create a compositional framework for the grouping and expressing of functional details.

**Slender stack** – the design will include a slender stack which will be screened with multiple materials at the base and allow for a minimised scale at the top.

The above architectural elements are deemed to effectively mitigate any perceived aesthetic issues with the facility and reduce the bulk and scale of the building.

The architectural form of the EfW Facility will assist in minimising any perceived visual impact.

## 6.15.2. Visual Amenity

Chapter 20 – *Visual Amenity* of the amended EIS addresses concerns associated with the visual impact of the facility. An update of the Visual Impact Assessment (VIA) to reflect the amended development description for the Stage 1 development of the EfW Facility has been undertaken and provided at **Appendix S**.

This is in addition to a further site inspection and assessment undertaken for this Response to Submissions Report.

Impacts were assessed at a number of different locations/receptors surrounding the proposed site, including parks and surrounding residential suburbs. In particular, the VIA acknowledges that views to the industrial landscape from Erskine Park are generally screened by existing vegetation and residential built form. Where views of the development are possible, these will generally be of the upper parts of the buildings and the slender vent stack protruding above the tree canopy or building line.

A site visit was undertaken to respond to the specific concerns outlined above. Imagery was taken from the adjacent residential area at Erskine Park, Lenore Drive and the proposed EfW Facility site to discern potential visual impacts as outlined in **Figure 23**.

As illustrated in Picture 2 and Picture 4, the view impact from residential properties will be minimal given the extent of mature vegetation buffering view lines to the facility. The visual impact assessment confirms that from most locations, the lower parts of the facility will be totally obscured from view.

Where views of the facility are possible (**refer Picture 3**) the resultant visual impact will be negligible for most locations and generally low to moderate where views are possible from sensitive viewpoints. The only open views to the facility are from low sensitivity industrial areas in the vicinity of Wallgrove Road and Lenore Drive.

Notwithstanding the above, the EfW Facility proposes a number of mitigation measures (presented in Section 9) that would be implemented in order to minimise any impacts of the proposal on visual amenity. These include:

- Visual mitigation measures such as additional canopy tree planting, effective use of materials and use of a light grey finish on emission stacks to aid visual integration.
- Implementation and management of technology design parameters to reduce plume formation and visibility.
- Ensuring all external lighting is consistent with Australian Standard AS 4282: 1997 – *Control of the Obtrusive Effects of Outdoor Lighting*. Night-lighting will be kept to the minimum required for operations and safety requirements.
- Architectural treatments aimed at drawing the height of stack downward (i.e. stack is thickest at the base).

Figure 23 – Site Visit Imagery (taken 24/05/2017)



Picture 1 – EfW Facility Site – view west



Picture 2 – Whistler Crescent – view east (note: elevated position)



Picture 3 – Lenore Drive – view north



Picture 4 – Fantail Crescent – view east

The above imagery demonstrates the view impact from Erskine Park and surrounding residential areas. Imagery was taken approximately 1.5km west from the proposed EfW Facility.

## 6.16. NOISE IMPACTS

A total of three (3) submissions raised the issue of noise impacts and questioned the veracity of the noise impact assessment undertaken by Pacific Environment. Of the submissions raising the matter of noise, the EPA made no comments in relation to noise. Leaving comments from Blacktown and Penrith City Councils and Allens/Jacfin as the primary objections in relation to these matters.

Jacfin has raised the most issues through a peer review, conducted by Wilkinson Murray of the Pacific Environment noise assessment including the following:

- Further justification is required to support out of hours' work;
- Low Frequency Noise (LFN);
- Need to adopt mitigation measures to address the cumulative/precinct plan goal exceedance;
- That to ensure a robust assessment of impacts seasonal noise monitoring was required to establish representative background noise levels to support a comprehensive assessment of noise impacts on adjacent properties; and
- Need to assess the impact of noise on Jacfin land.

Penrith and Blacktown City Council's appear to have primary concern in relation to LFN and other general comments as follows:

- Concerns that no changes have been undertaken to the noise modelling to account for changes to the design brief.
- Concerns that noise modelling is not detailed and exceeds the Eastern Creek Precinct Plan noise requirements and will impact on the Eastern Creek Business Park.
- Further assessment of low frequency noise impacts is recommended.
- General concerns with noise impacts.

**Submission Reference:** Penrith City Council (194814) | Blacktown City Council (188212) | Allens/Jacfin (194827)

### **Response:**

The noise and vibration implications of the EfW Facility and concerns raised by various government agencies and industries are acknowledged. In response to the issues raised and the revision of the proposal to include Stage 1 only, a revised Noise and Vibration Impact Assessment (**Appendix P**) has been conducted.

It is important to note that this application is for only Stage 1 of the facility. The assessment of noise and vibration parameters has previously been modelled and assessed as if both Stage 1 and Stage 2 were operating at full capacity.

The revised modelling is based on the nominal volume of residual waste fuels proposed to be treated upon completion of Stage 1 (this application) as 552,500 tonnes (engineering capacity for approximately 405,000 to 675,500 tpa with an optimum expected throughput of 552,500 tpa).

The revised assessment also includes a quantitative noise impact assessment and cumulative impact assessment. This concludes that Stage 1 noise levels associated with operational, traffic, construction and cumulative noise will be well within the required criteria.

This revised assessment has addressed the above concerns as follows:

- **Updated Receivers / Location & Modelling**

Background noise data was sourced in 2014 and an assessment completed to account for existing industrial and road noise influences. Since the original monitoring programme, additional monitoring for the existing Genesis facility has been reviewed and compared against the original data. This is referred to in **Appendix P**. The results indicate that the unattended logging in 2014 is still the most conservative data collected to date.

Updated modelling has been undertaken based on nearby commercial receivers and future land uses. New receiver locations are outlined below:

- Fisher and Paykel.
- Sargents.
- Dept of Planning Lands.
- Jacfin Site.

Noise levels at these locations are predicted to be below the commercial and industrial criteria outlined in the NSW EPA INP under all prevailing meteorological wind conditions. Given these receivers are closer than the Pepkor site (east of the existing Genesis facility) it is considered that compliance is achieved at this location.

- **Detail on Emission Calculations**

The level of detail on emission calculations is consistent with contemporary noise impact assessments. Detail provided is adequate to allow an external reviewer to assess and remodel the project independently.

Generally, the assessment has considered a worst-case assessment of both construction and operation noise.

- **Modelling Low Frequency Noise Impacts**

Modelling has been completed using the ISO9613 and CONCAWE algorithms. Octave band results are presented in the updated assessment at **Appendix P** to provide additional information on the C weighted results. Additionally, all predicted noise levels have been compared against the NSW INP low frequency noise criteria. It was found that adjustments for modifying factors are not required as the project is not expected to include tonal, intermittent, impulsive or low frequency noise characteristics as defined in the NSW INP.

This assessment approach to low frequency noise impacts is accepted practice for the modelling of airborne noise.

- **Cumulative Noise Impacts**

The cumulative noise impact of the development has been revised based on the assumption of Stage 1 only. The predicted cumulative noise from the facility and the approved adjacent development under Stage 1 is anticipated to be 39 dB, which complies with the amenity criteria and goal of 39 dB under the Eastern Creek Precinct Plan

In addition, the project design includes reasonable and feasible selection of plant and equipment to minimise noise impacts.

Based on the above, and the additional modelling and amendments to the noise impact assessment as suggested by the submissions, the outcomes and results of the assessment conclude that the proposed EfW Facility can operate within all noise limits and not have an adverse impact on surrounding land uses and the locality.

## 6.17. AIRSPACE OPERATIONS

A total of four (4) submissions were received in relation to or raising airspace operations. Two (2) made comment and two (2) raised objection of the grounds of potential impact. An analysis and response to the matters raised are discussed in the following subsections.

**Submission Reference:** Blacktown City Council (188212) | AirServices Australia (194827)

### 6.17.1. Airspace Management (OLS)

Blacktown City Council (BCC) (and their consultant Jacobs) combined with Jacfin have raise the potential for the proposal to affect controlled airspace of the future Badgerys' Creek Airport (also referred to as Western Sydney Airport).

In summary, their respective submissions raised the following matters:

- That despite the obstacle limitation surface (OLS) not yet being declared BCC are of the view that the proposed development would penetrate the same. In the view of BCC the declaration is imminent and no decision should be made in relation to the EfW Facility until the application has been reviewed by the Department of Infrastructure and Regional Development.

- Jacobs are of the view that the stack exit velocity has not been appropriately calculated and the potential impacts therefore not properly considered.

**Response:**

Following exhibition of the original EIS in 2015, an airspace operations report was prepared to identify a potential future OLS and a plume rise assessment completed to determine the potential for stack emissions to penetrate the same.

Both of the above reports were forwarded to the Department of Infrastructure and Regional Development (DIRD) for review and comment. This review concluded that there is unlikely to be an adverse impact on the operation of air space arising from the proposed development and that plume rise could be appropriately managed through electronic makers and notification (refer to Sections 21.4.1 and 24.1.2 of the amended EIS and Appendix EE).

The amended EIS, exhibited between December 2016 and March 2017 was referred once again to the DIRD, including AirServices Australia. The submissions received from DIRD confirms that the anticipated plume rise will not penetrate the OLS for Western Sydney Airport.

It is important to note that the previous iterations of modelling was based on Stage 1 and Stage 2 of the proposed facility to demonstrate the worst case scenario for plume rise. Stage 1 will involve only one stack and therefore reduce any impact on airspace operations further. This is based on additional review and modelling as described below.

The proposal for Stage 1 as described in this RtS report has been reviewed by Airspace Design Solutions in an Aviation Assessment included at **Appendix W**. The review concluded that the current proposal for Stage 1 development of the EfW Facility only has no additional impact on the assumed airspace likely to be associated with the proposed Western Sydney Airport, and existing airspace of Sydney and Bankstown Airports than already assessed.

In response to Jacobs' comments on the plume rise assessment, Ramboll Environ has addressed these concerns and undertaken an updated Plume Rise Assessment at **Appendix L** to assess the impacts of the Stage 1 development of the EfW Facility only, in particular, the impact of a single stack scenario.

This updated assessment by Ramboll confirms the following:

- The average critical plume height is below the Obstacle Limitation Surface (OLS) for each year modelled. The maximum critical plume height is above the OLS, however less than 5% of all critical plume heights are greater than the OLS.
- Plots of the plume velocity averaged by height clearly show that average plume velocity is well below the OLS for all years of analysis.
- The percentage occurrence of critical plume velocities above 4.3 m/s, at the OLS is very small (0.1%-0.2% for all years).
- The penetration of the OLS by critical plume heights occurs for only a very small area in the immediate vicinity of the stacks.

Overall, the approach employed by Ramboll Environ in the modelling of plume rise, in particular the merging of buoyant plumes from each flue in a multi flue stack is supported by the CSIRO (2005) based on Hibberd et al/CSIRO. It is noted that Jacobs method and approach is also valid.

Further, in response to the term NE in equation 2 being incorrect, the following response is provided:

*'Manins et al (1992) clearly defines NE as the effective number of stacks. Rise enhancement is defined in Manins et al (1992) as the ratio of the rise of the combined plume to the rise of a single plume and the rise enhancement factor (EN) is then taken as the lesser of NE 1/3 or N1/3 (where N is the number of stacks).*

*Manins et al (1992) also notes that the maximum rise enhancement factor for N stacks would be N1/3, if all the emitted buoyancy were to be completely combined. Therefore, following the approach in Manins et al (1992), NE should be raised to the power of 1/3 to derive the rise enhancement factor (which we use as the buoyancy enhancement factor) and not, as suggested by Jacobs, used directly as the buoyancy enhancement factor.'*

This effectively modelled the buoyancy enhance factor of the single stack with two ducts. In summary, for the reasons above, the modelling approach applied by Ramboll Environ is valid and appropriate and has been accepted by DIRD.

### 6.17.2. Wildlife (Bird) Strike: Monitoring

The DIRD in their response submission acknowledged that the amended EIS includes an assessment of Guideline C, Managing the Risk of Wildlife Strikes in the Vicinity of Airports, of the National Airports Safeguarding Framework (NASF).

The DIRD determines the EfW Facility to have a “moderate” risk of attracting wildlife to the site of the facility and recommends ongoing monitoring activities should occur to assist in development appropriate future mitigation measures.

**Submission Reference:** Department of Infrastructure and Regional Development (206372)

#### Response:

As set out in Section 21.4 of the amended EIS, the following characteristics of the site and proposed operation will mitigate the potential for the attraction of wildlife:

- TNG will receive non-putrescible waste streams; and
- The waste storage bunk is completely enclosed within a building kept under negative pressure with high speed roller doors only opened during vehicle entry and exit.

As such all waste stored in association with the operation of the EfW Facility is completely enclosed with limited potential to attract wildlife.

Notwithstanding, the recommendation of the DIRD to employ ongoing monitoring plan to identify and manage wildlife on and around the EfW site is noted. A plan will be prepared by a suitably qualified ecologist (or similar) having regard to the *Wildlife Hazard Management Plan* framework established by the Australian Airports Association. In particular, regard will be given to the framework established for monitoring programs under Section 5.1 of the plan framework. To ensure that this occurs at an appropriate time in the development process, the proponent’s mitigation and management measures will be expanded as referenced in Section 9 of this report.

## 6.18. TRAFFIC & PARKING IMPACTS

Four (4) submissions commented on potential traffic impacts. The following matters were consistent across the submissions as primary concerns:

- **Section 6.18.1:** Increased congestion.
- **Section 6.18.2:** Parking.
- **Section 6.18.3:** Precinct Road Alignment.
- **Section 6.18.4:** RMS Concerns.

These matters are discussed in the following subsections.

**Submissions Reference:** Blacktown City Council (188212) | Allens/Jacfin (194827) | Penrith City Council (194814) | RMS (194993)

### 6.18.1. Impact of Additional Truck Movements

Traffic have undertaken additional SIDRA modelling using the technological capacity of the proposed EfW Facility (see **Appendix U**). The modelling was undertaken on the basis that the facility would be implemented in the following phases:

- Phase 1: 552,000 Mtpa; and
- Phase 2: P1 + 552,500Mtpa. A total of P2 capacity of 1,105,000Mtpa.

The revised modelling was based on Stage 1 and Stage 2 of the proposed facility, adopting the maximum technological threshold of 1,350,000Mtpa to demonstrate that on a worst case scenario the proposal is able

to meet the required criteria. At 1,350,000Mtpa, the modelling determined that the project would have no diminishing impact on the current capacity of the local road network or key intersections. In relation to the latter the development would maintain a Level of Service B for the intersection of Wallgrove and Wonderland Roads.

Notwithstanding this, Stage 1 (this application) has been assessed based on the revised development description with an addendum letter provided at **Appendix U**. This review determines that based on a maximum design capacity of 675,000Mtpa to accommodate worst case criterion, the Stage 1 development can be readily accommodated by the surrounding road network.

Notably, the critical intersection of Wallgrove Road and Wonderland Drive will continue to operate with an unchanged and acceptable level of service post-Stage 1 development.

In summary, where the Stage 1 and 2 of the development was supportable on traffic planning grounds, this clearly remains the case for Stage 1 of the EfW Facility only.

The proposed development of Stage 1 subject to this application with 50% less technological capacity is therefore unlikely to significantly impact the traffic capacity of the wider area.

### 6.18.2. Parking

At least one (1) submission has raised concern regarding the impact of the proposal on the grounds of parking. As outlined in the Traffic Statement included in **Appendix U**, the proposal will provide 43 car parking spaces which is beyond the required amount. There is no anticipated impact arising from overflow parking demands.

### 6.18.3. Precinct Road Alignment

The future Precinct Road is located to the north of the development site and will, when complete connect Honeycomb Drive (in the east) to Archbold Road (in the west).

The delivery of the Precinct Road was mandated by Project Approval MP06\_139 for the construction and operation of Genesis MRF and Landfill. Access from the Precinct Road to the site of the EfW Facility is proposed under this SSD application but the Precinct Road itself is not. In this regard, consideration of the alignment of the road and any connection to the Archbold Road upgrade is beyond the scope of this proposal and therefore should not be assessed for compliance or suitability at this time.

Despite the above, indicative details of the road alignment and intersection were provided to RMS for review by email dated 19 April 2017.

In summary, the project increase in traffic generation potential of the EfW Facility is not expected to have any unacceptable traffic implications in terms of road network capacity and all comments provided by RMS have been addressed and included in the SIDRA modelling.

### 6.18.4. RMS Concerns

RMS in their review of the traffic assessment report and SIDRA analysis have identified a number of comments associated with the lane geometry, phasing, and priorities of the modelling.

In response to the comments raised by RMS, Traffix have updated their SIDRA modelling and provided an additional response to queries at **Appendix U**. This is summarised below.

#### Lane Geometry

- *The left slip lane in the model on Wonderland Dr is now correctly modelled with ped actuated signals in the revised model.*

#### Phasing

- *All revised models have been assessed adopting the SCATS sequence provided with an optimized cycle time of 100-150 seconds, which is within the accepted maximum practical cycle length for traffic signals under saturated conditions in accordance with Roads and Maritimes Services Traffic Modelling Guidelines (Feb, 2013).*
- *All reference phase in the revised models have been corrected, and is set to 'A' phase.*
- *Right turn filers at this intersection does not comply with today's standard practice and therefore have all been disabled.*

## Priorities

- *We have reviewed the model priorities and confirm that that all priorities are now correctly shown. Notwithstanding, we note there may have been a confusion with regards to the split phasing and priorities shown and emphasise that it is correct to show the 'normal' priorities (i.e. through movement is an opposing movement for the opposite right turn movement) and this does not conflict with the split phasing (i.e. whilst the through movement is an opposing movement the right turn movement will be unimpeded due to split phasing.)*

Traffic confirms that the Wonderland Drive/Wallgrove Road/M7 Control Centre intersection currently operates a LoS B in both the AM and PM peak periods and will continue to operate satisfactorily at LoS B in the future.

## 6.19. PRELIMINARY HAZARD ANALYSIS

The Department of Planning and Environment requested the following in relation to the Preliminary Hazard Analysis (PHA):

- The PHA should be critically reviewed in the context of the amended EIS to establish if the results and findings recommendation of the PHA are still valid.
- Particular attention should be paid to the conclusion that the risks associated with the flue gas treatment are as low as reasonably practicable.

### Response:

The concerns of the validity of the preliminary hazard analysis in the context of the amended EIS are acknowledged. The PHA prepared by RawRisk in March 2015 has been reviewed on two occasions by Core Engineering in June 2017 and September 2017. These technical advice notes are included within **Appendix V**.

Based on the June 2017 review of the process and how toxic products of combustion are extracted from the process prior to atmospheric discharge, it is still considered that the facility falls within the 'As Low as Reasonability Practicable' (ALARP) range.

Additionally, in terms of flue gas treatment, the ALARP assessment was part of the qualitative assessment to determine whether incidents associated with the flue gas treatment would result in injury or fatality. The assessment reviewed the individual stages for cleaning the exhaust gases and determined that the proposed methods would be effective for extracting the toxic products for combustion. It was found that considering the safe operation of other facilities using the same process, that an ALARP assessment could be determined and no additional assessment was required.

Core Engineering conducted a further review of the original PHA based on the revised Project Definition Brief (September, 2017) for Stage 1 of the EfW Facility only. The review revealed that the separation of Stage 2 does not significantly change the incidents assessed in the PHA as the commodities used and stored remain the same, only the quantity of material used during operations would be reduced. There is therefore no change in consequences estimated for the site and assessment against the applicable Hazardous Industry Planning Advisory Papers (HIPAPs) remains valid.

In summary, the reviews of the PHA found that the original findings of the report remain valid and the proposed facility does not exceed the acceptable risk criteria defined in HIPAP No. 4.

## 6.20. ODOUR

Three (3) submissions raised the following concerns in relation to potential odour associated with the EfW Facility. Of these three submissions, Allens/Jacfin raised the most concerns, which predominately related to the accuracy of the odour assessment. The following specific matters were raised by the submissions received:

- Odour assessment should provide more information on building ventilation as relevant to the management of fugitive odours.
- The ability of the EPA to manage this development in the future given its track record with odour management in the area
- The Proponent has not undertaken any additional noise or odour modelling to take into account the changes to the design brief for the project.

- The AERMOD model is not suitable for the light wind conditions occurring at the subject site.
- Odour levels have been significantly underestimated and as such, the Odour Impact Assessment is deficient.
- No consideration of potential odour from the delivery of waste via truck.
- Need for comprehensive odour sampling.
- Impacts of odour on Eastern Creek Business Park.

**Submission Reference:** Blacktown City Council (188212) | Allens/Jacfin (194827) | Penrith City Council (194814)

**Response:**

The comments raised in regards to odour are acknowledged. In response to these issues the odour assessment has been updated by Pacific Environment to reflect additional modelling and assessment undertaken, attached at **Appendix Q**.

It is important to note that this application is for only Stage 1 of the facility only. The assessment of air quality parameters has previously been modelled and assessed as if both Stage 1 and Stage 2 were operating at full capacity.

The revised modelling is based on the nominal volume of residual waste fuels proposed to be treated upon completion of Stage 1 (this application) as 552,500 tonnes (engineering capacity for approximately 405,000 to 675,500 tpa with an optimum expected throughput of 552,500 tpa).

The following additional modelling was undertaken to address the above concerns:

- **Updated Meteorological File**

The meteorological file used in the dispersion modelling was updated to address peer review comments with respect to calm wind speeds within the AERMOD model. All calm wind speeds were replaced with a 0.5m/s wind speed.

- **Additional Site Inspection**

An additional site inspection of the existing operations at the Genesis facility and proposed EfW Facility was undertaken.

It was concluded that there was minimal odour generated within the existing waste receivable hall of the Genesis facility, which handles a similar (non-putrescible) waste stream as proposed for the EfW Facility. The exception being chute discharge material known as ‘chute residual waste’ where a distinct odour was detected. However, this odour was observed to dissipate within tens of metres and is not anticipated to constitute an adverse odour at or beyond either the existing or future operational boundary.

- **Stack Emissions Assessment**

Emissions of individual odorous compounds will be released from the stack of the EfW Facility. These emissions are explored in detail in the revised Air Quality Assessment at **Appendix N** and demonstrate compliance with all air quality criteria when operating under ‘expected’ and ‘upset’ conditions.

Based on the above, individual odorous air quality metrics are deemed to be acceptable and have not been assessed further.

- **Modelling Justification**

The AERMOD dispersion model was chosen due to the source type, location of nearest receiver, and nature of local topography for the EfW Facility. The model is the US EPA’s recommended steady-state plume dispersion model for regulatory purposes and whilst not explicitly listed as an approved model by the EPA in the Approved Methods, AERMOD has been used for a number of assessments that have been approved by NSW EPA.

Ultimately, the project site is located in flat terrain free from complex interactions and for these purposes AERMOD is the ideal model of choice.

- **Plant Management and Mitigation**

In response to the concerns associated with the ability for the waste receivable hall to contain fugitive (principally odour) emissions, the various plant management measures will ensure any odour emissions are suitably mitigated.

Odour emissions in the waste receivable hall are primarily controlled through air being drawn to the furnaces and the area being under negative pressure. The plant consists of two lines, each of them in operation for at least 8,000 hours/year. During maintenance, only one line is shut down at a time ensuring air is continuously extracted. In the event of an emergency shutdown, air extraction continues in order to cool down the furnace ensuring negative pressure and to prevent dust to escape from the furnace and air control system.

Further, the waste stream is non-putrescible and the main C&I / C&D waste is neither highly odorous or toxic.

The facility has the ability to be sealed using operable doors and louvres, and it anticipated that under any condition where negative pressure is not present in the receivable hall, and odorous material is being stored, the operational air quality management plan for the facility would dictate that the area be sealed until such conditions change.

Based on the updated odour assessment, the results indicate that when the facility is considered both in isolation and combined with odour emissions from the Genesis facility, that the predicted 99<sup>th</sup> percentile odour concentrations would remain below the 20u impact assessment criterion of all sensitive receptors. Further, in view of the dispersion modelling results, it is anticipated that the operation of the facility would not result in an adverse impact on the local air environment in reference to odour.

In summary, taking into account the updated modelling parameters as suggested by the submissions, the outcomes remain consistent with the original assessment. This demonstrates the robustness of the assessment and data input into the modelling.

## 6.21. MISCELLANEOUS

A number of submissions included general commentary which did not fit under the key issues that were identified. These concerns are addressed as follows:

### 6.21.1. Aboriginal Heritage

Blacktown City Council submitted the following in regard to Aboriginal Heritage:

- A Construction Environmental Management Plan should be provided prior to the commencement of works to identify conservation areas designated to keeping artefacts retrieved during works.
- An Operational Environmental Management Plan should be developed to ensure that appropriate measures are in place for the treatment and ongoing safekeeping of the Aboriginal heritage in the area.

**Submission Reference:** Blacktown City Council (188212)

#### **Response:**

As described in Section 22 – *Aboriginal and Non-Aboriginal Cultural heritage* of the amended EIS, the main development footprint (Stage 1 and Stage 2) is located in areas considered to be of low Aboriginal heritage significance.

Three aboriginal sites were identified within the broader EfW Facility site, only one of these sites will be directly physically affected. The areas identified as having moderate cultural significance will have no physical impacts and be conserved.

Further, consultation with 12 local Aboriginal stakeholder groups was undertaken to discuss the likely impacts and change in visual landscape. The proposal was supported subject to retrieved artefacts being reburied close by.

The assessment of heritage impacts has previously been assessed based on both stages of development. The Aboriginal Cultural Heritage Assessment has been supplemented with an addendum letter to confirm the heritage impacts based on this application for Stage 1 of the facility only. This is attached at **Appendix Y**.

The overall impact on Aboriginal heritage is considered to be minimal, no new impacts were identified based on the amended development description. The proposal has the potential to reduce impacts on Aboriginal sites.

This can be realised through additional mitigation measures as proposed in Section 9 to protect Aboriginal cultural values through the erection of fencing, and retrieval and reburial of any artefacts discovered.

### **6.21.2. Land Values**

One submission raised the matter of adverse impacts on the property values within the host region, in particular the impact on property values in the neighbouring suburbs of Minchinbury, Erskine Park, St Clair and Colyton as a consequence of the development.

**Submission Reference:** NSW Legislative Council (193821)

**Response:**

Impact on property prices is not a 'matter for consideration' under the provisions of the EP&A Act 1979 and so cannot be used a reason to prevent development.

Notwithstanding the above, no evidence has been provided to support the allegation that property prices would be directly influenced by this proposal. It is worth recognising that the facility is located within a zoned industrial area, adjacent to an operating landfill and 24/7 concrete batching plant. In this regard, the eastern creek industrial park is characterised by established traditional industrial uses. The proposal is not considered to diminish the amenity of the area or alter the character so as to cause a direct and quantifiable impact on local property prices.

### **6.21.3. Greenpeace Submission**

The comments from Greenpeace are acknowledged. This is not a matter of consideration and should not be given determinative weight in the assessment of merit.

**Submission Reference:** Greenpeace (193808)

### **6.21.4. IGGC Submission**

The comments of Ian Grey of IGGC are noted. The assessment of soil and water contained in the amended EIS drew on a range of source material to inform and determine potential impacts and the need for management and mitigation.

The issues raised by IGGC are of a civil nature between the company owner. They should not be given determinative weight in the assessment of merit.

**Submission Reference:** IGGC (183383)

# 7. RESPONSE TO COMMUNITY SUBMISSIONS

This section of the RtS report details the key issues and sub-issues raised by the community submissions during the exhibition period of the amended EIS.

Due to the level of detail provided in the submissions received, a detailed breakdown of each of the key issues raised is also provided in **Appendix B**.

## 7.1. HUMAN HEALTH

A range of issues were raised in relation to health concerns. These are detailed below:

### 7.1.1. General impact of pollutants of human health

#### Issue Description:

A number of submissions raised concerns regarding the general impact of pollutants on human health.

#### Response:

The Human Health Risk Assessment (HHRA) (**Appendix O**) includes the assessment of potential health risks to surrounding identified human receptors (people) that may be exposed to emissions from the proposed EfW Facility. The HHRA assessed short-term and long-term exposure to a variety of potential pollutants from air to particulate matter (dust – PM2.5 and PM10) through an acute and chronic exposure assessment.

Ultimately, the potential risks to human health from air and particulates (dust) are considered to be low and acceptable. This is based upon an emissions assessment against five potential future operating scenarios, with exposure assessment based on a conceptual site model identifying the following:

- Where and if contamination is present and where it may originate from.
- How it may move from the site.
- What people may be exposed.

An exception to this is identified when reference to the calculated hazard indices is slightly above the adopted hazard index of 1.0 for off-site infants via the ingestion of breastmilk under Scenario 2 – POEO limits. As discussed in Section 6 this potential risk is considered highly unlikely to be realised as:

- Scenario 2 is considered redundant (the facility will be regulated to the performance standards set out in Scenario 4). This scenario has been carried forward within this assessment only for consistency with historical reporting.
- It was conservatively assumed that a breast feeding mother was exposed to all exposure pathways i.e. inhalation of vapour, direct contact (incidental ingestion and dermal contact) with soil, ingestion of home-grown produce, ingestion of home-grown eggs and ingestion of home-grown beef for 24 hours a day, 365 days per year for 29 years. It is unlikely that a mother would be concurrently exposed to all of these pathways for this prolonged period of time.
- A mother's intake was conservatively based on maximum annual average or grid maximum vapour and dust deposition rates.
- The estimated CoPC concentrations in soil were based on dust deposition rates and not measured concentrations. This is likely to overestimate the CoPC concentrations in soil.
- The fraction of ingested chemical stored in fat was not available for most CoPC and therefore the published value for dioxins was used. This may overestimate the concentrations of metals, PAHs, PBCs and HCB in fat.
- The adopted ingestion rate of breastmilk was the high end range of average intake (enHealth, 2012b).

It is important to note that the proposed EfW facility is unlikely to ever operate continuously at POEO emission limits (if at all). The POEO limits referenced as Scenario 2 is considered to be both historical and redundant, since the EfW facility has been designed to meet the more stringent emission limit requirements

of the EU IED (reflected in Scenario 4). The proposal is presented on the basis that the Scenario 4 IED limits will form the regulated performance standards for the proposed EfW Facility.

Predicted impacts from the facility are below applicable NSW EPA assessment criteria and relevant guidelines, and have been developed to protect human health and well-being at all surrounding receptor locations. The HHRA concluded the project would not result in any significant impact on the existing health of the population.

### **7.1.2. Specific health concerns including: cancer, asthma**

#### **Issue Description:**

A number of submissions raised health concerns specific to certain diseases or other conditions including (but not limited to), asthma, cancer, birth defects, autoimmune disorders, cardiac disease, respiratory diseases, brain disorders and cancer clusters.

#### **Response:**

A wide range of chemicals were investigated for potential human health risks. This included the identification of hazards, review of existing toxicological information and further assessment of impacts from ozone.

This assessment and review revealed that the proposed facility will not lead to any adverse health effects from dioxins and furans, and will not have any non-carcinogenic or carcinogenic effects.

It was found that any potential health concerns were 'low and acceptable'.

### **7.1.3. Evidence pollutants are harmful to human health**

#### **Issue Description:**

Several submissions provided reference to research which indicated a number of pollutants emitted by the proposal would be harmful to human health.

The 'Health effects of waste incinerators' by Dr Jeremy Thompson and Dr Honour Anthony and the National Toxics Network's 'Burning waste for energy- it doesn't stack up' were the most frequently referenced research on the issue.

#### **Response:**

It is neither reasonable nor practical to peer review and respond to all research papers cited. Accordingly, the main recurring reports have been addressed below.

#### **'Health effects of waste incinerators' – Dr Jeremy Thompson and Dr Honour Anthony (2008)**

This report details health risks associated with waste incineration. The submissions imply that the emissions produced by waste incinerators directly correlate with negative human health outcomes and higher incidences of cancer and mortality.

We note that the study examines emissions produced from municipal waste incinerators. The proposed facility will not accept or process municipal waste and will therefore have a different emission profile.

Based on this, we consider the implications made within the report do not apply to the proposed EfW Facility.

#### **'Burning waste for energy- it doesn't stack up' – National Toxics Network (2013)**

The report argues that waste burning technology is unsustainable and inadequate as a means of energy generation. The report presents a 'zero-waste' model as a method of waste management which is more appropriate than incineration and lobbies the Government to take part in recycling and recovery waste principles.

We appreciate the concerns regarding sustainability and renewable energy. Notwithstanding, the proposed EfW Facility has been designed in line with the NSW EfW policy and as such is considered to be a form of renewable energy. This is through the diversion of waste from landfill, reducing the potential for methane emissions, while also providing a form of low carbon, renewable energy as recognised by the NSW Government.

In summary, both the above reports do not provide any information that is relevant to the assessment of health impacts in Western Sydney associated with the proposed EfW Facility.

#### 7.1.4. Admission of human health risk by the proponent

##### Issue Description:

Several submissions were concerned with a perceived admission of human health risk in the amended EIS. These submissions questioned the appropriateness of a development which admits to such health risks and indicated the proposal should be rejected on this basis. Some submissions were also concerned the proponent could not provide a guarantee that human health would not be impacted and therefore should be rejected.

##### Response:

The amended EIS outlines mitigation measures to minimise and avoid impacts associated with the operation of the plant and potential emissions (Section 17.5.1). As described in the HHRA, these mitigation measures are generally operational conditions and all potential chemicals of potential concern associated with emissions associated with Scenario 4 as the operating limits of the EfW Facility are resolved to be acceptable and low risk of impact on human health.

In summary, the potential for risk to human health from odour, noise, ozone, hazards, soil and water were considered to be low and acceptable and did not warrant quantitative assessment within the risk assessment framework.

The previous HHRA modelling was based on Stage 1 and Stage 2 of the proposed facility to demonstrate that on a worst case basis the proposal is able to meet the required criteria. Notwithstanding this, the maximum volume of residual waste fuels proposed to be treated upon completion of Stage 1 (this application) is only half of the scenario modelled (552,500 tonnes) and therefore demonstrates the proposed Stage 1 will be well within low and acceptable human health criteria. Where exception to this is noted (operating Scenario 2), this is considered highly unlikely as described in Section 7.1.1. above.

#### 7.1.5. Dioxins

##### Issue Description:

Many submissions raised concerns regarding the impact of dioxins on human health. Several submissions elaborated that there is no safe level of exposure to dioxins and others referenced that no evidence was provided to detail the cumulative impact of dioxins on children.

##### Response:

Dioxins and furans are a toxic substance by-product of when other chemicals or products are made and can generally be produced when products are burned.

The impact of dioxins and furans and associated impacts from the operational phase of the project have been addressed in the updated HHRA at **Appendix O**. Modelling predictions at sensitive receptors indicate that dioxins and furans make up 0.1% of the impact assessment criterion. In this sense, the cumulative impact assessment of criteria pollutants outlines that there were no exceedances of the Department of Environment and Conservation Criteria (2005) *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* when the EfW Facility contribution was added to the maximum background concentrations.

This concludes that any impact of dioxins will not adversely affect the existing health of the population.

#### 7.1.6. Delayed onset of health issues

##### Issue Description:

A number of submissions were concerned that health issues associated with the proposal may only become evident in later years, and by this time it would be difficult to reverse any adverse impacts that may occur.

##### Response:

As described within the HHRA, a chronic health assessment was undertaken to assess potential long-term exposure to potential contaminants. This chronic assessment assessed two future operation scenarios as described below.

1. **Normal Operating Condition** – EfW Facility operating using emission rates prescribed by the Industrial Emissions Directive (IED; Directive 2010/75/EU). This scenario is considered to be the most representative of the future operating conditions.

2. **POEO Limit Operating Condition** – EfW Facility operating using emission rates set to ensure current emission limits prescribed by the *Protection of the Environment Operations (Clean Air) Regulation 2010* (POEO (Clean Air) Regulations) were satisfied. This scenario is representative of theoretical worst-case impacts and is unlikely to be realised, and if it is realised, it will only be for short periods of time.

The human health impacts of human receptors were considered based on the surrounding land uses:

- Off-site residents, including schools, childcare centres and hospitals.
- Off-site commercial workers.

Exposure to air and deposition of particulates (which could deposit onto soil) was identified through multiple exposure pathway assessments. For the chronic health assessments, maximum annual average ground level concentrations (100<sup>th</sup> percentile) at each receptor and grid maximum concentrations were adopted as these were considered to be representative of a typical exposure scenario.

This assessment found that both scenarios are below the adopted acceptable risk level 10-5, and hazard indices were below the adopted acceptable hazard index of 1.0.

In summary, the estimated health risks to off-site residents and commercial workers from inhalation and direct contact pathways under Scenario 1 and 2 operating conditions were considered low and acceptable. Therefore, there is unlikely to be any delayed onset of health issues.

### 7.1.7. Children's health

#### Issue Description:

Several submissions were particularly concerned with the impact of pollutants on the health of children living in proximity to the site. These concerns centred around exposure to harmful pollutants in food, soil and water that children may come into contact with and the cumulative impact of lifetime exposure to toxins.

#### Response:

Child exposure has been assessed through multi-pathway exposure scenarios and a conceptual site model using the National Environmental Protection (Assessment of Site Contamination) Measure (ASC NEPM) through a chronic health assessment as detailed within the updated HHRA (**Appendix O**) and above.

This assessed human behavioural exposure parameters for an adult and child over the period of their lifetime and makes conservative assumptions in the ingestion/exposure concentration that children would be exposed to, in particular ingestion of breastmilk.

This assessment concludes that in the for long term health impacts on children is considered 'low and acceptable'.

We note that for off-site infants via the ingestion of breastmilk the calculated hazard indices were slightly above the adopted acceptable hazard index of 1.0 based on the Scenario 2 (POEO) limits. This is considered a highly unlikely scenario to be realised for the reasons described in Section 7.1.1. above.

## 7.2. AIR QUALITY

### 7.2.1. Adequacy and feasibility of mitigation measures

#### Issue Description:

The following comments and questions were raised regarding the adequacy and feasibility of the mitigation measures proposed in the amended EIS relating to air quality:

- The EPA will not be an efficient enforcement or regulatory body to ensure environmental compliance of the proposed facility.
- Periodical emissions monitoring is not adequate.
- There is no method of community engagement to notify residents of compliance or noncompliance.
- Clarification is needed regarding what action will be taken if exceedances are detected during air quality monitoring.

- How will the community be protected from potentially high levels of exposure to pollutants during a facility shutdown event?

**Response:**

As described within Section 9- *Environmental Mitigation Measures* of this RtS, the implementation and role of best available technology (BAT) as outlined in the Air Quality Assessment will serve to manage emissions concentrations at levels appropriate for ensuring air quality, as well as human health and well-being.

The Air Quality Assessment has been updated in response to issues raised as part of this Response to Submissions Report and comments received from the EPA. This is explained in detail at Section 6.12– *Air Quality Impacts* of this report.

In summary, the updated assessment has revised various modelling parameters and found that the cumulative predictions for air quality impacts show that there are no exceedances of the EPA criteria when the EfW Facility is added to the maximum background concentration under expected operating conditions. The

The following points respond to the respective points as above:

- The EfW Facility will operate using emission rates set by the POEO Act, with the exception of Cd which will be set at the limit prescribed by the Industrial Emissions Directive (IED; Directive 2010/75/EU). As part of the project approvals (SSD approval), the EfW Facility would be required to comply with ambient air quality criteria on an ongoing basis. This will be enforced and controlled through monitoring procedures as detailed below.
- Emission concentrations will be continuously monitored to ensure the facility operates within acceptable parameters. Consistent with the NSW EPA Energy from Waste Policy Statement, the facility will utilise Continuous Emissions Monitoring System (CEMS) to provide the EPA with real time feedback and emissions monitoring. This will be a key tool in demonstrating this compliance to ensure ‘safe’ levels for the nearby residents.
- The comprehensive community engagement program run by the proponent is set out in Section 6.4.1 of this report.
- Safe shutdown procedures will be implemented if emission limits are exceeded. This will continue as an ongoing operational phase of the project.
- All mitigation measures will be implemented based on BAT and serve as mitigating factors in the potential for adverse events or impacts during a shutdown period.

## 7.2.2. Uncertainty of emissions profile

**Issue Description:**

A number of submissions raised concerns regarding the accuracy of the emissions profile and commented that the actual emissions produced were uncertain as they were based on assumptions.

**Response:**

An emissions profile was established using publicly available information compiled and reviewed for suitability by Ramboll. A total of eight (8) reference facilities were identified based on the technology in use and the fuel profile (i.e. waste streams being treated).

While no exact replica of the proposed facility was identified, it is considered that the number of plants reviewed for the purposes of establishing the emission profile based on comparative fuel stock is representative of the future emissions of this proposal. The project engineer, Ramboll, was able to nominate the Ferrybridge facility in the United Kingdom as a facility using the same technology, and Ferrybridge is of a comparable size and treating a like waste stream.

Additional modelling and calculations for both waste stream profiles and air quality has been undertaken to address accuracy concerns and provide a detailed analysis of potential emissions of the facility.

The emissions calculations modelling conducted has accounted for a high level of conservatism in key assumptions to provide an upper level prediction of potential air quality impacts in the surrounding environment. The air quality technical assessment has therefore been adequately addressed and not underestimated. In addition, the AQA (**Appendix N**) has been prepared by technical experts who are a highly reputable international company and qualified specialists in their field.

### 7.2.3. Cumulative impact on air quality

#### Issue Description:

Several submissions raised the following concerns regarding the cumulative impact of emissions on local air quality:

- Emissions from the proposed facility will exacerbate existing poor air quality conditions.
- The proposal has not considered the cumulative impact of emissions from future development such as the Badgerys Creek Airport on local air quality.

#### Response:

Existing air quality was taken into account in the AQA provided with the amended EIS to assess the cumulative impacts with emissions from the EfW Facility. This background data has subsequently been updated as part of this report to assess Stage 1 only and a revised AQA is provided at **Appendix N**.

Local existing air quality was analysed through the collation of data recorded by onsite monitoring equipment and closest sensitive receptors, including locations such as schools and hospitals, located within the closest residential suburbs of Minchinbury and Erskine Park.

The AERMOD atmospheric dispersion model was selected as a suitable dispersion model due to the source type, location of nearest receiver and nature of local topography and conducted in accordance with the NSW EPA *Approved methods for the Modelling and Assessment of Air Pollutants in NSW*. Preliminary iterative modelling was completed and determined that a stack height of 100m was required to demonstrate compliance with the NSW impact assessment criteria.

The baseline air quality characterisation was established using available data collected by the Office of Environment and Heritage at monitoring stations in St Marys and Prospect and a Genesis facility monitoring station in the suburb of Minchinbury. Data collected spanned a five-year period from 2009 to 2013. The following points were noted from the analysis.

Annual Average and maximum 24-hour average PM<sub>10</sub> concentrations for St Marys, Prospect and Minchinbury showed several exceedances. However at least one event, in 2009, was associated with significant recorded dust storm events. Exceedances in 2013 accounted for 2 days. Under the Air-NEPM up to five (5) days of exceedance falls within an acceptable range:

- NO<sub>2</sub> (Nitrogen Dioxide) concentrations for St Marys and Prospect are below EPA guideline levels based on annual average and maximum 1 hour averages.
- SO<sub>2</sub> (Sulfur Dioxide) concentrations for Prospect are below EPA guideline levels based on annual average and maximum 1 hour averages.
- CO (carbon monoxide) concentrations for Prospect are below EPA guideline levels based on annual average and maximum 1 hour averages.

Under normal operating conditions, there are no exceedances of the EPA criteria when the EfW Facility contribution is added to maximum background air quality.

Further, when the plant emissions are modelled at both the Regulatory (POEO Limits) and Regulatory (IED Limits), it was deemed that the EfW Facility would be sufficiently protective of health and environmental impacts.

### 7.2.4. PM2.5 particulates

#### Issue Description:

A number of submissions commented that the technology to measure ultrafine or nano particulates smaller than PM2.5 does not exist. Several submissions were also concerned that there are currently no regulatory standards to manage the emission of particulates smaller than PM2.5.

#### Response:

The potential impacts associated with emissions of PM2.5 (defined as particulate with aerodynamic diameter less than 2.5 micrometers, including sub-micrometer particles) is explicitly addressed within Section 9.1 (incremental) and Section 9.2 (cumulative) of the Air Quality and Greenhouse Gas Assessment (attached at **Appendix N**).

Nanoparticles (or ultrafine particles) are particles between 1 and 100 nanometers (equivalent to 1/1000 to 1/10 microns or micrometer) in size. Emissions to air are often referred to as PM<sub>2.5</sub>, meaning all Particulate Matter smaller than 2.5 micron. When measured as emission to air, Nanoparticles therefore form part of the parameter PM<sub>2.5</sub>.

The main emission sources of PM<sub>2.5</sub> from human activities are traffic (mainly diesel engines, wear of tires and brakes, air turbulence on roadways), agriculture and industry. Further there are relevant natural sources as bushfires, dust storms, pollens and sea spray.

PM<sub>2.5</sub> emissions (including nanoparticles) of EfW facilities have been investigated by Ramboll. The investigations all have shown that the emissions of a EfW Facility are very low. In fact, the emissions of PM<sub>2.5</sub> (including nanoparticles) measured at the stack in some plants was below the concentration of ambient air in urban areas.

In summary, it can be said that - irrespective of the air pollution control system - the contribution of a EfW Facility to the PM<sub>2.5</sub>/nanoparticles ground level concentration is negligible (i.e. below 0.1%).

### 7.2.5. Increase in emissions during shutdown event

#### Issue Description:

Some submissions raised the following concerns regarding an increased release of pollutants during a shutdown event:

- Clarification is sought on how it can be assured that this increase will not result in an unsafe level of emissions or unsafe levels of exposure.
- Further clarification is also sought on whether the potential for an increase in emissions has been considered in regard to cumulative health impacts in the human health risk assessment.

#### Response:

Emissions during start-up/shut-down conditions have been addressed in the updated AQA (**Appendix N**). In these instances, a clean auxiliary support fuel will be used in the incinerator to regulate the temperature. It is understood that the fuel would comprise diesel and burn cleaner than the residual waste fuel with all relevant emissions released from the 100m stack. Impacts from these events were considered low and infrequent, and therefore not necessary for further assessment.

Further, the EfW Facility will be started using fuel oil to reach safe combustion temperatures before any solid fuels are added. The flue gas cleaning system and emissions monitoring will be in operation before any solid fuel is added, reducing any risk of emissions.

The impacts of exposure to air pollutants on the health of the local community, during both construction and operational phases of the project have been addressed in detail in accordance with Australian guidance in the HHRA. The HHRA has evaluated health impacts associated with exposure to particulates and found most complete exposure pathways to be low and acceptable.

### 7.2.6. Impact on ground level ozone

#### Issue Description:

Some submissions commented that ground level ozone would increase from the emissions produced by the facility, as hydrocarbons and nitrogen oxides would react with sunlight.

#### Response:

Ozone (O<sub>3</sub>) is a secondary pollutant formed in a chemical reaction when emissions of NO<sub>2</sub> and Volatile Organic Compounds (VOCs) react in the presence of sunlight.

Ozone in the upper atmosphere is good for human health in preventing ultraviolet radiation from reaching the Earth's surface. However, ozone in the lower atmosphere can have a negative health effects.

Ozone rates and emission of NO<sub>x</sub> has been addressed as part of the updated Ozone Assessment (**Appendix R**). This assessment undertook a level 1 screening assessment for ozone assessment that accompanies the NSW Ozone Procedure. This was based on a 1-hour and 4-hour test period across selected days measuring the incremental ozone and cumulative concentrations based on the worst case emission scenario of the EfW Facility.

The facility will employ Best Available Technology (BAT) in the form of Selective Non-Catalytic Reduction (SNCR) to limit the daily average NO<sub>x</sub> emissions (the dominant ozone precursor released from the facility) to 120mg/m<sup>3</sup>. The adoption of an optimised SNCR system, with the ability to achieve daily average in stack NO<sub>x</sub> concentrations of 120 mg/m<sup>3</sup>, represents a best practice approach to tropospheric ozone abatement.

This assessment concluded that during normal operation of the facility, the emission levels and impact on ground level ozone is generally expected to be well within the limit value as prescribed by the *Protection of the Environment Operations Act 1997*.

### **7.2.7. Emissions produced by additional vehicles**

#### **Issue Description:**

Some submissions were concerned that emissions produced by additional vehicles to and from the site during construction and operation would negatively affect local air quality. Several of these submissions commented that toxic emissions produced by cars (benzene, acetaldehyde and 1,3-butadiene) had not been considered in the EIS.

#### **Response:**

The EfW Facility and the anticipated maximum 126 additional trucks added to the road network are considered to have minimal potential for impact on local air quality.

Such a small change in vehicle numbers is anticipated to make a non-discernible difference in local air quality given the site abuts the M4 and M7 motorways. The general concern regarding diesel combustion emissions and toxic emissions produced by construction and site vehicles is generally unfounded.

The impact of air pollution and amenity issues at construction sites and vehicle movements to and from the site is considered minimal and therefore was not assessed further.

### **7.2.8. Smoke and smog**

#### **Issue Description:**

Some submissions commented on the potential for smoke and smog to be emitted by the proposed facility.

#### **Response:**

Treated flue gases will be emitted to the atmosphere via one twin-flue standalone stack, located to the south of the Flue Gas Treatment Areas. The flue gas system will minimise the total smoke and smog produced by the facility.

A quantitative photochemical smog assessment was undertaken and deemed to be well within the limit value in accordance with the *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW (2005)*.

Further, plume visibility will be very minimal. A stack exit temperature of around 120 degrees Celsius and moisture of the flue gas of 15-18% is expected. Calculations show that the plume formation will not occur at ambient temperature above 12 degrees Celsius and a relative humidity of 75%.

Based on the exit temperature, plume will not be visible the clear majority of the time and even under adverse conditions, the plume will be light (not dense) and it will disappear quickly. The plume will most likely occur only at night and in the early morning hours in the coldest 6 months of the year and have very limited height.

## **7.3. SUITABILITY OF LOCATION**

### **7.3.1. Proximity to sensitive land uses**

#### **Issue Description:**

A number of submissions were concerned that the proposal is located in close proximity to sensitive receivers including residential areas, schools, community facilities, workplaces, open space and aged care facilities. Many these submissions were particularly concerned with how emissions from the proposal would affect these sensitive receivers.

**Response:**

The proposals location to sensitive land uses including residents and workers has been thoroughly considered throughout the entirety of the amended EIS and this RtS. A full and thorough assessment of the potential impact of emissions from the facility on all sensitive receivers was undertaken in both the HHRA and AQA assessments. The HHRA found the human health risk to be low, and below applicable EPA criteria and all relevant guidelines. The AQA confirms that there are no exceedances of the EPA criteria when the EfW Facility is added to the maximum background concentration under expected operating conditions.

### 7.3.2. Proximity to Prospect Reservoir

**Issue Description:**

A number of submissions were concerned with the proposal's proximity to Prospect Reservoir, and commented on the potential for pollutants to enter the drinking water supply.

**Response:**

The site is approximately 4.5km from Prospect Reservoir, where covered tanks are used. Dispersion modelling used to assess the movement of air pollutants found that Prospect Reservoir was unlikely to be impacted by the EfW Facility. Despite the potential for contamination being low, a qualitative assessment of risk was undertaken as part of the revised HHRA included at Appendix O of this RtS.

The revised HHRA determined that contaminant concentrations (under wet and dry conditions) were significantly less than the applicable drinking water criteria. As such, the HHRA determined that the ingestion of drinking water was not considered an exposure pathway for assessment.

### 7.3.3. Alternative site location in less populated areas

**Issue Description:**

Many submissions suggested that an alternative site in a less densely populated area would be a more appropriate location for the proposal. Several of these submissions suggested the proposal be located in regional towns, or other smaller communities outside of metropolitan Sydney to reduce the level of exposure to pollutants.

**Response:**

The site selection process has been thoroughly considered throughout the design of the project and this RtS. In summary, significant advantages of the site location include:

- Proximity to Genesis MPC, which maximises operational efficiency and provides the opportunity to share infrastructure, such as roads.
- Location within an existing Industrial Precinct (Eastern Creek) in the Western Sydney Employment Area (WSEA).
- Proximity to major regional road networks.
- Proximity and access to the TransGrid substation and use of an existing TransGrid easement for service lines.
- Strategic alignment with the objectives of the 'Plan for Growing Sydney 2014' for the WSEA.

The project is considered to be an appropriate distance from sensitive receivers, including residential areas, whilst also maximising synergies with the Genesis MPC within an existing industrial area. The subject site is also proximal to waste sources within Metropolitan Sydney. Transporting waste to a similar facility in a regional location would increase traffic impacts on the regional road network and not deliver the net positive contribution to the greenhouse gas effect that this proposal offers. It would also distance the facility from the electrical grid, which means Metropolitan Sydney would not receive the full benefit of electricity produced by the facility.

As detailed in the AQA (**Appendix N**), the EfW Facility will operate using set emissions rates which ensures that emission concentrations are at levels appropriate for ensuring air quality, and human health and well-being. Given these factors, the chosen location is considered suitable.

### 7.3.4. Scale

**Issue Description:**

A number of submissions were concerned that there was no precedence in Australia, or internationally, to regulate an energy from waste facility of the scale proposed. Several of these submissions felt the proposal was inappropriate for the area, as it would be 'the world's largest waste incinerator'.

**Response:**

Through the exhibition and assessment of the amended EIS, concern was raised by the NSW EPA about the availability of waste to achieve the maximum treatment volume. Accordingly, the proponent has amended the proposal to implement the project in phases. This application now **proposes to construct and operate Stage 1 only**.

The proposed facility has been designed and laid out as a two (2) stream waste processing facility that has the ability to be built and delivered in two (2) stages. The amendments to the application significantly reduces the scale of the proposal as Stage 1 only.

Further, as detailed in Section 6.2 of this report, there are several legislative instruments which have guided the proposal concept, and will enforce strict environmental regulations during operations. In addition to this, the proponent has agreed to operate the EfW Facility in line with the Industrial Emissions Directive (IED) (Directive 2010/75/EY) which sets an internal standard for waste incineration and co-incineration plants. As such, throughout assessment and operation the EfW Facility will be subject to a stringent regulatory framework.

## **7.4. PROPOSED OPERATIONAL AND MONITORING PROCEDURES**

### **7.4.1. Nature of waste profile**

**Issue description:**

A number of submissions raised concerns regarding the following aspects of waste sources proposed to be processed by the facility:

- Unknown nature of waste profile and sources.
- Potential for non-transparency of waste being processed due to synergies between facilities owned by the Proponent.
- Location of waste transfer via an underground culvert inhibits Government monitoring.

**Response:**

The feedstock fuel for the facility will be sourced from the neighbouring Genesis MPC. Fuel will be provided only by Facilities where appropriately regulated resource recovery processes have been undertaken in accordance with the NSW EfW Policy guidelines and where fuel quality is consistently demonstrated.

In all cases quality control procedures engaged by the Genesis Recycling facility will be employed to ensure:

- Compliance with the NSW EPA Energy from Waste Policy in respect of the extent of the resource recovery required to have been carried out.
- Consistent fuel quality and the exclusion of unacceptable materials from the fuel residue waste stream.

As described in Section 6.6 – *Waste Profile* of this Response to Submissions Report, the key waste streams and fuel types identified as the main sources of fuel feedstock for the facility are detailed below:

- Chute Residual Waste (CRW) from the Genesis Plant Output
- General Solid Waste [ non putrescible] currently Landfill Facility Direct Input
- Material Recovery Facility waste (MRF) from bona fide resource recovery facilities (currently Genesis Landfill Facility Direct Input)
- Floc waste from car and metal shredding and resource recovery carried out by others
- Commercial and Industrial (C&I) residual after resource recovery carried out by Genesis or by others operating qualified resource recovery facilities
- Other specified waste fractions (SWF) compliant with EfW Policy

It is confirmed that the proposal does not seek approval for receiving or processing of MSW.

Based upon the fuel types listed above, a fuel (feedstock) composition has been developed. This is based on typical values for each of the proposed fuels and an estimated fuel mix. The feedstock will always be mixed as part of the normal operational process to produce as homogenous an input as possible.

Independent waste audits have been undertaken by NSW EPA accredited Waste auditors, EC Sustainable, to determine the macroscopic compositional attributes and calorific value of the eligible feedstock to be accepted at the facility. These audits are described in detail in Section 6.6.2– Waste Audits of this report.

### **7.4.2. Possibility of hazardous waste sources**

#### **Issue description:**

Several submissions were concerned that potentially hazardous waste sources may be accepted by the facility either unintentionally or intentionally and that this would increase potential for unknown, toxic emissions to be produced.

Potential for hazardous waste to be concealed in truck loads and not be identified via visual inspection.

#### **Response:**

The EfW Facility will not receive or process hazardous waste materials.

As described in Section 6.6– Waste Source and Composition of this report, checking and auditing the various fuel forms are an important first step in the control process. Upon arrival at the facility, all fuels will be weighed, visually checked with CCTV and if necessary sampled. Any deviation from the fuel specification will be noted, and if significant, fuel loads will be rejected. During unloading, facility operators will carry out further visual checks of the fuel.

Further mitigation measures for waste management is noted in Section 9 of this report and will include the following at a minimum for the screening of waste:

- Details of the residual waste streams that may be accepted from third party authorised facilities.
- Detailed procedures for all employees on the process of accepting residual waste materials.
- Preliminary inspection of waste, source verification and CCTV footage.
- Visual inspection post tipping.
- Contractual tools such as penalties or right of refusal for delivery of waste with high lead or nickel concentrations.
- Pre-screening, sorting and separation processes to remove hazardous materials at MPC, PSC and/or other authorised facilities.
- Reporting tool for the tracking of waste volumes and types received and processed.
- Procedures for the exclusion and/or rejection of waste loads that have:
  - not undergone resource recovery.
  - loads that fail inspection at any point in the screening procedures.

It is considered that through the above methods, in addition to other mitigation measures for waste management as prescribed in this Response to Submissions Report that no hazardous waste materials will be received or processed by the EfW Facility.

### **7.4.3. National and State environmental legislation and regulatory framework**

#### **Issue Description:**

A number of submissions were concerned that there is no National or State environmental legislation or regulatory framework to protect the community from emissions produced from the proposed facility.

#### **Response:**

The proposed EfW Facility has been assessed against all applicable environmental planning instruments consistent with the SSD, DA DGRs. Key legislative instruments which the proposal was assessed against are outlined below:

- *Environment Protection and Biodiversity Conservation Act 1999 (COMMONWEALTH).*
- *Environmental Planning and Assessment Act 1979.*
- *Environmental Planning and Assessment Regulation 2000.*
- *Protection of the Environment Operations Act 1997.*
- *Protection of the Environment Operations (Clean Air) Regulations.*
- *EPA Energy from Waste Policy Statement.*
- *Air Quality Framework – Approved Methods for the Modelling and Assessment of Air Pollutants in NSW (DEC) and Approved Methods for the Sampling and analysis of Air Pollutants in NSW (DEC).*
- *National Greenhouse and Energy Reporting Act 2007.*
- *National Greenhouse and Energy Reporting Regulations 2008 (NGER).*
- *Sustainable Development Greenhouse Gas Protocol (the GHG Protocol)*

These instruments are implemented for the purpose of protecting the environment from adverse impacts.

The proposal has been developed in accordance with all relevant legislation. In addition to the above, the proponent has agreed to operate the EfW Facility in line with the Industrial Emissions Directive (IED) (Directive 2010/75/EU) which sets an internal standard for waste incineration and co-incineration plants.

#### **7.4.4. Facility shutdown**

##### **Issue Description:**

Some submissions raised the following concerns relating to facility shutdown procedures:

- Clarification is sought on the details of emergency response procedures.
- Will the EPA require the facility to shut down if atmospheric conditions are such that emissions would pose a greater health risk? (Ref: 183068).

##### **Response:**

The facility is managed by a Continuous Emissions Monitoring System (CEMS). It is the CEMS role to consistently monitor the combustion process and the formation of chemicals of potential concern.

If an exceedance of emissions or chemicals of potential concern are detected the facility will stop automatically in a rapid manner. Fuel flows and air flows are stopped instantly which causes combustion to stop very quickly. The boiler can be depressurised via safety valves if required. This system is fully interlocked to prevent manual intervention unless it is safe to do so.

The updated PDB (September, 2017) sets out the shutdown procedures and confirms the automatic shutdown procedure that is part of the plant technology:

*The plant will further be equipped with an automatic shutdown procedure in case of non-compliance with the emission limits according to the IED § 50.4c which states: "Waste incineration plants ... plants shall operate an automatic system to prevent waste feed ... whenever the continuous measurements show that any emission limit value is exceeded due to disturbances or failures of the waste gas cleaning devices."*

#### **7.4.5. Safety risks**

##### **Issue Description:**

Several submissions had general concerns regarding the safety of facility operations for both workers and local residents.

##### **Response:**

The concerns of the local community regarding the safety of facility operations for both workers and local residents are acknowledged. The potential hazards and risks associated with the operation of the EfW Facility have been discussed in Section 23 – *Hazards and Risks* of the amended EIS and the Preliminary Hazard Analysis (PHA) prepared by RawRisk in March 2015.

This PHA was reviewed twice by Core Engineering based on the updated project definition brief. These technical reviews are included within **Appendix V** of this report and determine that the original findings of the report remain valid and the facility does not exceed the acceptable risk criteria defined in the application Hazardous Industry Planning Advisory Papers.

The implementation of appropriate building construction methods combined with ongoing site and land management practices will mitigate any potential impact associated with hazards related to the operation of the facility. Key mitigations measures include the following:

- Develop and implement hazard and fire response protocols detailing location of evacuation muster points and procedures to be implemented in case of emergency.
- Development of a work permit system.
- Development of hazardous area diagrams.
- Installation of monitor(s) in the waste bunker.
- Storage of all liquid chemicals in a bunded control area and/or double skinned tank with 110% of the stored capacity as per the *Work Health and Safety Regulation 2011*.
- Prior to commencement of operations a spill management procedure shall be developed and implemented.
- Further bushfire mitigation measures.

From a community safety perspective, the following features and services are proposed:

- Fencing is proposed around the perimeter of the facility to ensure the plant is secure. Fence heights will not obstruct views to and from the Site from a public place. The existing post and rail fencing will be maintained as part of the proposed works. New fencing and Armco barriers will be installed as required;
- 24-hour security personnel will be present on Site to respond to any safety concerns;
- CCTV will be onsite; and
- Signage for community safety communication will be erected as required.

From an operations perspective, a distributed control system (DCS) will be implemented to operate the plant and ensure the safety of personnel and equipment. The DCS will operate the facility processes, machinery and drives. It also covers information management, quality control, and mechanical and field device condition monitoring. This system will ensure the safety of workers.

Further to this the facility operations have been developed as per the *Work Health and Safety Regulation 2011*.

## **7.5. ENVIRONMENTAL IMPACTS**

### **7.5.1. Endangered ecological communities and vulnerable species**

#### **Issue Description:**

Several submissions raised concerns regarding the following:

- Clearing of Cumberland Plain Woodland and Eucalypt River-Flat Forest.
- Removal of 8 habitat trees.
- Clearing of land which provides habitats for vulnerable and endangered fauna.
- Proximity to the habitat of the Green and Golden Bell Frog.

#### **Response:**

The impacts on the removal of vegetation and construction of the proposed facility on flora and fauna habitats has been comprehensively addressed through the ecological survey analysis and assessment prepared by Abel Ecology for the project. In summary of the flora and fauna surveys and the offset strategy prepared, the following was found in relation to the amended development layout (i.e. reduction of Pad 3):

- The original proposal required the removal of 2.89 hectares of River Flat Eucalypt Forest (RFEF). The reduction to Pad 3 has reduced the required vegetation removal by 2.32 hectares (80%). The area of RFEF proposed to be removed is now 0.57 hectares.
- The proposal does not significantly affect species that may potentially use vegetation for the purposes of foraging as these areas have been assessed as “marginal at best” by Abel Ecology (p. 115; 2015 report) and faunal species identified as likely to use the site have wide foraging ranges.
- Roosting/nesting boxes will replace hollow bearing trees (HBTs) removed as part of the works. The rate of replacement is 2.5:1 (i.e. 20 boxes) that is considered more than adequate to offset the loss. Boxes will be implemented a minimum of 2 weeks prior to construction to allow relocation of fauna and pre-clearing surveys will be undertaken prior to the commencement of tree removal and construction works ensure no fauna is harmed.

Removal of approx. 0.27 ha of Cumberland Plain Woodland and 0.57 ha of River Flat Eucalypt Forest (reduced in size from the original proposal by 2.32 hectares) proposed to be cleared for the proposal will be offset through a robust and equitable offset strategy that has been worked through with the Office of Environment and Heritage (OEH) to confirm its acceptability. This offset strategy will provide viable opportunities to re-establish and make significant improvements to the flora and fauna habitats associated with the site. Notwithstanding this the condition of these communities has been found to be degraded lacking structural complexity as well as modified vegetative structure.

The potential impacts on all flora and fauna species anticipated to be found on the site has been undertaken (through detailed field work and sampling) and critically reviewed by OEH. As a result, the extent of Pad 3 has been significantly reduced in size to allow for an additional 2.32 hectare area of vegetation to be retained. The proposed vegetation removal is supported by a justifiable offset strategy prepared by Abel Ecology that seeks to mitigate any impacts associated with the vegetation removal and provide for improved habitat conditions.

## 7.5.2. Contamination of soil and water by pollutants

### Issue description:

A number of submissions were concerned that pollutants emitted by the facility would contaminate soil and water and this would have adverse impacts on flora, fauna and human health. In addition to concerns regarding potential groundwater contamination from pollutants emitted by the facility. Submission 187034 commented that the waste bunker outlined in the EIS will have groundwater interaction, subsequently resulting in contamination.

### Response:

As described in Section 16.4.3.3 – *Potential Contamination* of the amended EIS, the proposed development does not include any activities that pose a particular risk to groundwater quality. The development will be sewerage and stormwater drainage will be directed to the local surface water system.

Further, the emissions described within the revised Air Quality Assessment and Human Health Risk Assessment as described in Section 4.6.4 and 4.6.5 of this report respectively, detail that there will be no adverse impacts on flora, fauna, and human health.

The design and construction of the waste bunker involves a continuous pour of concrete to ensure that there is no requirement of joint. This will further limit the potential for impact arising from the storage of waste and prevent any leaching of contaminants into soil and groundwater.

The development does not post an unacceptable risk to groundwater quality.

## 7.5.3. Site contamination

### Issue description:

Some submissions were concerned there is contamination present on the subject site, and that there had not been an adequate investigation into potential site contamination.

### Response:

Both a Phase 1 Environmental Site Assessment and a Targeted Phase 2 Detailed Site Contamination Investigation was undertaken as described in the amended EIS. These investigations included detailed soil sampling around the boundary of the site to determine whether contamination is present within the soil, and/or surface water and river sediment within the boundaries of the site.

These investigations concluded that concentrations of the potential contaminants within the soil, sediment and surface water samples were below the NEPM Schedule B (1) Health Based Investigation Levels (HIL)D, Ecological Screening Levels (commercial/industrial) and ANZECC Guidelines for Fresh and Marine Water Quality assessment criteria's.

Based on the above, the site is deemed suitable for commercial/industrial land use and the proposed development. Further, an addendum letter was prepared and attached at **Appendix Z** to confirm that the outcomes of the above remain consistent and relevant for the Stage 1 development of the EfW Facility only.

#### **7.5.4. Contribution to climate change**

##### **Issue description:**

A number of submissions were concerned that the facility would worsen the greenhouse gas effect from emissions produced by additional vehicles and CO<sub>2</sub> emitted by the facility.

##### **Response:**

The Greenhouse Gas Assessment has been updated by Pacific Environment (refer **Appendix N**) in response to issues raised as part of the Response to Submissions Report and to reflect the Stage 1 development of the EfW Facility only.

The revised assessment has included updated modelling and emission estimates, which are detailed in Section 6.13 of this report.

Based on these updates, it was concluded that the EfW Facility would have a net positive greenhouse gas impact, potentially eliminating over a 25-year period between 13.6 to 17.1 Mt CO<sub>2-E</sub>. The emission intensity for electricity generated from waste incineration is significantly lower than that derived from the current NSW electricity grid.

Based on this it is considered the proposed facility will not have a detrimental effect to climate change and greenhouse gas.

## **7.6. TRAFFIC IMPACTS**

### **7.6.1. Impact of additional vehicles on congestion**

#### **Issue Description:**

A number of submissions were concerned that the proposal would add to existing traffic congestion on the surrounding road network. Several submissions were also concerned the proposal has not considered the cumulative impact on road congestion with the proposed airport.

#### **Response:**

The traffic impacts of the EfW Facility have been assessed and are detailed in the Traffic Report prepared by Traffix and letter addendum statement included in **Appendix U**.

Traffic impacts on the wider network, including local roads have been assessed using intersection performance modelling software (SIDRA). This analysis concluded that the net traffic generation provided from the facility will be a minimal increase above existing conditions and is unlikely to significantly impact the LORD network capacity available to the wider area.

Cumulatively, traffic generated by the proposed development will represent only a small proportion of traffic generated by the wider Western Sydney area, and as such will not have a significant impact on the ability of the surrounding road network to operate at an acceptable level into the future. In particular, the operation of the facility will maintain LoS B at the key intersection of Wallgrove Road and Wonderland Drive.

### **7.6.2. Traffic safety**

#### **Issue Description:**

Some submissions raised concerns that additional trucks associated with the construction and operation of the facility would pose a traffic safety risk. Of these submissions, a number were also concerned that the potential transportation of hazardous wastes to and from the facility (e.g. fly ash) would be a safety risk if a road accident were to occur.

**Response:**

The site and surrounding road network has been designed and constructed to allow trucks to move safely. In particular, truck movements within the site are almost always in a constant forward motion, with the only exception being when they reverse to unload at the tipping bunker.

There are no hazardous waste materials transported to the facility and APC residue (by-product) is fully contained.

There are no identified traffic safety risks associated with the proposal. Given this, no mitigation measures are proposed.

### 7.6.3. Traffic report

**Issue Description:**

Some submissions were concerned the accuracy of the traffic report was comprised by its use of modelling and predictions from eight years ago.

**Response:**

The Traffic Impact Assessment has been prepared based on the existing traffic environment through literature review of previous traffic statements and confirmation via traffic count surveys, in accordance with the *RMS Guide to Traffic Generating Developments*. Therefore, this information is satisfactory for the modelling and assessment of traffic impacts for the EfW Facility.

The traffic assessment report and SIDRA analysis was subsequently updated by Traffix at **Appendix U** based on comments raised by RMS. All modelling is accurate and consistent with RMS requirements.

## 7.7. ODOUR

### 7.7.1. Cumulative odour impact

**Issue Description:**

A number of submissions were concerned that potential odours emitted from the facility had not been considered cumulatively with odours already present from existing landfill sites, or future odours from airport and other industrial operations.

**Response:**

In response to this issue the odour assessment has been updated by Pacific Environment to reflect additional modelling and assessment undertaken, attached at **Appendix Q**. This assessment includes a cumulative assessment of odour sources

Based on this updated assessment of odour sources (existing and proposed) on the site, it is indicated that the predicted odour concentrations, at the 99<sup>th</sup> percentile, would be below the 20u impact assessment criterion for all of the sensitive receptors including the most affected residents in Minchinbury.

The facility will not use or accept putrescible waste. All waste by-product will be stored in a bunker under negative pressure.

This confirms that the facility is considered unlikely to result in an unreasonable adverse off site odour impact.

### 7.7.2. Prior existence of offensive odours

**Issue Description:**

Many submissions were concerned with the presence of an existing odour from the landfill located on the subject site.

**Response:**

This is a mistaken claim disproved by independent analysis on many occasions. The Genesis facility does not receive, process or landfill putrescible waste (i.e. no food waste). The Genesis facility does not compost greenwaste. The overwhelming majority of wastes received at the Genesis Recycling facility comprise hardfill materials, of brick, concrete, rock, sand, soil, tile, and bitumen road millings. These are not known to generate odour. The Genesis Landfill predominantly receives soils with plastics and therefore generates negligible odour.

The existing Genesis facility has received no substantiated odour complaints associated either with recycling or landfilling since the commencement of operations in 2012.

### **7.7.3. Air-tight design of facility**

**Issue Description:**

One submission raised concerns regarding the design of the proposed development, particularly that the facility would not be air-tight to prevent odours from being released.

**Response:**

All waste storage and unloading will take place within the tipping hall building, which is kept a negative pressure with air extracted from the building used as combustion air in the boiler.

Further information in regards to this process is included in Section 6.20 of this report.

### **7.7.4. Odour from fumes**

**Issue Description:**

A number of submissions were concerned the EfW Facility would emit offensive odours, and that this had not been adequately addressed in the EIS.

**Response:**

The operation of the proposed facility is not anticipated to result in any adverse odour impacts as detailed in the revised Odour Assessment (**Appendix Q**). The revised assessment found that any potential odour emanating from the facility would be minimal and not exceed the impact assessment criteria of 2 odour units. Given there is no exceedance, the facility is considered to be within the acceptable odour limit.

## **7.8. IMPACT ON PROPERTY VALUES**

### **7.8.1. Reduction in land value**

**Issue Description:**

Several submissions raised concerns regarding a potential reduction in land value of properties surrounding the proposed development due to potential health risks and visual impact.

**Response:**

The concerns of the local community regarding land and property depreciation are acknowledged. The same concerns were raised by Minchinbury residents in relation to the planning application which was made for the Genesis Waste facility.

The Genesis waste facility replaced a hard rock quarry which had operated on the site for the previous 60 years. The current waste facility has operated since 2012 and there is no evidence to suggest that real property values in Minchinbury or Erskine Park have suffered any downward pressure because of it. There are a variety of factors that influence land and property values in the area. Given the complexity of these factors, it is not possible to predict whether the facility would have any impacts, either negative or positive, on housing demand in the area. It is also noted that accepted planning principles, practice and application of the EP&A Act do not recognise impact on land values as a relevant planning consideration.

## 7.8.2. Compensation

### Issue Description:

Some submissions suggested compensation be given to property owners whose property value may be negatively affected by the proposed development.

### Response:

The concerns of the local community regarding land and property depreciation are acknowledged. There are a variety of factors that influence land and property values in the area. Given the complexity of these factors, it is not possible to predict whether the facility would have any impacts, either negative or positive, on housing demand in the area. It is also noted that accepted planning principles, practice and application of the EP&A Act do not recognise impact on land values a relevant planning consideration, and as such, would not be responsible for any act of compensation.

## 7.9. PROPONENTS OPERATIONAL HISTORY

### 7.9.1. History of EPA breaches

#### Issue Description:

50 submissions raised concerns regarding the proponent's past EPA breaches. Of particular concern were matters regarding illegal dumping of asbestos and other clean up notices issued to the proponent's other business operations. Submissions noted that a history of past breaches may be repeated, and the proponent could not be trusted to operate the facility in a compliant manner.

#### Response:

The concern around EPA breaches is acknowledged. The concerns which have been raised are largely influenced by inflammatory internet reportage which do not reflect the true facts.

The proponent, TNG, is a relatively new company which has not previously been the holder of an Environment Protection Licence (EPL) it has therefore not been associated with any alleged breaches of the Protection of the Environment Operations Act (POEO)

The holding company of the corporate group of which TNG is a part has been engaged in the business of waste disposal and waste management since 1984.

During that 34 year period a company within the group was subjected to one prosecution by the NSW EPA for breach of a licence condition. The company pleaded guilty to that breach caused by an employee unaware that his actions breached a licence condition. The Court found that no environmental harm resulted from the action and the penalty was nominal.

Reference has been made to a Clean-up Notice regarding the deposition by a member of the public of pieces of asbestos at the operating premises of a company within the group. The Company carried out a program of clean up until those premises were compulsorily acquired for the purposes of motorway construction. An independent hygienist certified the carrying out of those works. The NSW EPA returned in full the environmental bond held by it in respect of those premises.

The proposed EfW Facility will be designed and operated in accordance with all relevant legislation, safety regulations and in accordance with the *NSW Energy from Waste Policy*.

The proponent seeks approval to construct the facility, it does not propose that it will be the operator of it or necessarily the holder of the EPL in respect of it.

The proposal has been assessed in detail against the Director General's Requirements, with specialised reports underpinning key findings and recommendations demonstrating compliance with all relevant criteria.

Previous history of EPA breaches by associated entities are not a relevant planning consideration in this instance.

## 7.9.2. History of construction outside of permitted hours

### Issue Description:

One submission was concerned the proponent had a history of construction outside of allocated times and that this may be repeated.

### Response:

Neither the proponent TNG or any associated company has any history of construction outside of approved hours.

A preliminary Construction Management Plan has been prepared by Brookfield Multiplex and included at Appendix BB of the amended EIS.

This plan satisfies the Director General's requirement issued for the proposed developed, and details permitted hours of work for construction as detailed below:

- Monday to Friday - 7.00am to 6.00pm
- Saturday - 8.00am to 1.00pm
- Sundays and Public Holidays - No work permitted

Brookfield Multiplex (BM) has applied for extended construction hours for 7:00am to 8:00am and 1:00pm to 6:00pm Saturdays in conjunction with specific periods of 24-hour operation for the delivery of large plant equipment and emergency works.

This construction management plan will form a condition of approval and will be required to be adhered to.

## 7.9.3. Credibility due to previous EIS inconsistencies

### Issue Description:

Some submissions commented that previous inconsistencies in the initial EIS affected the credibility of the amended EIS and created general concern regarding the accuracy and reliability of information.

### Response:

The original EIS for this project sought to address the issues set out in the Director General's requirements. The modelling and analysis of the facility's projected performance by reference to anticipated regulatory standards was considered to be an unsuitable criterion for planning consideration

The amended EIS then sought to address and provide a response to submissions received as part of the initial exhibition period. The amended EIS in particular reassessed the facility's expected or projected performance by reference to comparable data from operating facilities in like jurisdictions

The amended application withdrew and replaced the original Fichtner concept design report with the Ramboll Project Definition Brief.

In general terms, the new Project Definition Brief developed and refined the technological design and operation of the facility providing greater clarity and depth of information that has been used to support key technical and environmental assessments used to determine and verify environmental impacts.

In further pursuing the issue of projected performance by reference to fully operational plants using the same technologies and treating like waste streams in other similar jurisdictions. The proponent has investigated and reported upon the fractional components of the residual fuel waste stream. In turn this has more fully informed the Air Quality and Human Health Risk Assessments. To this end, these have been updated and are attached at **Appendix N** and **Appendix O** respectively.

Section 4.6.16 *Presentation of Air Quality results* of this RtS sets out the reasons for the variances in the presentation of the Air Quality data in detail, and is entirely due to changes in the assessment criteria as highlighted through the external review process.

To describe these processes as 'inconsistencies' is to misunderstand the assessment process. It is considered that the process is necessary is to constantly refine and to ensure that the information upon which the approval authorities are relying is directly relevant to the standards which the project must in order for it to be approved.

## 7.9.4. Nature of political donations

### Issue Description:

Some submissions raised concerns that political donations made by the proponent would affect the determination outcome. Some submissions were also concerned the extent of political donations made by the proponent were not accurately recorded.

### Response:

The proponent has declared all donations and interests in accordance with all relevant legislation.

Political donations are not a relevant planning consideration. The proposed EfW Facility will undergo the approval process for State Significant Development as determined by the Minister for Planning.

## 7.10. GAPS IN EIS

### 7.10.1. Adequacy of emissions modelling

#### Issue Description:

A number of submissions raised the following concerns regarding the adequacy of emissions modelling:

- Emissions modelling is based on assumptions.
- There is no evidence for low emissions being valid or achievable.
- Emissions modelling has been based on outdated European standards which are currently being revised.
- Emissions data has not considered existing geographic context, weather patterns and other atmospheric conditions.
- The method of greenhouse gas emissions savings is inaccurate and not justified.
- Predicted reduced greenhouse gas emissions are based on the assumption coal fire power stations will reduce.

#### Response:

The assessment methodology for emissions is described within Section 4.5 of this RtS report.

The following points respond to the concerns detailed above:

- An emissions profile was established using publicly available information compiled and reviewed for suitability by Ramboll. A total of eight (8) reference facilities were identified based on the technology in use and the fuel profile (i.e. waste streams being treated). These are real world examples and not based on assumptions.
- There are over 500 operating EfW facilities across the world which achieve emissions that are considered valid. Waste compositions vary on a daily and even an hourly basis. Background air quality, topography and a range of other factors including proximity of sensitive receivers are all considerations which will vary.
- It is considered that the number of plants reviewed for the purposes of establishing the emission profile based on comparative fuel stock is representative of the future emissions of the EfW Facility.
- Emissions modelling is based on informed and justified assumptions as expressed within the Ramboll Project Definition Brief (**Appendix D**). This modelling has utilised the EU Industrial Emissions Directive standards, and was adopted on 24 November 2010 and reviewed in 2013. The IED is the main EU instrument regulating pollutant emissions from industrial installations and is not outdated in its current state.
- The AERMOD atmospheric dispersion model was selected as a suitable dispersion model due to the source type, location of nearest receiver, and nature of local topography. Preliminary iterative modelling was completed and determined that a stack height of 100m was required to demonstrate compliance with the NSW impact assessment criteria.
- Modelling predictions for air toxics were assessed against the 99.9th percentile prediction, at and beyond the site boundary. The ambient concentration of H<sub>2</sub>S was assessed against the 99th percentile prediction.

- As per the updated Greenhouse Gas Assessment included in **Appendix N**, the operation of the facility would have a net positive GHG effect, due to removal of biomass waste from landfill and significant emissions of methane from the decomposition of waste that would also be eliminated. Further, no assumption on the reduction of coal fire power stations has been used. This is further reiterated through the updated assessment of Greenhouse Gas emissions (**Appendix N**) which found that the EfW Facility would potentially eliminate over a 25-year period between 13.6 to 17.1 Mt CO<sub>2-E</sub>.

### 7.10.2. Storage and disposal of residual ash

#### Issue Description:

Several submissions commented that the method of storage and disposal of residual ash was not clear and/or inadequate. Specific comments made are as follows:

- No details on long term disposal locations or method.
- Potential landfilling of ash at the Genesis Xero Waste landfill site.
- Ash classification results have not been consistently reported throughout the EIS.

#### Response:

Two types of ash will be produced by the EfW Facility as outlined below:

- **Bottom Ash** – this is the burnt-out residue from the combustion process.

Bottom ash will be stored on site at storage collection bays capable of 5 days' storage capacity and then disposed at the Genesis Landfill as it is considered non-putrescible and non-hazardous.

- **Air Pollution Control (APC) Ash** – this comprises fine particles of ash and residues from the Flue Gas Treatment process.

As noted in Section 10.5 – *Table 44* of the amended EIS and Section 9 of this RtS, the proposed process for ash handling and management is detailed as:

*APC residues will be collected into sealed storage silos and transported via sealed tanker off-site for further treatment or disposal at landfill. In the event APC residue exceeds the criteria for Restricted Solid Waste, the residue will be taken off site to a Hazardous Waste Treatment facility, in line with relevant hazardous waste legislation.*

It is considered that this will be the ongoing long term approach to disposal of ash residue from the EfW Facility.

### 7.10.3. Accuracy of human health risk assessment

#### Issue Description:

A number of submissions raised concerns regarding the accuracy of the human health risk assessment. The key issues raised are as follows:

- Disparity in values of fat in breast milk used to measure contamination.
- No quality longitudinal data to measure impact to human and pet health.
- Ramboll document/human health risk assessment does not address cumulative effect of chlorine from treated wood.
- Residents live in a neighbourhood their whole life, not 30 years.
- Impact on food processors and manufactures e.g. Arnott's.
- Exposure pathways from both domestic and commercial rainwater tanks have not been considered (EIS does not take cumulative affect into account in this situation (183068)).
- Modelling does not consider influxes in local population from the workforce and visitors to Wet n Wild.
- No quality longitudinal data on impact to human and pet health.

**Response:**

The assessment of health impacts presented in Section 17 – *Human Health* and the HHRA at Appendix N of the amended EIS and updated at **Appendix O** has considered a range of factors which may impact human health in accordance with all relevant legislations and guidelines required by Government agencies.

As discussed throughout this report, the HHRA has addressed the potential long term impacts through a chronic health assessment and found all pollutants through most complete exposure pathways assessed to be low and acceptable levels. Where exceptions to this are noted, this is based on a highly unlikely operating scenario and will not be realised.

Section 17.4.1 of the amended EIS provides a list of chemicals of potential concern which may be emitted from the operation of the EfW plants. As discussed in this section, the organic component of chlorinated organic compounds or chlorides is destroyed during the incineration process and converted to HCl (hydrogen chloride).

#### **7.10.4. Incomplete soil and water contamination assessments**

**Issue Description:**

Some submissions were concerned that the soil and water contamination assessments contained in the amended EIS were incomplete.

**Response:**

Section 16 – *Soils and Water* of the amended EIS addresses the level of contamination of soil and water within the site area.

A Phase 1 Environmental Site Assessment and further Targeted Phase 2 Detailed Site Contamination Investigation was undertaken. The investigation and assessment of extracted soil samples concluded that concentrations of the potential contaminants within the soil, sediment and surface water samples were below the NEPM Schedule B (1) Health Based Investigation Levels (HIL) D, Ecological Screening Levels (commercial/industrial) and ANZECC Guidelines for Fresh and Marine Water Quality assessment criteria's.

No further assessment was required to be undertaken as the site is deemed suitable for commercial/industrial land uses.

#### **7.10.5. Failure to respond to SEARS requirements**

**Issue Description:**

One submission (188528) suggested the EIS had failed to respond to SEARS requirements; specifically, in addressing whether the proposal was in the public interest, site suitability and identifying a need for the development.

**Response:**

The amended EIS is consistent with the Standard Secretary's Environmental Assessment Requirements (SEARs). These requirements have been considered in preparation of the amended EIS, and this RtS with public interest, site suitability and identifying the need for development addressed throughout various sections.

#### **7.10.6. Worst case scenario**

**Issue Description:**

Some submissions were concerned that worst-case scenarios had not been considered in risk assessment modelling and outcomes were based on best case scenarios.

**Response:**

In determining the potential impact of the proposed EfW Facility, multiple scenarios have been assessed in order to determine risk associated with human health, fire management, pollution control etc.

The technical assessments submitted with the amended EIS were considered based on a maximum capacity to treat up to 1.35M tonnes/pa of residual waste fuel. As approval is now sought for Stage 1 only, key technical assessments have been revised based on a maximum capacity to treat up to 552,500 tonnes/pa of residual waste fuel.

The revised Air Quality Assessment (**Appendix N**) and Human Health Risk Assessment (**Appendix O**) have assessed five (5) potential operating scenarios including operation during upset conditions (Scenario 3). Scenario 3 assumes that the EfW Facility would operate at a maximum operation of 60 hours per year (as this is the maximum allowable under the IED) under upset conditions with the remainder of the year (8,700 hours) under normal conditions. This scenario also allows for worst case meteorological conditions to be accounted for in the ground level concentration predictions. The likelihood of this scenario (being the potential for upset conditions to coincide with worst-case dispersion) is less than 0.012%.

In the case that this worst-case scenario is realised, the modelling indicates that Cd levels (cadmium) are predicted to exceed the NSW impact assessment criteria. However, as described above the probability of this occurring is extremely low. There are no exceedances of the EPA criteria when the EfW Facility contribution is added to maximum background.

Additionally, the updated HHRA determined that under this worst-case scenario, acute and chronic health risks to off-site receptors are low and acceptable. Based on this, it is considered that the proposed facility has been assessed against its maximum capacity and 'worst-case scenario'.

### **7.10.7. Flood management**

#### **Issue Description:**

Some submissions were concerned that backwater flooding events had not been considered in a flood management plan for the facility, and that the facility should not be built on a floodplain.

#### **Response:**

In accordance with Section 16.4.6 of the amended EIS and flood modelling carried out and provided in the Brown Consulting Report (Appendix Z), the site is not identified as being flood affected on any adopted flood planning maps. Further, the flood levels of the creek to the south of the site will not adversely affect the development.

The development is not expected to contribute to any potential off site flood affectation related to the development or discharge of water from the basin to the tributary.

### **7.10.8. Comprehensibility**

#### **Issue Description:**

Some submissions were concerned the EIS was too long and contained technical language which inhibits the community from engaging with key issues and data.

#### **Response:**

The development proposed is of a highly technical nature. All efforts have been made to explain processes and systems in lay-person terms, however some matters require the use of technical language and discussion.

Community forums were held at both Council areas to provide the community with the opportunity to ask questions from key consultants. The aim of which, in part, was to provide for improved understanding of the project.

The length of the report is not atypical of a development of this type and was necessary to address the SEARS and relevant legislative requirements.

## **7.11. NOISE CONCERNS**

### **7.11.1. Impact of 24-hour facility operation**

#### **Issue Description:**

A number of submissions were concerned with the noise and vibrations associated with the 24/7 operation of the proposed facility and their associated impacts.

#### **Response:**

It is acknowledged that a number of residents live close to the project site and there is a concern regarding exceedance of noise assessment criteria and the impacts this has on health and lifestyle.

Construction and operation noise will be regulated through the project approval and in accordance to relevant acoustic legislation, policy and guidelines (*NSW Interim Construction Noise Guideline, EPA Industrial Noise Policy, EPA Road Noise Policy, NSW Road Traffic Noise Policy*). The regulations have been developed to control noise levels in order to manage potential health impacts on the community.

As outlined in the revised Noise and Vibration Assessment included at **Appendix P**, 24/7 operational noise of the EfW Facility would comply with the most stringent criteria under both neutral and adverse meteorological conditions.

### 7.11.2. Construction noise

#### Issue Description:

183068- Noise control is assumed to be partly mitigated by 'smart' reversing alarms, but not all vehicles may have these fitted so this is an unrealistic mitigation measure

EIS noise mitigation measures are based off recommendations and has no mandatory status, and will therefore be ineffective in managing noise levels.

#### Response:

A further update to the Noise and Vibration Impact Assessment has been conducted to address the issues raised in this Response to Submissions Report and is included at **Appendix P**.

Construction noise will vary over the 36-month program of construction works as a consequence of variation in construction and activity, and the nature of the plant and machinery in use.

To minimise noise emissions and comply with the project approval and regulations, the EfW Facility would be designed and constructed with reasonable and feasible noise mitigation measures to control noise emissions within the surrounding community. All noise mitigation measures will be detailed in a construction noise management plan which will form a condition of approval. These measures will form a requirement of the development approval and are designed to ensure that there are minimal to no exceedance of noise criteria during the construction phase.

### 7.11.3. Air-conditioning unit noise

#### Issue Description:

One submission was concerned that the noise emitted from air conditioning units used during operation of the facility had not been considered, or appropriately mitigated in the EIS.

#### Response:

Air-conditioning, including air cooled condensers housed in an open top enclosure on the EfW Facility were included in the operational modelling scenario which was established to provide a conservative assessment for operations at the facility over a 15-minute period.

As described within the revised Noise and Vibration Assessment (Appendix P), the operational noise assessment as informed by this modelling found that noise emissions from the operating of the facility would comply with all relevant noise criteria.

### 7.11.4. Traffic noise

#### Issue Description:

Several submissions were concerned with the noise created by additional truck and vehicle movements both on site, and on public roads and the impact this would have on residents living in proximity.

#### Response:

As described within the revised Noise and Vibration Assessment (**Appendix P**), road traffic noise was included in acoustic modelling based on the potential impact that new truck movements will have on the noise environment of public roads.

Existing roads related to the proposed development already carry large volumes of traffic, including a large percentage of heavy vehicles on Wallgrove Road, M4 and M7 generated by existing industrial and commercial land uses. As a result of the facility, the traffic volumes would be expected to increase on these roads by less than 2 per cent of the ADDT and therefore no significant noise increase is expected on these roads.

Typically, an increase in traffic noise level above the 2dB increase criteria is expected where traffic volumes increase by 20 per cent or more. Since the facility is expected to increase traffic by a much lower amount than this, it is considered to comply with the RNP relative increase criteria.

Based on this, the impacts of any traffic noise are deemed minimal.

## 7.12. VISUAL IMPACT

### 7.12.1. Light impact

#### Issue Description:

Some submissions were concerned that the EIS had not addressed the visual impact of light emitted from the facility during construction and operation on residential amenity.

#### Response:

All external lighting associated with the Facility will comply with Australian Standard AS 4282: 1997 – *Control of the Obtrusive Effects of Outdoor Lighting*.

The proposed EfW Facility is located 1km from residents downhill. The facility is unlikely to contribute to light spill and loss of amenity for local residents.

### 7.12.2. Visual impact of stack

#### Issue Description:

Several submissions made the following comments on the visual impact of the stacks:

- The proposed stacks will be visible from residential properties.
- Graphics of the visual impact from different locations have not been provided in the EIS
- The visual impact assessment has not considered impact from residential boundaries: particularly properties 7-10 Hocking Place and 167-187 Swallow Drive, Erskine Park (sub 179378).
- Request to use vegetation to reduce the visual impact of the site

#### Response:

The visual impacts of the facility have been assessed with findings provided in Chapter 20 – *Visual Amenity* of the amended EIS. Additionally, a further update of the Visual Impact Assessment (VIA) has been provided to reflect the amended development description for the Stage 1 development of the EfW and is included at **Appendix S**.

Impacts were assessed at a number of different locations/receptors surrounding the proposed site, including parks and surrounding residential suburbs. The VIA determines that views to the industrial landscape from Erskine Park are generally screened by existing vegetation and residential built form. Where views of the development are possible, these will generally be of the upper parts of the buildings and the slender vent stack protruding above the tree canopy or building line.

Overall it was determined that the view impact will be negligible for most locations and generally low to moderate where views are possible from sensitive viewpoints.

Notwithstanding the above, a number of mitigation measures are proposed (presented in Section 9) in order to minimise any impacts of the proposal on visual amenity. These include:

- Visual mitigation measures such as additional canopy tree planting, effective use of materials and use of a light grey finish on emission stacks to aid visual integration.
- Implementation and management of technology design parameters to reduce plume formation and visibility.
- Ensuring all external lighting is consistent with Australian Standard AS 4282: 1997 – *Control of the Obtrusive Effects of Outdoor Lighting*. Night-lighting will be kept to the minimum required for operations and safety requirements.
- Architectural treatments aimed at drawing the height of stack downward (i.e. stack is thickest at the base).

In addition to the above, a site visit was undertaken to respond to the above concerns of visual amenity. Imagery was taken from the adjacent residential area at Erskine Park, Lenore Drive, and the proposed EfW Facility to discern potential visual impacts. This is addressed in detail in Section 6.15.2 of this report. It is deemed that from most locations, the lower parts of the facility will be totally obscured from view.

## **7.13. NON-COMPLIANCE WITH INTERNATIONAL AND NATIONAL REGULATIONS**

### **7.13.1. United Nations Commission on Human Rights**

#### **Issue Description:**

Some submissions raised concerns that the operation of the EfW Facility would contravene the United Nations Commission on Human Rights, specifically, the 'Right to Life'.

#### **Response:**

It is noted that no specific document has been referenced. It is assumed that the 'Right to life' reference is in relation to Article 3 of the Universal Declaration of Human Rights which states 'Everyone has the right to life, liberty and security of a person'. The article requires the government to take appropriate measures to safeguard life by making laws and legislation aimed at protecting life.

In the context of this proposal, the government has established planning and environmental processes, requirements and limits which are aimed at protecting people from any adverse environmental impacts of a proposed development. This includes emissions limits and assessment of potential impacts to human health. The Proponent has been subject to these legislative requirements throughout the entirety of the planning process, and upon the assessment of all relevant potential environmental impacts under the assessment framework established by the government, has been proven to have a low and acceptable environmental impact.

### **7.13.2. Stockholm Convention**

#### **Issue Description:**

Some submissions were concerned that the EfW Facility would affect Australia's obligations to the Stockholm Convention.

#### **Response:**

The Stockholm Convention has a range of control measures to reduce, and where feasible, eliminate the release of POPs, including emissions of unintentionally produced POPs such as dioxins. The convention also aims to ensure the sound management of stockpiles and wastes that contain POPs. Australia has committed to reducing and managing the emissions of POPs under the obligations of the treaty, however, it should be noted that there is currently no National environmental legislation which prescribes these obligations. The emission of POPs is a shared responsibility between the Australian Government and the states and territories and in NSW the Environmental Protection Authority (EPA) is responsible for ensuring NSW manages Australia's obligations under the Stockholm Convention treaty.

As such, the proposal has been subject to the emissions criteria established by National and State legislative requirements. This has been discussed throughout the entirety of the amended EIS and considered in all relevant specialist consultant assessments. All potential impacts assessed through this framework have been appropriately identified, and mitigated where necessary.

Additionally, the Stockholm Convention specifically states that the following is to be considered in determining best available techniques for dioxin control; "Use of improved methods for flue-gas cleaning such as thermal or catalytic oxidation, dust precipitation, or adsorption".

The TNG EfW Facility will be constructed using the Best Available Techniques (BAT) as described in the convention. It uses dust precipitation and adsorption in the flue gas treatment system. All residues from the process (bottom ash and flue gas treatment residue, including fly ash) are expected to be well below the "low POP content" threshold for wastes. This means that the Stockholm Convention does not require further treatment of the residues prior to disposal when it comes to the dioxin content

As such, the proposal has no anticipated impact on Australia's current obligation to the Stockholm Convention.

### **7.13.3. EP&A Act of 1990**

#### **Issue Description:**

Several submissions were concerned the EfW Facility contravenes the EP&A Act of 1990.

#### **Response:**

Irrespective of the incorrect legislative reference, the submissions are non-specific in how the proposal contravenes the Act. A full and thorough assessment has been undertaken and concludes that adverse impact to environment is unlikely, where potential impacts have been identified suitable management and mitigation measures have been recommended for adoption and implementation.

### **7.13.4. Broader Western Sydney Employment Area Draft Structure Plan 2013**

#### **Issue Description:**

One submission (ref: 185263) was concerned that the proposal will only generate 6 jobs per hectare, rather than the 21 jobs per hectare target established by the Broader Western Sydney Employment Area Draft Structure Plan 2013.

#### **Response:**

A figure of 21 jobs per hectare is not specifically referenced in the Broader Western Sydney Employment Area Draft Structure Plan 2013, so a comment is unable to be provided in relation to this. The creation of approximately 500 construction jobs and 55 operational jobs is in line with the nature of operating a waste management facility, and will also be an intensification of an otherwise underutilised portion of an existing site. As such, the proposal will positively contribute towards the job targets for the WSEA established in the Draft Structure Plan 2013.

### **7.13.5. Renewable Energy (Electricity) Act 2000**

#### **Issue Description:**

A number of submissions raised concerns regarding an apparent non-compliance with the Renewable Energy (Electricity) Act 2000. A specific concern raised was regarding the processing of treated wood, which would make the EfW Facility non-renewable under the Act.

#### **Response:**

The Renewable Energy (Electricity) Act 2000 aims to encourage the additional generation of electricity from renewable sources, reduce greenhouse gases in the electricity sector; and, to ensure that renewable energy sources are ecologically sustainable through the issuing of renewable energy certificates. These certificates allow eligible energy producers to avoid or reduce the amount of renewable energy shortfall charge that entities who acquire energy have to pay.

The comments of the community regarding treated wood are acknowledged, and are referred to Part 2 cl 17 (2) which identifies materials or waste products derived from fossil fuels are not eligible renewable energy sources under the Act. At this stage, the application is not seeking certification of the EfW Facility under the Act. While many renewable energy providers use the certification under the Act to receive incentives and benefits, the facility plans to operate independent of these and as such is not subject to compliance under the Act.

It should also be noted that the Act does not hold any legislative power to determine what are, and are not, renewable energy sources outside of the definition required for certification. As such, the Act does not have any bearing on the definition of the EfW Facility as a renewable energy source.

## **7.14. SOCIAL AND ECONOMIC IMPACTS**

### **7.14.1. Community structure**

#### **Issue Description:**

Some submissions argued the community structure of the local area would be negatively impacted if the proposal went ahead due to the movement of residents away from the area.

#### **Response:**

The concerns of the local community regarding the importance of community structures are acknowledged. There are a variety of factors that influence community structures, and the movement of residents away or to a local area. Given the complexity of these factors, it is not possible to predict whether the facility would have any impacts, either negative or positive, on community structure.

### **7.14.2. Economic impact of reduced tourism**

#### **Issue Description:**

Some submissions were concerned tourism to Wet n Wild and Western Sydney Parklands would be reduced.

#### **Response:**

Visitation rates of Wet'n'Wild and Western Sydney Parklands will be affected by a variety of factors. Given it is difficult to determine the exact factors influencing the rates of visitation of these locations, it is also difficult to establish whether the proposed facility will, or will not have any positive or negative impact on visitation rates.

### **7.14.3. Economic impact of health on business operations**

#### **Issue Description:**

Some submissions commented that business productivity would decline due to increased health issues. Some submissions were also concerned that businesses would move out of the area if the proposal went ahead, and this would have negative economic ramifications for the local community.

#### **Response:**

The HHRA included at Appendix O has thoroughly investigated all potential exposure pathways of contaminants and resolved that there is an acceptable and low risk of adverse impact on human health. In light of this outcome, no significant negative impact on local business productivity is anticipated.

### **7.14.4. Increased shared health costs**

#### **Issue Description:**

A number of submissions were concerned that potential health issues caused by pollutants from the facility would burden the public health care system. Several of these submissions added they were concerned the total cost of Medicare would increase, and therefore the cost of the Medicare levy for individual tax-payers.

#### **Response:**

The HHRA included at **Appendix O** has thoroughly investigated all potential exposure pathways of contaminants and resolved that there is an acceptable and low risk of adverse impact on human health. In light of this outcome, no additional burden on the public health system as a result of the facility is anticipated.

### **7.14.5. Cost of operations**

#### **Issue Description:**

Some submissions raised concerns regarding the expense of operations and maintenance of the facility and asked who would be responsible for these expenses.

#### **Response:**

TNG will be wholly responsible for the operational and maintenance costs of the EfW Facility.

### **7.14.6. Cost of air pollution monitoring and baseline studies**

#### **Issue Description:**

Some submissions raised concerns that further investment in air pollution monitoring and baseline studies would be associated with the project, and that these would be an inappropriate use of tax-payer money.

**Response:**

The EfW Facility will utilise a Continuous Emissions Monitoring System (CEMS), located on site, to provide the EPA with real time feedback on emissions monitoring using Best Available Technology. This system will be operated, maintained and paid for by TNG. It is anticipated that this system will provide an accurate, comprehensive and up-to-date reporting of emission concentration levels produced by the EfW Facility.

TNG is not responsible for the operation of air pollution monitoring systems and baseline studies under government agency authority, and as such cannot comment on the nature of investment in these operations.

### 7.14.7. Aboriginal heritage

**Issue Description:**

Some submissions raised concerns regarding the interference of the development with a culturally significant Aboriginal site. Submissions noted the impact of the development on the site is not acceptable.

**Response:**

The Aboriginal heritage impacts as a result of the project were identified and assessed in Section 22 – *Aboriginal and Non-Aboriginal Cultural Heritage* of the amended EIS for a development footprint inclusive of Stage 1 and Stage 2. This assessment identified that the development footprint was located in an area of low Aboriginal heritage significance.

Three aboriginal sites were identified within the broader EfW Facility site, only one of these sites will be directly physically affected. The areas identified as having moderate cultural significance will have no physical impacts and be conserved.

Further, consultation with 12 local Aboriginal stakeholder groups was undertaken to discuss the likely impacts and change in visual landscape. The proposal was supported subject to retrieved artefacts being reburied close by.

The assessment as described above considered the ultimate EfW Facility development at the time of the amended EIS. An addendum letter to the Aboriginal Cultural Heritage Assessment has been included at **Appendix Y** to confirm the heritage impacts associated with Stage 1 only and the amendments made as part of this RtS report. No new impacts were identified based on the amended development for Stage 1 only, and as the development footprint has reduced this has the potential to reduce impacts on Aboriginal sites.

The overall impact on Aboriginal heritage is considered to be minimal and mitigation measures are proposed to protect Aboriginal cultural values through the erection of fencing, and retrieval and reburial of any artefacts discovered.

## 7.15. INADEQUACY OF TECHNOLOGY

### 7.15.1. Operation of international facilities

**Issue Description:**

A number of submissions raised the following concerns regarding the operation of international EfW facilities:

- Waste incineration is being phased out in Europe.
- European Union has discouraged EfW facilities.

**Response:**

The general concerns with the operation of an EfW Facility are acknowledged. The EfW Facility has been designed with the main objective to provide an alternative use for non-reusable or recyclable waste.

Waste incineration and energy from waste facilities are an integral part of the 'recovery' waste hierarchy used in Europe. In December 2016, there were 37 operational EfWs in the UK, with a further 4 in commissioning. These facilities processed a total of 9.96Mt of residual waste in 2016, which is an increase of 18% on 2015 figures (source: <http://www.tolvik.com/>)

The EPA recognises that the recovery of energy and resources from the thermal processing of waste has the potential, as part of an integrated waste management strategy, to deliver positive outcomes for the community and the environment. This is detailed in the NSW Energy from Waste Policy Statement.

As such, in the Australian context, the thermal processing of waste for energy is a suitable form of waste recovery, notwithstanding the operation of international facilities.

### **7.15.2. Facility shutdown at 37 degrees**

#### **Issue Description:**

A number of submissions were concerned that information in the EIS indicated a facility shutdown would occur at temperatures of 37 degrees and above. Several of these submissions noted that temperatures in Western Sydney can reach above 37 degrees during summer, and that this would result in frequent facility shutdowns and associated increases in emissions.

#### **Response:**

The concerns with emergency shut-down procedures are acknowledged. In response to the concern that the facility will shut down at temperatures of 37 degrees and above, this is not accurate.

As described in the revised Ramboll Project Definition Brief (**Appendix D**), a safe shutdown event will occur in the simultaneous occurrence of adverse conditions as below:

- High voltage (HV) electric grid blackout in the Eastern Creek area of Sydney or in the whole of Sydney requiring island mode operation of the EfW plant.
- An extremely hot day with ambient air temperatures above 37°C causing an excessively high back pressure in the ACC with temperatures above 55 degrees, in turn initiating a turbine trip and necessitating a shutdown of the whole EfW plant.

The probability of the first adverse scenario is low, as such the probability of the simultaneous occurrence of both conditions is very low. In this sense, a grid blackout (island mode operation of the turbine), extremely high temperatures and full load operation (100%) of the EfW Facility would need to occur simultaneously to initiate a turbine trip and shutdown of the entire facility.

The probability of the two simultaneous events occurring is once every 10 years. Further, the potential of a turbine trip, grid blackout and very high ambient temperatures can be significantly decreased by a reduction of the waste load rates.

The EfW Facility may also only operate under a maximum of 60 hours annually under upset conditions as set by the IED. It is considered that the occurrence of a facility shutdown is highly unlikely, and suitable mitigation measures and emergency shutdown procedures are in place to minimise additional adverse impacts.

## **7.16. IMPACT OF PROPOSED DEVELOPMENT ON WASTE MANAGEMENT FACILITIES AND METHODS**

### **7.16.1. Reduction in recycling**

#### **Issue Description:**

A number of submissions were concerned that overall recycling rates would be reduced by the proposal. There was general concern that if it were cheaper and more efficient to burn waste, there would be a reduced incentive for waste management companies to recycle and reuse waste using sustainable methods.

Several submissions also commented that companies and individuals should be made responsible for recycling, and this would reduce the need for waste incineration.

#### **Response:**

Under the current NSW waste levy, it is more profitable to recycle waste than to use waste as a fuel source. As such, the facility will continue to preference the separation of recyclable waste and where possible, recycling material which is fit to be reused in favour of the proposed EfW Facility.

Of the waste loads received by at the Genesis MPC that are classified as containing material capable of being recovered or recycled, it is estimated that, on average, 80% of materials are recovered by sorting, separating and processing and made available for resale or reuse by other processors. This is a higher rate than the averages for NSW and exceeds the WARR Strategy criteria.

The aim of the EfW Facility is to generate energy from residual waste, meaning waste which cannot be reused or recycled and would otherwise be diverted to landfill. Given the high recycling rates already achieved by the Genesis facility are anticipated to remain high, it is expected that the proposed EfW Facility will not have a negative impact on recycling rates.

### **7.16.2. Monopolisation of waste industry**

#### **Issue Description:**

Some submissions were concerned that the EfW Facility would create a monopoly in the waste management industry as it would be more profitable to burn, rather than recycle or landfill waste and this would disadvantage other operators.

#### **Response:**

The concerns of the local community regarding other waste management operators are acknowledged. Accepted planning principles, practice and application of the EP&A Act do not recognise matters of economic competition between individual trade competitors as a relevant planning consideration.

### **7.16.3. Waste importation**

#### **Issue Description:**

Several submissions were concerned that additional waste would be imported in order to make 24 hours, 7 days a week operations commercially viable.

#### **Response:**

The economic feasibility of the project has been based on the assumption that all waste would be sourced from within Australia. Given the availability of waste streams within NSW, it is not anticipated that the proposal will need to import any waste to ensure commercial viability.

## **7.17. COMMUNITY CONSULTATION**

### **7.17.1. Extent of community engagement**

#### **Issue Description:**

A number of community submissions raised the following concerns regarding the adequacy of community notification of the proposed development:

- The 'letter-drop' undertaken to inform the community of the community consultation and information sessions did not reach an appropriate catchment of residents.
- Residents in close proximity to the proposed development did not receive notification.
- Workers in Eastern Creek were not notified
- Pamphlets distributed by EfW did not reach all residents who would be affected
- Exhibition period not long enough

#### **Response:**

Public exhibition and consultation of the proposed EfW Facility has been undertaken in accordance with the requirements under the *Environmental Planning and Assessment Act 1979*. The original SSD DA in April 2015, was exhibited from 27/05/2015 to 27/07/2015. Since this application, the scope of the development was amended to respond to matters raised by assessment authorities and the community, accordingly this resulted in the lodgement of the amended EIS and documentation which was exhibited from 09/12/2016 to 01/03/2017.

Through the above exhibition periods, in addition to the standard exhibition requirements the below consultation items were undertaken:

Table 10 – Extent of Community Consultation

Date	Item
April 2013	<p><b>Project website</b>            A dedicated website (<a href="http://www.tngnsw.com.au">www.tngnsw.com.au</a>) has been created to offer general information on the proposal, together with a project flyer and video. In addition, frequently asked questions were uploaded to provide responses to general questions. As the Energy from Waste facility is a new concept to NSW the website focuses on educating the visitor on how the technology operates and creates 'green' energy.</p>
Ongoing	<p><b>1800 community line and project email</b>            A dedicated, toll-free 1800 community information line (180 252 040) and email address (<a href="mailto:info@tngnsw.com.au">info@tngnsw.com.au</a>) was established from the inception of the consultation to provide an immediately available and central point of contact for stakeholder and community enquiries. Both the information number and email address have been promoted via the website and on all communications collateral including the media release and project flyer.</p>
December 2013	<p><b>Key stakeholder correspondence</b>            Correspondence has been sent via post and/or email to identified key stakeholders and community groups. Distributed in early December 2013, the correspondence included a project overview and flyer with the offering of a personal briefing should they request it. This was also followed up by direct phone calls to some key stakeholders offering a personal briefing.</p>
Stakeholder category	<b>Identified stakeholder</b>
NSW Government	Director General of Department of Premier and Cabinet
	Premier and Minister for Western Sydney
	Minister for Environment and Heritage
	Minister for Resources and Energy
	Minister for Western Sydney
	Parliamentary Secretary for Western Sydney
	Shadow Minister for Energy
	Shadow Minister for Environment and Climate Change
Federal Members	Federal Member for Chifley
	Federal Member for McMahan
NSW State Members	Member for Blacktown
	Member for Mount Druitt
	Member for Mulgoa
State Government agencies	Land Partners
	NSW Department of Planning and Infrastructure
	NSW Environment Protection Agency
	NSW Trade and Investment
Local government	Sydney Water
	Blacktown City Council and Councillors
	Penrith City Council and Councillors
Industry peak bodies	Western Sydney Regional Organisations of Councils
	Master Builders Association
	Sustainable Energy Association of Australia
Waste Management Association of Australia	
Environmental peak bodies	Total Environment Centre
Indigenous peak bodies	Deerubbin Local Aboriginal Land Council

Business Chambers	NSW Business Chamber
	Regional Development Australia – Sydney
	Western Sydney -Sydney Business Chamber
Community groups	Blacktown District Environment Group
	Minchinbury Jets
	Minchinbury Residents Action Group
	Spartan Blacktown Football Club
	Western Sydney Conservation Alliance Inc.
	Whalan Action Group
Surrounding residential neighbours	Erskine Park – 2,000 residents
	Minchinbury – 2,000 residents
Surrounding business	Aldi
	Alspec
	Arbonne
	Australand
	Best & Less
	Capral (formerly OneSteel)
	Cassons
	CH2
	DHL Supply Chain
	FedEx
	Freight Distribution Management
	Fulton Hogan
	Goodman
	Hanson
	Ingram Micro
	Jacfin
	K Mart Ltd
	Life's Good
	Macism
	Milton Trading
	Myer
	Nover
	NSW Department of Planning and Infrastructure
	OfficeMax
	Ontex Australia
	Sargents Pies
	SK Steel Australia
Woolworths	
4 <sup>th</sup> December 2013	<p><b>Mailbox drop to 4,000 homes.</b></p> <p>Two letter box drops were undertaken to inform the nearby residential areas in the suburbs of Minchinbury and Erskine Park about the project. The first was on the proposed facility and the second was an invite to a community information day and site tour. A total of 4,000 residences received the project flyers and a DVD which showed the proposed facility and the project.</p>
22 <sup>nd</sup> February 2014	<p><b>1–5PM Community Information afternoon hosted by TNG.</b></p> <p>4-hour information day.  General discussion.  Introduction and overview of facility.  Site tour.  Community information day and site tour</p> <p>On the 22<sup>nd</sup> February 2014 a community information afternoon was hosted by TNG. Approximately 32 people were in attendance. The aim of the afternoon was to inform and educate any interested party or individual of the proposed facility. The four-hour information day saw a general discussion upon arrival followed by an introduction and overview of the proposed facility by TNG's Managing Director. The overview included a 10-minute presentation followed by an opportunity for questions and answers. A site tour of the facility was then conducted for the attendees.</p>

26 <sup>th</sup> February 2014	26 February 2014 7-8PM Where: Blacktown Council Chambers <b>Presentation to Councillors and Officers</b> – Play video and Q & A session
5 <sup>th</sup> May 2014	Stephen Bali Councillor – Blacktown Council When: Monday, 5 May 2014 4-5 PM Where: Tour of Genesis facility Eastern Creek
6-8 <sup>th</sup> May 2014	Waste Avoidance and Resource Recovery Conference – TNG NSW representatives attended and presented at the above conference. There were 487 delegates in attendance comprising of industry leaders and Government representatives (including delegates from local councils). Environmental Protection Authority EPA representatives from NSW and Victoria were also in attendance.  TNG NSW's Managing Director was on a panel where he gave a comprehensive overview of the Energy from Waste facility. Further, a standalone TNG NSW presentation session regarding the Energy from Waste facility was attended by approximately 140 delegates. At this presentation a video was shown followed by a Question and Answer session.  Finally, TNG NSW had an exhibition stand throughout this 2-day Conference showing the 12-minute video and answering questions, queries from the delegates.
2 <sup>nd</sup> Dec 2014	Susan Coulter; Mayor Blacktown; Stephen Bali; Kerry Robinson; Glennys James; Darryl Watkins Subject: Genesis facility Eastern Creek and EfW – Consultation meeting When: Tuesday, 2 December 2014 2:30-3:30 PM Where: Porirua Room, Blacktown City Council
7 <sup>th</sup> July 2015	Blacktown Council and DoP Consultation meeting
November 2016	Presentation and panel questions at Blacktown City Council, Strategy meeting <ul style="list-style-type: none"> <li>• Blacktown City Council – Mayor, Councillors, the General Manager and relevant Council Officers (including the Policy and Strategy committee) – 23/11/13, 26/11/13, 27/11/13 and 26/2/14</li> <li>• Penrith City Council – Mayor and relevant Council Officers – 18/12/13</li> <li>• State Member for Mount Druitt – 27/11/13</li> <li>• State Member for Blacktown – (briefing and site visit) – 24/1/14</li> </ul>
10 <sup>th</sup> December 2016	11AM - 3PM Genesis Recycling facility. Community Consultation at Eastern Creek and site tour of waste facility (following demonstration outside Genesis).
6 <sup>th</sup> February 2017	7PM Minchinbury Neighbourhood Centre. Blacktown Community Consultation.
16 <sup>th</sup> February 2017	7PM Erskine Park Community Hall. Penrith Community Consultation.
24 <sup>th</sup> February 2017	Mailbox Drop to 5,000 residents
13 <sup>th</sup> April 2017	Community Consultation at Erskine Park Community Hall.

2 <sup>nd</sup> May 2017	<p>Coffs Harbour Waste Conference.</p> <p>TNG NSW representative attended and presented at the above waste conference. There were 585 delegates in attendance comprising of industry leaders and Government representatives (including delegates from local councils). EPA representatives were also in attendance.</p> <p>TNG NSW's Managing Director gave a presentation on the role of Energy from Waste in an integrated waste management strategy. Educational material was distributed.</p>
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In addition to the above, an extra mailbox delivery of an updated project description video on individual USBs to 5,000 households was undertaken in early 2017. In all 3 separate videos have been produced and displayed on the Company website since the first project application advising stakeholders and the community of the developments in the planning application.

An additional community consultation session was held at Erskine Park Community Hall, however TNG was not invited to attend. The proponent has maintained a project web page since prior to the lodgement of the initial EIS in 2015. This web page contains a link for members of the public to make comment or ask questions.

Based on the above, and the amount of community submissions received during the exhibition period, it can be deemed that community notification of the proposed development was extensive and adequate for a proposal of this nature and scale.

## 7.18. GENERAL CONCERNS

### 7.18.1. Community benefit

#### Issue Description:

A number of submissions commented that the proposal has no benefit to the community. Several of these submissions were concerned that the negative impacts to the community outweighed the positive impacts, and that job creation was minimal and would not provide a substantial enough benefit to negate potential health risks.

#### Response:

The concerns of the local community are acknowledged, however the proposal is considered to have merit and provide significant public benefit, including the following:

- The Stage 1 facility will deliver a net positive greenhouse gas effect, eliminating approximately 544,000 tonnes of CO<sub>2</sub> per annum;
- The facility will complement existing recycling initiatives and be a vital addition to the waste management system by processing genuine residual waste fuel that cannot currently be feasibly reused or recycled;
- The proposal will contribute to energy security and diversity through the provision of a low carbon, renewable electricity generating facility, providing a renewable energy source to 100,000 homes (Stage 1 only);
- The proposal will reduce the amount of material diverted to landfill, saving valuable and scarce landfill space and reducing greenhouse gas emissions (including methane) generated from the breakdown of waste materials; and
- It is anticipated that the proposal will create 500 construction jobs during the construction phase, 55 jobs for the operation of the facility and several hundred indirect jobs which will be of significant local and state economic benefit.

All members of the community contribute to the production of waste and consequently the necessity of waste management systems and operations. Similarly, all members of the community rely upon electricity for personal and commercial uses. As such, the efficiency of waste management systems and secure electricity supply is beneficial, and essential, to the community. The benefit of EfW is that the production of energy is not reliant on variable environmental conditions, as is this case with other renewable energy systems such as wind, solar and hydro. The main disadvantages of these forms of energy are that they cannot guarantee energy will be provided to the grid during peak load time requirements, as they may be subject to environmental constraints.

As detailed in Section 5.2 of the amended EIS, EfW is the most cost effective source of energy based on 1MWh of energy produced than alternative technologies. Considering these factors, the EfW Facility will provide a significant contribution to the security and efficiency of both waste management and electricity production to support a growing population in NSW.

The potential effects on human health of the proposed facility have been rigorously assessed throughout the amended EIS and determined to be low during normal operating scenarios. Given that the project will provide the benefits listed above, it is anticipated that overall the project will be of a significant benefit to the community.

## **7.18.2. Quality of life**

### **Issue Description:**

Some submissions commented that the proposal would negatively impact the quality of living for residents.

### **Response:**

There are several factors which influence the quality of life for residents within an area. Some of these factors include visual amenity, noise, air quality and health. The impact of the proposal on these factors has been discussed in detail throughout this report and supporting documentation. The proposal has considered all matters listed under the Director General's Assessment Requirements, inclusive of potential social and economic impacts. Given quality of life cannot be quantitatively analysed, it is considered that all relevant matters potentially impacting quality of life have been adequately considered and any potential impacts appropriately mitigated.

## **7.18.3. Perception of Western Sydney as a 'dumping ground'**

### **Issue Description:**

Several community submissions were concerned Western Sydney had become Sydney's 'dumping ground' for undesirable, or hazardous development. Some of these submissions were concerned that similar proposals would not be considered in other Sydney suburbs.

### **Response:**

These concerns are acknowledged. The factors which influenced the site location are discussed in detail in Section 6.3.3. Further to these factors, the location of the facility is also considered to have strategic merit. The 'Plan for Growing Sydney' published in 2014 is the principal strategic plan guiding the development of Sydney. The Plan states the WSEA will be the single largest new employment space in the Sydney Metropolitan Area. The Plan identifies the strategic importance of the WSEA based on its proximity to the M7 and M4 motorways, and its location close to Badgerys Creek Airport and associated new transport infrastructure. The proposed facility is consistent with the vision of the Plan as it will contribute towards increased employment opportunities in the WSEA, which will ultimately attract business investment and activity.

Waste management processing, sorting and landfill facilities have been operating on industrially zoned land in Western Sydney and in close proximity to the site for several years. These facilities are also located in other areas in Greater Sydney such as the Kimbriki Resource Recovery Centre (tip) in Terrey Hills in Sydney's North. The location of the proposal is intended to facilitate efficiency across all levels of the waste production and management process- from the generators of waste, waste collectors, waste processors and waste disposal for the Western Sydney region. Waste facilities across Sydney are similarly located within the regions they will receive and process the majority of waste from.

#### **7.18.4. Lack of community consideration in planning decisions**

##### **Issue Description:**

Some submissions were concerned that the opinion of the community was not being fairly considered by all parties involved in the planning process.

##### **Response:**

The proponent has been committed to the consideration of concerns raised by the community and key stakeholders throughout the entirety of the planning process and this report has been prepared with this intent. Further details of this engagement are discussed in Section 6.4 of this report.

Ultimately, the NSW DPE is responsible for the assessment and final determination of the project, and therefore this RtS submission cannot respond on the behalf of other government agencies involved in the planning process.

#### **7.18.5. Intergenerational equity and the precautionary principle**

##### **Issue Description:**

Several submissions commented on the notions of intergenerational equity and the precautionary principle. Some submissions detailed that they felt the proposal posed a risk to the health of children and future generations. Some submissions also felt that a lack of scientific knowledge and adequate data monitoring on pollutants meant the precautionary principle should be applied, to prevent any unknown adverse environmental impacts.

##### **Response:**

The concepts of the precautionary principle and intergenerational equity are referred to in Sections 25.1 and 25.2 of the amended EIS, respectively. The precautionary principle approach has been adopted through the design and management controls proposed for the facility. These controls specifically relate key areas including, but not limited to;

- Greenhouse gas and air emissions;
- Noise and visual impacts;
- Soil and groundwater contamination;
- Biodiversity impacts; and
- Potential hazards.

The monitoring and control of these aspects is proposed in the amended EIS and Section 9- *Environmental Mitigation Measures* of this RtS to be in line with regulatory and licencing requirements, and as required by Environmental Management Plans for the proposed facility. The proposed development does not contemplate works that would result in the serious or irreversible environmental damage the precautionary principle is centred around.

The concept of intergenerational equity has been considered by the amended EIS, and it is anticipated that the safe, clean and reliable form of energy produced by the facility will have positive implications for future generations. These include; reducing reliance on landfill, reducing greenhouse gas emissions and securing reliable energy sources for the future. The environmental management measures listed above, and detailed in the amended EIS have been designed to ensure the environment is protected for the enjoyment of future generations.

#### **7.18.6. Lack of transparency from the proponent**

##### **Issue Description:**

Several submissions were concerned that the proponent has not been transparent about the full impacts of the proposal.

## Response:

The amended EIS and this RtS have been prepared by experienced professionals in accordance with all relevant environmental and planning legislation and other relevant procedures and guidelines required by government agencies, including the NSW Secretary's Environmental Assessment Requirements (SEARs) and the Department of Environment's (DoE) EIS guidelines. Experienced, specialist technical consultants were engaged to rigorously assess local air quality and human health impacts against these planning guidelines.

TNG has been committed to total transparency regarding the outcomes of these assessments throughout the EIS and ongoing engagement with government agencies and the community. Further detail on the extent of community notification, engagement and consultation is discussed in Section 6.4 of this report.

### 7.18.7. Concept of energy from waste as 'green, renewable' energy

#### Issue Description:

Some submissions commented that the concept of energy from waste could not be considered 'green, renewable' energy as incineration destroys resources. A number of the submissions also commented that the proposal could not be considered 'green', as it emits a range of pollutants which are harmful to the environment.

## Response:

The EfW Facility will process residual waste, which is not able to be recycled. These waste streams are not considered to be resources which could be form part of resource recovery and be reprocessed or reused. Energy from Waste is considered a renewable energy source, as it makes use of unusable materials (that would otherwise be landfilled) to create a steady and controllable output of electricity. The proposal is also anticipated to achieve a net reduction of 544,000 tonnes of CO<sub>2</sub> per annum through reducing waste diverted to landfill and provide power to up to 100,000 homes (Stage 1 only). This outcome will be of significant benefit to the environment and community as the reliance on non-renewable energy sources and landfilling is reduced.

### 7.18.8. Misinformation

#### Issue Description:

A number of submissions were concerned there was a misappropriation of information on the following issues:

- The location of the nearest residential area is 500 metres away, rather than 1 km.
- The facility is an incinerator and has been inappropriately named an Energy from Waste facility.
- The human health risk assessment states breast milk contains only 0.04% fat, when it is actually 4%, resulting in a miscalculation of contamination.

## Response:

In response to these comments:

- 1 Todd Place is the closest residential home in Minchinbury to the north of the subject site. The proposed EfW Facility is approximately 1km south of this property. The closest residential property to the west of the site in Erskine Park residential area is approximately 970 metres from the subject site. The 1 kilometre approximation provided in the amended EIS remains correct.
- The core objective of the project is to construct and operate a facility which generates electricity from the thermal treatment of residual waste. Given electricity generation is the primary function of the facility, it is defined as 'electricity generating works' which means '*a building or place used for the purpose of making or generating electricity*' under the Standard Instrument. The term 'energy from waste' is consistent with this definition.
- The HHRA has been reviewed and the all parameters relating to breastmilk are correct and in accordance with the DEH (2005) National Dioxins Program, Technical Report No. 12, Human Health Risk Assessment of Dioxins in Australia. Office of Chemical Safety, Australian Government Department of the Environment and Heritage, Canberra.

### **7.18.9. Lack of support from government agencies, Council and independent reviews**

#### **Issue Description:**

A number of submissions raised concern that the proposal did not have support from Blacktown and Penrith Council, the EPA, Public Health agencies and independent reviews undertaken by Council

#### **Response:**

Submissions have been received from several government and other agencies. The response to key stakeholder submissions can be found in Section 6 of this report.

## 8. UPDATED RESPONSE TO DGR'S

This amended EIS has been prepared to address the issues outlined in *Schedule 2, Part 3, Clause 6 and 7* of the *Environmental Planning and Assessment Regulations 2000* and the DGRs issued for the proposed development.

The DGRs were issued on December 2013, and have been addressed within the amended EIS. These DGRs have been re-reviewed as part of this Response to Submissions Report to ensure they are continued to be met.

Table 11 below summarises the DG requirements and identifies where responses to each of the DGRs are addressed in the amended EIS. Where relevant the location of the associated technical/specialist report submitted in support of the amended EIS, a relevant response to assessment or submission and the environmental assessment of key issues is also identified.

Table 11 – Summary of the DGRs

Director Generals Requirements	Application Reference	Response to Submissions Report Appendix
<b>ENVIRONMENTAL IMPACT STATEMENT: GENERAL REQUIREMENTS</b>		
detailed description of the site, and any existing or approved operations	Amended EIS: Section 2	N/A
detailed description of the development, including:	Section 3 and 4	N/A
<ul style="list-style-type: none"> <li>likely interactions between the development and existing, approved and proposed operations in the vicinity of the site;</li> </ul>	Amended EIS: Section 27	N/A
<ul style="list-style-type: none"> <li>consideration of any relevant statutory provisions;</li> </ul>	Amended EIS: Section 8	N/A
<ul style="list-style-type: none"> <li>risk assessment of the potential environmental impacts of the development, identifying the key issues for further assessment;</li> </ul>	Amended EIS: Section 26	N/A
<ul style="list-style-type: none"> <li>detailed assessment of the key issues specified below, and any other significant issues identified in this risk assessment;</li> </ul>	Amended EIS: Sections 9 - 25	N/A
<ul style="list-style-type: none"> <li>consolidated summary of all the proposed environmental management, mitigation and monitoring measures, highlighting all commitments included in the EIS.</li> </ul>	Amended EIS: Section 28.2 RtS: Section 9	N/A
<ul style="list-style-type: none"> <li>a detailed calculation of the capital investment value (CIV) of the development (as defined in clause 3 of the <i>Environmental Planning and Assessment Regulation 2000</i>), including details of all assumptions and components from which the CIV calculation is derived. Including verification that the CIV was accurate on the date that it was prepared</li> </ul>	Amended EIS: Section 1.3	N/A

<b>Director Generals Requirements</b>	<b>Application Reference</b>	<b>Response to Submissions Report Appendix</b>
<ul style="list-style-type: none"> <li>a close estimate of the jobs that will be created by the development during construction and operation;</li> </ul>	Amended EIS: Section 3.4; Section 4.7.3  RtS: Section 6.5	N/A
<b>KEY IMPACTS</b>		
Strategic Planning	Amended EIS: Section 7	N/A
Waste Management	Amended EIS: Section 10  RtS: Section 6.6	MRA
Air Quality and Human Health	Amended EIS: Sections 11 & Section 17  RtS: Sections 6.11 and 6.12	Appendix N & Appendix O
Odour	Amended EIS: Section 14  RtS: Section 6.20	Appendix Q
Noise and Vibration	Amended EIS: Section 15  RtS: Section 6.16	Appendix P
Soils and Water	Amended EIS: Section 16  RtS: Section 6.10	N/A
Traffic and Transport	Amended EIS: Section 18  RtS: Section 6.18	Appendix U
Hazards and Risk	Amended EIS: Section 23 & 24  RtS: Section 6.19	Appendix V
Flora and Fauna	Amended EIS: Section 19	N/A
Visual, including photomontages, plume assessment & airspace operations	Amended EIS: Section 20 & 21  RtS: Section 6.15	Appendix S & Appendix L & Appendix W.
Greenhouse Gas	Amended EIS: Section 12  RtS: Section 6.13	Appendix N
Aboriginal and non-Aboriginal Cultural Heritage	Amended EIS: Section 22  RtS: Section 6.21	Appendix Y and Appendix AA

Director Generals Requirements	Application Reference	Response to Submissions Report Appendix
<b>PLANS AND DOCUMENTS</b>		
The EIS must include the following:		
<ul style="list-style-type: none"> <li>Architectural drawings</li> </ul>	Amended EIS: Section 3	Appendix E
<ul style="list-style-type: none"> <li>Site Survey Plan, showing existing levels, location and height of existing and adjacent structures/buildings and boundaries;</li> </ul>	N/A	N/A
<ul style="list-style-type: none"> <li>Site Analysis Plan;</li> </ul>	N/A	N/A
<ul style="list-style-type: none"> <li>Stormwater Concept Plan including easements and associated overland flow paths;</li> </ul>	N/A	Appendix H
<ul style="list-style-type: none"> <li>View Analysis/Photomontages; Shadow Diagrams;</li> </ul>	Amended EIS: Section 20	N/A
<ul style="list-style-type: none"> <li>Landscape Plan;</li> </ul>	Amended EIS: Section 9.2	Appendix T
<ul style="list-style-type: none"> <li>Preliminary Construction Management Plan</li> </ul>	Amended EIS: Section 3	Appendix F
<ul style="list-style-type: none"> <li>Schedule of materials and finishes.</li> </ul>	Amended EIS: Section 3.3.4	N/A
<b>CONSULTATION</b>		
Details of consultation with relevant local, State and Commonwealth Government authorities, and community stakeholders.	Amended EIS: Section 6	N/A

On the basis of the above table, the DGRs have been comprehensively addressed, initially through the amended EIS and updated as required through the Response to Submissions package as prepared in response to the submissions received through the exhibition period.

## 9. ENVIRONMENTAL MITIGATION MEASURES

The following measures have been compiled based on the Environmental Impact Assessment undertaken in the preparation of the amended EIS and following review and consideration of the issues raised in consultation with government agencies.

They provide a commitment by The Next Generation NSW and indicate the responsibilities required to implement measures to prevent potential environmental impacts that have been identified through the assessment. This will ensure that the proposed Development is environmentally, socially and economically sustainable.

Schedule 2 of the Environmental Planning and Assessment Regulation 2000 requires a full description of the measures proposed to mitigate any adverse effects of the development on the environment.

The collective measures required to mitigate the impacts associated with the proposed works are detailed within Table 12. All mitigation measures remain consistent with those outlined in the amended EIS and additional mitigation measures proposed within the RtS report in response to matters raised in submissions are shown in **red text**.

As demonstrated, model impacts as modelled for the total development remain applicable to Stage 1. Therefore, mitigation measures address all issues identified in the submissions as indicated in the sections above. These measures have been derived from the assessments in previous Sections and those detailed within the appended consultant reports.

In many cases, the operational and environmental management controls inherent to operation of the facility adequately manage the potential impacts. In these cases, no additional mitigation measures are required to address the potential impacts.

For this reason, the below summarises both mitigation (where relevant) and environmental control measures.

Table 12 – Mitigation and Environmental Control Measures

Matter	Mitigation Measure	Timing
<b>Key Area: Site Layout and Design</b>		
Visual Amenity	Materials and colours in accordance with those shown on Drawing No AR-KTA-1911 Rev 2	Construction
	Implementation of landscaping in accordance with the concept land design package by Site Image. Final landscape detail and plant selection to consider the use of plants resistant to saline soils.	Prior to issue of Occupation Certificate
Lighting	All lighting used on site shall be implemented in accordance with AS4282 'Control of the obtrusive effects of outdoor lighting	Construction and Operation.
Signage	No more than three (3) signs to be erected on the site.	Construction
	Signage to be in accordance with Krikis Taylor Signage Plan Drawing No. AR-KTA-1901 Rev 2.	
CPTED	<ul style="list-style-type: none"> <li>Site layout in accordance with Krikis Taylor Architectural Plans;</li> <li>Implementation of site boundary fencing;</li> <li>CCTV will be used to monitor the site and 24-hour security personnel;</li> </ul>	Construction and operation.

	<ul style="list-style-type: none"> <li>• Use of appropriately placed lighting to ensure sightlines and promote recognition;</li> <li>• Ongoing maintenance of landscaping and site.</li> </ul>	
Water Demand (Landscaping)	<ul style="list-style-type: none"> <li>• A water demand strategy will be developed to identify measures aimed maximising the potential for water reuse on amenity landscaping.</li> </ul>	Prior to construction certificate.
<b>Key Area: Waste Management</b>		
Waste Streams	<p>TNG may only receive and process the following residual waste materials:</p> <ul style="list-style-type: none"> <li>• Genesis MPC Chute Residual Waste;</li> <li>• Construction and Demolition;</li> <li>• Commercial and Industrial;</li> <li>• Floc Waste;</li> <li>• AWT;</li> <li>• GO Waste;</li> <li>• Paper Pulp; and MRF</li> </ul> <p>TNG shall not receive or process hazardous waste materials.</p>	Operation: Ongoing
Waste Management: Receipt of waste materials	<p>Prior to commencement of operations, the operator shall develop an appropriate waste screening methodology. At a minimum the plan will include the following details;</p> <ul style="list-style-type: none"> <li>• Details of the residual waste streams that may be accepted from third party authorised facilities;</li> <li>• Detailed procedures for all employees on the process of accepting residual waste materials, including <ul style="list-style-type: none"> <li>- Preliminary inspection of waste, source verification and CCTV footage;</li> <li>- Visual inspection post tipping;</li> </ul> </li> <li>• Contractual tools such as penalties or right of refusal for delivery of waste with high lead or nickel concentrations;</li> <li>• Pre-screening, sorting and separation processes to remove hazardous materials at MPC, PSC and/or other authorised facilities.</li> </ul>	Develop prior to operations, implementation of plan at operation and ongoing.

	<ul style="list-style-type: none"> <li>Reporting tool for the tracking of waste volumes and types received and processed.</li> </ul>	
Waste Management: Audit Framework	<p>Develop and implement auditing framework for external residual waste fuel suppliers. That should include details of:</p> <ul style="list-style-type: none"> <li>The identification of an independent auditor(s).</li> <li>The frequency with which audits may be undertaken;</li> <li>Standards that external residual waste fuel providers are required to meet to process waste at TNG; and</li> <li>Contractual penalties for authorised facilities who fail the independent audit.</li> </ul>	Prior to the commencement of operations.
Ash Handling and Management	<ul style="list-style-type: none"> <li>APC residues will be collected into sealed storage silos and transported via sealed tanker off-site for further treatment or disposal at landfill. In the event APC residue exceeds the criteria for Restricted Solid Waste, the residue will be taken off site to a Hazardous Waste Treatment facility, in line with relevant hazardous waste legislation.</li> </ul>	Operation: ongoing
	<ul style="list-style-type: none"> <li>Bottom ash from the grate will be removed by quenching with water and moving it by conveyor to the enclosed ash storage bunker where it is stored prior to being transported off-site. The conveyor passes under a magnetic separator to remove ferrous materials.</li> </ul>	Operation: ongoing
	<ul style="list-style-type: none"> <li>Boiler ash will be disposed of with the APC residues, unless it can be proven to be reusable following rigorous testing procedures in compliance with EPA regulations.</li> </ul>	Operation: ongoing
	<ul style="list-style-type: none"> <li>Any ferrous material removed, post combustion, shall be directed to an appropriate reuse and/or recycling facility.</li> </ul>	Operation: ongoing
Waste Management Output (Disposal)	<p>Develop and implement an operational waste management plan in accordance with the section 6 of the Ramboll, WMR. The plan shall detail, as a minimum:</p> <ul style="list-style-type: none"> <li>Storage methods and location of all wastes arising;</li> <li>Where disposal is required, the location of disposal;</li> <li>Maintain waste register of all outgoing wastes, in particular;</li> <li>Procedures for storing and transporting hazardous waste;</li> <li>Options to immobilise waste will be examined in the event that sorting does not reduce lead and nickel</li> </ul>	Operation: ongoing

	<p>concentrations to be able to achieve a 'restricted solid waste' classification; and</p> <ul style="list-style-type: none"> <li>• Periodic testing of bottom ash.</li> </ul>	
<b>Key Area: Air Quality, Human Health &amp; Odour</b>		
Maintain Target Air Emissions	<ul style="list-style-type: none"> <li>• Implement BAT, as set out in Table 7-2 of the Pacific Environment; Air Quality and GHG Assessment.</li> <li>• Implement an appropriate maintenance schedule to ensure that FGT systems operate appropriately.</li> <li>• The plant shall be managed by a duly qualified specialist and trained personnel.</li> </ul>	Construction and operation
Emission Concentrations (Normal Operations)	<ul style="list-style-type: none"> <li>• Proposed energy from waste facility operating using emission rates set by the POEO Act, with the exception of Cd which will be set at the limit prescribed by the Industrial Emissions Directive (IED; Directive 2010/75/EU).</li> </ul>	Operational Condition: Ongoing
Monitor Emission Concentrations	<ul style="list-style-type: none"> <li>• Implement continuous monitoring system to ensure facility operates within acceptable parameters;</li> <li>• Set CEMs to commence safe shutdown procedures if emission limits are exceeded</li> </ul>	Operational Condition: Ongoing.
Fugitive Dust Emissions	<ul style="list-style-type: none"> <li>• Construction of new Estate Road to provide a sealed surface and reduce dust emissions from vehicles;</li> <li>• Tipping hall building to be kept under negative pressure whereby air within the building will be used as excess air for the boilers, limiting the release fugitive dust emissions generated within the shed to the ambient environment (as this will subsequently pass through the FGT's bag house</li> </ul>	Site preparation and Construction
Waste Fuel	<ul style="list-style-type: none"> <li>• Management of incoming waste fuels received from external sources (i.e. other than Genesis MPC);</li> <li>• Mixing of waste fuel to ensure homogenising and to manage waste fractions (including chlorine and wood waste)</li> </ul>	Operation: ongoing
Emergency Conditions: Use/Operation of Diesel Generators	<p>Imposition of operating conditions that:</p> <ul style="list-style-type: none"> <li>• Limits the use of diesel generators restricted to "black start" associated with plant upset; a</li> <li>• Limit the Use of diesel generators is not to exceed 200 hours in any calendar year (a calendar year would commence on the day the EfW plant becomes operational).</li> </ul>	Operation: ongoing

	<ul style="list-style-type: none"> <li>Imposes emissions restrictions on the diesel generators.</li> </ul>	
Plant Upset Conditions	<p>Impose conditions limiting concentration emissions during upset conditions.</p> <p>In the event of upset conditions leading to mass emissions, the Plant CEMS will trigger a shutdown.</p> <p>Require the preparation and implementation of a response plan outline protocols to be followed in the event of an upset, including:</p> <ul style="list-style-type: none"> <li>Staff evacuation measures;</li> <li>A notice system to alert the EPA and local Councils, including Penrith and Blacktown;</li> <li>Any other measures deemed necessary to ensure that all possible measures are taken to limit the potential impact.</li> <li>Maintain records of any regarding any incident, including details of cause (if known); action taken and any changes in the management of the facility implemented in response.</li> </ul>	Operation: ongoing
EfW Plant Maintenance	<ul style="list-style-type: none"> <li>Plant may operator more than 8,000 hours in a year to allow for regular maintenance;</li> <li>The operator shall develop a maintenance schedule and keep a record of all major maintenance work carried out.</li> </ul>	Operation: ongoing
Plant Operation and Staff Training	<p>The proponent shall appoint a qualified plant operator to manage the EfW Facility and oversee implementation;</p> <p>The operator shall ensure that all employees are suitable trained.</p>	Implementation and Operation.
<b>Key Area: Ozone</b>		
Release of NO <sub>2</sub>	Use of BAT in flue gas treatment, specifically use of a SNCR.	Implementation/Operation
	Continuous emissions monitoring to ensure they are within acceptable limits	Operation Ongoing
	Reporting of emissions to NSW EPA.	Operation: Ongoing
<b>Key Issue: Odour</b>		
Nuisance odour (offsite)	TNG will not accept or process putrescible waste streams.	Operational: ongoing
	The tipping hall will utilise high speed at the entrance and exit to limit the period with which fugitive emissions can escape.	

waste storage and receipt	All waste storage and unloading, associated with TNG will take place within the tipping hall building, which is kept under negative pressure.	
Nuisance odour (emissions)	Excess air extracted from the building will be reused in the boiler (i.e. eliminating potentially odorous air through thermal oxidation).	Operational (ongoing)
No mitigation required, removed through thermal treatment.	odorous compounds undergo chemical decomposition through thermal treatment.	
<b>Key Area: Noise and Vibration</b>		
<b><i>Construction Phase: Noise Mitigation</i></b>		
Construction Noise impacts on residents	<p>Prior to the commencement of any work the proponent will prepare a detailed construction noise management plan</p> <ul style="list-style-type: none"> <li>• Communication with the potentially affected receiver locations to inform of the proposed works, durations and potential for noise.</li> <li>• Identification of key noise impacts.</li> <li>• Noise management measures.</li> <li>• Noise monitoring on site and at sensitive receivers.</li> <li>• Training and awareness of on-site personnel.</li> <li>• Incident and emergency response.</li> <li>• Non-conformance, preventative and corrective action.</li> </ul>	Prepared prior to CC; implemented through construction.
Construction Noise Management	<p>Construction Site Management Plan that includes measures to ensure noise is kept to a minimum. The plan shall include:</p> <ul style="list-style-type: none"> <li>• A Site induction that makes workers aware of the location of sensitive receivers and protocols to implemented to ensure management of noise beyond site.</li> <li>• Ensuring work occurs within approved hours.</li> <li>• Ensuring plant and equipment is well maintained and not making excessive noise.</li> <li>• Not operating equipment simultaneously, where possible. This has the potential to substantially reduce noise emissions.</li> </ul>	Site preparation and construction.

	<ul style="list-style-type: none"> <li>• Turning off machinery when not in use.</li> <li>• Mitigation of specific noise sources may be possible by using portable temporary screens or site structures.</li> <li>• Maximising the offset distance between noisy plant items and receivers where possible, especially during more sensitive periods (evening and night).</li> <li>• Orientating directional noise emitting equipment away from receivers.</li> <li>• Operating excavators and other mobile plant in a manner that would reduce the likelihood of maximum noise level events occurring such as: <ul style="list-style-type: none"> <li>- Sudden changes in vehicle direction/engine load.</li> <li>- Shaking excavator buckets.</li> <li>- Excavator buckets or similar contacting the ground or other solid structures.</li> </ul> </li> <li>• Carrying out loading and unloading away from sensitive receivers.</li> <li>• Selecting plant and equipment based on noise emission levels.</li> <li>• Use of residential class mufflers to reduce noise emission from mobile plant such as dozers, cranes, graders and excavators.</li> <li>• Using alternative construction methods.</li> <li>• Using spotters, closed circuit television monitors, “smart” reversing alarms, or “squawker” type reversing alarms in place of traditional reversing alarms.</li> </ul>	
Construction Noise: Nuisance and Disturbance	Noise monitoring will be conducted as part of the construction noise management plan. It will follow the principles for noise monitoring outlined in Error! Reference source not found. and be made up of a combination of continuous long term unattended and short term attended noise monitoring. Attended monitoring will also be conducted at appropriate intervals during each major construction stage, and in response to complaints, where appropriate.	Prior to commencement to inform development of CEPM and during construction work as required.
Out of Hours construction noise.	Prior to undertaking or commencing any out of hours works including phases of 24 hours’ construction works and those planned to occur over the IN “night time” hours the proponent must give a minimum of 48 hours’ notice to those residents most likely to be affected. Notice must be in writing and provide residents with a 24 hours complaints line and the details of the	Construction: As need in response to OSH

	authorised personnel who will be onsite throughout the works and their contact details.	
<b>Operational Phase: Noise Mitigation</b>		
Noise from plant operation	Implementation of the Noise Management Plan, in accordance with Appendix D of the Noise Impact Assessment prepared by Pacific Environment.	Operation: Ongoing
	<ul style="list-style-type: none"> <li>• Conditions of consent requiring performance of the facility to be consistent with the environmental noise goals of the project will be considered when selecting plant and equipment.</li> </ul>	Construction and Operation.
Noise Management: plant selection and building materials	<ul style="list-style-type: none"> <li>• The selection of plant and equipment will ensure the environmental noise goals of the project will be considered</li> <li>• All building envelope materials will have the same or better performance than those used in the Pacific Environment Assessment</li> <li>• Building facades will be constructed so they are continuous and contain no gaps between panels and sections.</li> <li>• Buildings will have openings orientated away from receivers, where possible. The opening will be designed so as to not compromise the acoustic performance of the building and remain closed where possible.</li> </ul>	Detailed design and prior to the issue of a Construction certificate
Noise from Trucks and plant	Where possible, broadband or smart reversing alarms will be fitted to all vehicles on site, in order to reduce the potential impacts caused by tonal style reversing alarms.	Operation: ongoing
Monitoring Operational Noise	Noise monitoring will be carried out to establish the noise emission level of the facility at sensitive receptors and determine compliance. In the event of a noise complaint received from the community and during the initial stage of the development's operation, compliance noise monitoring will be conducted. Noise will be monitored at the most critical time of day near the complainant and near the identified source of the impact.	Operation: During Proof of Performance trial period.
Noise from site operations	Develop and implement an operational noise management plan aimed at minimising disturbance of sensitive receivers.	Operations.
<b>Key Area: Soil and Water</b>		

Groundwater and Groundwater Dependant Ecosystems	No mitigation	N/A
Groundwater: Contamination Prevention	Implementation of groundwater drainage system around the entirety of the proposed waste bunkers to assist groundwater re-entering the strata.	Construction
	Monitoring of groundwater surrounding the waste bunkers, by incorporation of inspection manhole to enable periodic inspection of groundwater levels surrounding the waste bunkers. Monitoring of groundwater quality will include a monitoring for hardness.	Operation: ongoing
Erosion and Sedimentation	<p>A detailed Erosion and Sediment Control Plan (ESCP) will be developed for the construction phase of the project. This will include a detailed description of the proposed overall approach and specific erosion and sediment control measures including the following:</p> <ul style="list-style-type: none"> <li>Proposed phasing of works (it is suggested that this be based upon the final stormwater catchments for the completed development; with excavation, filling and surfacing carried out area by area from north to south).</li> <li>Requirements for, and design sizing of sediment basins and associated catch drains;</li> <li>Detailed erosion control measures;</li> <li>Proposed systems for management of inflows and pumping of accumulated rainfall (and any minor groundwater seepage from excavations);</li> <li>Proposed monitoring of volumes of run-off, pumped water from excavations and discharge from the site during construction; and,</li> <li>Details of the approach and methods to be employed in post-construction revegetation of the site.</li> </ul> <p>Erosion and Sedimentation controls will be installed and maintained in accordance with Department of Housing (1998), <i>Managing Urban Stormwater</i>, Soils and Construction, Fourth Edition. The following levels of control will be constructed:</p> <ul style="list-style-type: none"> <li>Silt fences will be installed along the base of excavated slopes and stockpiles to prevent runoff.</li> </ul>	<p>Prior to works commencing.</p> <p>Maintained throughout construction works.</p>

	<ul style="list-style-type: none"> <li>• Kerb inlet sediment traps will be installed at the completion of the drainage works. Whilst works are underway, geotextile filter fabric fences will be installed around open pits.</li> </ul> <p>To demonstrate the effectiveness of erosion and sediment control, a surface-water monitoring programme is proposed. This will include background, routine, and event-based (wet weather) monitoring.</p>	
Water Quality	Undertake surface water quality monitoring program outlined in Section 5.2 and Table 5.1 of Edison Environmental report dated 12 April 2015.	Implement prior to commencement of site works and maintain throughout Construction
Dust	<p>Implementation of CEMP prepared by Brookfield Multiplex, that as a minimum should include the following:</p> <ul style="list-style-type: none"> <li>• Management of spoil stockpiles;</li> <li>• Management of cleared land, including where necessary water spray/chemical soil stabiliser to suppress dust;</li> <li>• Laydown pads will be stabilised as soon as practicable following completion. Stabilisation methods may include the planting of suitable native grasses i.e. cooch grass (or as recommended by the project ecologist) to form a suitable ground cover; and</li> <li>• Sediment control devices will be implemented prior to any commencement of site clearing works and will be regularly inspected and maintained.</li> </ul>	Construction
Cut and Fill: Soil Health	<ul style="list-style-type: none"> <li>• Reuse of spoil excavated from site; and any imported fill material to be VENM.</li> <li>• Where reuse of excavated soil occurs, visual observation will be maintained during excavation of the subsoil profile and soils showing clear evidence of high salinity (visible salt crystals etc.) should be removed and stored in covered stockpiles. Reuse of site as backfill material is considered acceptable although blending with less saline soils is recommended.</li> </ul>	Construction.
Salinity: Environmental Health	<p>The risk associated with salinity is also low, and the development is expected to reduce existing salinity impacts as a result of reduced recharge and improved drainage.</p> <p>Preparation of a detailed Salinity Management Plan, to include (but not be limited to):</p> <ul style="list-style-type: none"> <li>• Avoidance/minimisation of exposure of saline subsoils, minimise cut and fill;</li> </ul>	Prior to CC and implanted through construction.

	<ul style="list-style-type: none"> <li>• Avoid disturbance in riparian zones and poorly drained areas;</li> <li>• Establish vegetation in areas subject to erosion and disturbance;</li> <li>• Consider salt-resistant construction materials in areas of shallow saline water tables; and</li> <li>• Monitor perched water tables.</li> </ul> <p>Landscaped areas will be planned with salt-tolerant vegetation.</p>	
Salinity: Building Impacts	<p>Undertake soil testing to confirm soil salinity content prior to commencement of construction (i.e. at the completion of bulk earthworks).</p> <p>Where necessary ensure construction materials to be resistant to the effects of salinity.</p>	Prior to the commencement of construction.
Flood: Protection of Buildings	Implementation of Finished Ground Levels in accordance with the AT&L Civil works plans to ensure plant is a minimum of 2 metres above flood level.	Construction.
Flood: Ropes Creek Tributary and downstream properties	Construction of onsite detention basin. Outlet flow shall ensure that discharge rate of water from detention is in accordance with SEPP 59 or BCC requirements.	Construction and Operation: ongoing.
Salinity: Soil and Water Quality	<p>Implement stormwater management plan prepared by AT&amp;L, including WSUD elements within the bio-retention basin.</p> <p>Ongoing maintenance of the basin by TNG to ensure appropriate ongoing operation to suitable standards.</p>	<p>Construction.</p> <p>Operation: ongoing.</p>
Water Availability	<p>Connect to local potable water supply for use by Staff;</p> <p>Construct water storage tanks to provide secure source of water for firefighting purposes (water to be tanked in for initial supply);</p> <p>Implement rain water tanks to harvest water for re-use on landscaping.</p>	Construction
Stormwater: Management	Implement AT&L Stormwater Management Plans as detailed in the Civil Works Package.	Construction and Operation
Stormwater: Quality	Implement bio-retention in accordance with Civil Works package prepared by AT&L.	Construction and Operation
Riparian Management	<p>Limit works permitted within riparian corridor to the batter and swales associated with the construction of OSD/bioretenion.</p> <p>Prohibit the removal of trees within the riparian corridor.</p>	Construction.

	Revegetation of the riparian corridor in line with the plan contained in the Abel Ecology report	
Water Demand	Connect site to potable water supply.  Installation of water tank capable of retaining a minimum of 546,000 litres of water for firefighting purposes.	Construction.
<b>Key Area: Human Health</b>		
Emission Concentrations (Normal Operations)	<ul style="list-style-type: none"> <li>Proposed energy from waste facility operating using emission rates set by the POEO Act, with the exception of Cd which will be set at the limit prescribed by the Industrial Emissions Directive (IED; Directive 2010/75/EU).</li> </ul>	Operational Condition: Ongoing
Monitor Emission Concentrations	<ul style="list-style-type: none"> <li>Implement continuous monitoring system to ensure facility operates within acceptable parameters.</li> <li>Set CEMs to commence safe shutdown procedures if emission limits are exceeded</li> </ul>	Operational Condition: Ongoing.
Emission Concentrations (Facility upset)	<ul style="list-style-type: none"> <li>In line with the EfW policy a series of trials and tests would be undertaken to ensure proper functioning of technology prior to full operation.</li> </ul>	Operational Condition: time restricted
	<ul style="list-style-type: none"> <li>Following completion of PoP trials and within the first 12 months of commencing operations the proponent will undertake a minimum of two (2) measurements (at least 3 months apart) of the following toxics: <ul style="list-style-type: none"> <li>Heavy metals;</li> <li>Polycyclic aromatic hydrocarbons; and</li> <li>Chlorinated dioxins and furans.</li> </ul> </li> </ul>	Operational Condition: time restricted (first 12 months)
<b>Key Area: Traffic, Transport and Parking</b>		
Design and delivery of parking (RMS)	<ul style="list-style-type: none"> <li>Deliver parking in line with proposal.</li> <li>Car parking and associated access to be designed and constructed in accordance with:AS2890.1 – 2004; AS2890.2-2002 &amp; AS2890.6 -2006 Off-Street Car Parking.</li> </ul>	Construction and Operation: ongoing.
Management of access to the site during extended hours.	A Construction Traffic Management Plan is to be prepared prior to construction.	Prior to issue of Construction Certificate
Construction Traffic	Development and implementation of a Construction Traffic Management Plan, detailing vehicle routes, number of trucks, hours of works, access arrangements and traffic controls.	Prior to the issue of a CC and implemented

Management (RMS)		throughout construction works.
<b>Key Area: Flora and Fauna</b>		
Habitat Removal: Fauna Disturbance	Appointment of a project ecologist to undertake and oversee all flora and fauna pre-clearing, management and revegetation works.	Prior to the commencement of any works.
	Additional targeted fauna survey to determine the presence of the Cumberland Land Snail. In the event that targeted survey identifies the presence of the Snail, they will be relocated to the 1.29 hectares of RFEF.	Prior to vegetation clearing
	A pre-clearing survey will be undertaken and any vertebrate fauna and Cumberland Plain Land Snails captured will be moved to the retained area of River Flat Eucalypt Forest to the south of the development footprint;	Prior to commencement of any works on site.
	Prior to draining and filling of dam, any native fauna must be moved to wet areas within the Ropes Creek Tributary.	Prior to commencement of any works on site
	Implementation of roosting/nesting boxes within the riparian zone at a rate of 2.5:1 (i.e. 20 habitat boxes).	2 weeks prior to clearing surveys and any commencement of construction works, including the removal of any trees or vegetation from the site
Impact on vegetation by Construction	Erection of fencing to protect vegetation within the Ropes Creek Tributary.	Prior to commencement of any onsite works
Habitat and Flora Restoration:	<p>Preparation of a vegetation management plan as a minimum to include:</p> <ul style="list-style-type: none"> <li>• Compensatory planting and replanting of land within the Ropes Creek tributary riparian corridor using replacement CPW.</li> <li>• Offset the proposed 1.03 hectares of ECC removal in accordance with the Biodiversity Offset Strategy prepared by Abel Ecology, dated 14 July 2017 (29 credits required).</li> <li>• Landscaping implemented following construction will use locally indigenous flora.</li> <li>• All replanted tree species will utilise tube stock (and not seed).</li> </ul>	Prior to CC and implanted as works commence, where relevant: Ongoing

	<ul style="list-style-type: none"> <li>• Weed management will be undertaken within the development proposal footprint. This will mitigate against further weed spread.</li> <li>• Measures to prevent tree impacts during construction and prevent clearing within the riparian corridor. Ongoing (post construction) measures to ensure the establishment and maintenance of the Ropes Creek tributary.</li> <li>• The VMP will have a minimum post construction management and implementation phase of 2 years from completion.</li> </ul>	
Aquatic & soil health: sedimentation from site disturbance works (tree and ground cover removal)	Potential erosion will be mitigated through the use of sediment fencing adjacent to the downslope edge of the development footprint combined with maintaining and improving riparian planting.	Prior to the commencement of any works on site.
	Stormwater quality discharged from the site will meet or exceed the requirements of SEPP59 and thus this will mitigate against potential impact of poor water quality. The bio-retention basin will be planted with local indigenous wetland species to create wetland habitat	Construction and ongoing
<b>Key Area: Visual Amenity</b>		
Visual Impact Management	<p>Implementation of the landscape and architecture plans as submitted, that include the following mitigation measures:</p> <ul style="list-style-type: none"> <li>• canopy tree planting along the north interface with the future Estate Road to act as screen planting that will soften the visual appearance of the built elements combined. Furthermore, large tree canopy plantings provide scale to the built form when viewed from the adjacent street.</li> <li>• Effective use of materials, including the use cladding of the buildings with non-reflective materials and subdued colours that mimic those found in the surrounding WSEA and landscape setting, including greys, browns and olive greens. The effective use of tonal shade achieves a dappled effect to building improving visual integration with the surrounding landscape.</li> <li>• Use of light grey finish on emission stack to aids visual integration in range of atmospheric conditions. Bright, un-natural colours have been avoided.</li> </ul>	Post construction: ongoing

Plume visibility reduction	Implementation and management of technology design parameters including exit temperature of emission from stack at around 120°C and moisture of the flue gas of 15-18% is expected to reduce plume formation (noting the potential to occur in early morning and night in autumn/winter months).	Operational: ongoing
Avoidance of Obtrusive Lighting	all external lighting associated with the facility will comply with Australian Standard AS 4282: 1997 – <i>Control of the Obtrusive Effects of Outdoor Lighting</i> . Night-lighting will be kept to the minimum required for operations and safety requirements.	Construction: ongoing
<b>Key Issue: Airspace Operations</b>		
Safe and Efficient Operations of Protected Airspace: WSA only	<p>A minimum of 2 weeks' notice should be given prior to commencement of PoP or testing of the emissions stacks to the DIRD and/or CAS regarding the commencement of operation to ensure that adequate measures have been implanted in the airport instrument management system.</p> <p>At a minimum TNG should advise the relevant authority of the final stack height + 30 metres.</p>	Prior to OC and commencement of any PoP or equipment testing
	The plume exit velocity must not exceed 4.3m/s.	Operational: Ongoing
Wildlife Management to minimise the incidence of bird strike	Limit the processing and storage of putrescible waste.	Operational: Ongoing
	<b>Develop and adopt a suitable monitoring program generally in accordance with section 5.1 of the Wildlife Hazard Management Plan Template, published by the Australian Airports Association.</b>	<b>Prior to the issue of any occupation certificate and maintained for the life of the project.</b>
<b>Key Area: Aboriginal and non-Aboriginal Cultural Heritage</b>		
<b>General Site Management: Aboriginal and Non-Aboriginal Cultural Heritage</b>		
Heritage Value: Management of unexpected finds	In the event that unexpected archaeological remains not identified within the statement are discovered at the area, all works within the affected area should cease and dependant on the nature of the find the OEH or NPWS should be notified.	Site preparation and construction
	All contractors involved in the development should receive a Heritage Induction outlining the protocol regarding the identification of unexpected archaeological remains, and their obligations under the Heritage Act and the National Parks and Wildlife Act (NSW).	Site preparation and construction

**Aboriginal Cultural Heritage Management**

Protection of Aboriginal Cultural Values	Incorporate Aboriginal Values management measures into CEMP identifying the location of known Aboriginal Sites, including Archbold 1 and 2 as well as the extent of EfW South.	Prior to CC and implemented till completion of works
	Erect fencing around Archbold Road 1 and 2 to prevent unintentional access or damage during construction	Prior to CC and implemented till completion of works
	Rebury retrieved artefacts in riparian corridor adjacent to Ropes Creek Tributary within EfW South Site, as identified in the Artefact Report and shown in <b>Appendix X</b> . Once reburied OEH is to be advised of their location and depth using the “update card” to permit update of records.	On completion of construction and prior to OC
	<p>For the parts of EFW South (45-5-4491) now outside of the design area, these areas should be protected from inadvertent impacts during works. This should include inductions for the staff working on site, and a clearly marked out barrier for works to protect against inadvertent impacts to this area.</p> <p>This area should be incorporated into the management framework for the riparian protection zone, to conserve it for the future and integrate it into the already planned conservation framework, where parts of EFW South (45-5-4491) are already planned to be protected and managed</p>	Site preparation and construction
Heritage Value: Management of unexpected finds	Develop an appropriate unexpected finds protocol	Develop prior to commencement of works. Maintain throughout “stage 1” construction.
<b>Key Area: Hazard and Risk</b>		
<b>General Mitigation/Management Measure</b>		
Hazard and Fire Response	Develop and implement hazard and fire response protocol detailing location of evacuation muster points and procedures to be implemented in case of emergency.	Operation: ongoing
<b>Mitigation of Potential incidents arising from operations:</b>		
On site incidents arising from the storage of hazardous materials and goods.	<p>Implement the following site practices and tools</p> <ul style="list-style-type: none"> <li>• Development of a work permit system, including hot work permits;</li> <li>• Development of hazardous area diagrams in accordance with AS60079.10.2 be conducted;</li> </ul>	Operation: Ongoing

	<ul style="list-style-type: none"> <li>• Installation of monitor(s) in the waste bunker (further monitor recommendations below);</li> <li>• Implementation of all recommendations contained in Appendix A of the HRA by RawRisk.</li> </ul>	
Storage and Management of chemicals	Storage of all liquid chemicals shall be in a bunded control area and or double skinned tank with 110% of the stored capacity as per the <i>Work Health and Safety Regulation 2011</i>	Operation: Ongoing
Spill Management	<p>Prior to commencement of operations a spill management procedure shall be developed and implemented.</p> <p>Spills of chemical substances within bunded areas required to be taken off site shall be classified and transported in accordance with the <i>Environmental Guideline: Assessment, classification and Management of Liquid and Non-liquid Wastes</i>.</p>	Operation: Ongoing
<b>Mitigation of Potential Fire Incidents</b>		
Diesel tank leak, spill, immediate ignition and bund fire	<p>Implement the following measures a diesel bund:</p> <ul style="list-style-type: none"> <li>• 1 powder type fire extinguisher per bunded area;</li> <li>• 1 hose reel with foam making capabilities per bunded area; and</li> <li>• 1 hydrant with foam making capabilities per bunded area.</li> </ul>	<p>Operation: Ongoing</p> <p>Construction (delivery of bund) and operation: ongoing.</p>
PAC dust cloud, ignition and dust cloud explosion within storage silo	<p>PAC Silo</p> <ul style="list-style-type: none"> <li>• Potential of nitrogen blanketing for the purpose of fire protection (via oxygen exclusion) will be investigated.</li> </ul>	Operation: ongoing
Ignition of waste in bunker and full bunker fire;	<p><i>Waste Bunker</i></p> <ul style="list-style-type: none"> <li>• Two 1900 L/min monitors shall be installed to provide complete coverage within the fuel bunker;</li> <li>• Monitors shall be installed such that access is provided externally from the fuel bunker; and</li> <li>• Monitors shall be installed on raised platforms to prevent trucks from colliding with the monitors.</li> </ul>	<p>Operation: ongoing</p> <p>Operation: ongoing</p>
Transformer internal arcing, oil spill, ignition and bund fire	<p>Transformers</p> <ul style="list-style-type: none"> <li>• 1 powder-type fire extinguisher per transformer.</li> <li>• A pump set shall be installed to provide adequate water pressure for the monitors; and</li> </ul>	Operation: ongoing

	<ul style="list-style-type: none"> <li>At least 504,000 L of firewater shall be stored at the Site.</li> </ul>	
Management of fire incidents: Volume requirements	Ensure that the site has access to no less than 546,000L (the environmental noise goals of the project will be considered 4-hour supply + 0.5 hours for firefighters to arrive) of water for the purposes of managing onsite fires.	Operation: Ongoing.
<b>Bushfire Management</b>		
Protect the site and plant from bushfire	<p>Application and demonstration of the following:</p> <ul style="list-style-type: none"> <li>Building construction for all aspects of the buildings excluding windows will need to be minimum FRL 30/30/30 where separation of 27m from grassland and 55m from forest is not achieved;</li> <li>Openable portions of windows are to be screened with metal mesh maximum 2mm aperture <b>where separation of 55m from forest is not achieved;</b> and</li> <li>Water requirements. Fire hose reels must be provided, which is capable of reaching all extremities of the proposed development.</li> </ul>	Construction
Vegetation Management: Bushfire Management	<ul style="list-style-type: none"> <li>Maintenance of grass land between the facility and unmanaged grassland of adjoining sites to be mown as lawn.</li> </ul>	Operation: Ongoing
<b>Key Area: Services and Utilities</b>		
Development of un-serviced land	Require services and infrastructure to be delivered prior to the commencement of operation.	Construction, prior to issue of occupation certificate



# CONCLUSION

This RtS report provides a comprehensive and consolidated response to the Government Agency, Industry and Community submissions received in response to the exhibition of the amended EIS (dated November 2016). During the RtS process the proponent and the project team have worked with the NSW DPE and NSW EPA, OEH, and NSW Health in seeking clarification of the technical issues raised to aid in our understanding of the key issues in order to comprehensively address the comments received and work through key matters.

This RtS report, including the proposed amendments to the project and an assessment of these amendments, have been prepared in response to the submissions to the DPE and has resulted in an amendment to the SSDA which is presented under clause 85(2) of the EP&A Regulation and in accordance with the relevant provisions of Division 4.1 of Part 4 of the EP&A Act and SEPP (State and Regional Development) 2011.

The key findings and recommendations of this RtS report are underpinned by a suite of technical reports prepared by a specialist consultant team, these are attached as Appendices A – AA. The technical reports address the amended project definition brief and provide an assessment of the potential environmental impacts that may arise as a result of the proposed construction and operation of Stage 1 of the EfW Facility and the associated works. These technical reports and this RtS report are to be read in the context of the amended EIS.

The modelling and assessment of potential impact has been based on Stage 1 of the proposed facility being the development to which the SSDA, as amended, now relates. This modelling and assessment has demonstrated that the proposed facility when operating at the EU IED control conditions is able to meet the identified environmental criteria and will result in only 'low and acceptable' risks to human health.

This RtS report sets out a comprehensive analysis of the submissions with reference tables (**Appendix A** and **Appendix B**) identifying direct response to each submission within the body of this RtS report, including cross-referencing to the applicable technical appendices. The proposed fuel source (waste feedstock) composition and availability has been further defined to confirm fuel source fractional composition and chemical analysis. The results of the testing confirm the waste quantities to be processed and the Net Calorific Value (NCV) of the fuel as 12.3 MJ/kg. This represents no change to the proposal as detailed in the amended EIS.

The diversion of waste from landfill, reducing the potential for methane emissions, while also providing a form of low carbon, renewable energy, is now recognised by the NSW Government as making an important positive contribution to government targets for managing and minimising waste. The quantity of waste required to fuel the facility (Stage 1) can be sourced within the MLA, this has been determined and demonstrated in accordance with the Resource Recovery Criteria specified in the NSW EfW Policy. The waste source availability results (**Appendix J**) confirm there is sufficient waste available to support the facility at present, and taking into account projected growth in waste generation (due to population increases into the future) that the ongoing operation of the facility will not monopolise the waste market nor will it negatively impact the growth of other resource and energy recovery initiatives.

The potential environmental and social impacts of the EfW Facility have been reassessed and this report and the supporting technical input confirm that any potential impacts of Stage 1 of the proposed EfW Facility being are able to be adequately managed and mitigated through the proposed operational and environmental management controls.

This RtS report has addressed the issues listed in the Director-General's Requirements for the SSDA and provides a complete list of proposed environmental mitigation measures relevant to the amended proposal.

The benefits of this proposed EfW Facility have been described in detail within this RtS report. These benefits in support of the proposal are summarised below:

- The facility will reduce future reliance on landfilling as the sole repository of residual waste.
- The facility is a suitable development for the site and location.
- The facility will be capable of delivering baseload electrical power directly into the State's electricity grid.
- The facility will result in a net positive greenhouse gas effect.

- The facility will assist in minimising the State's reliance on landfill.

The development of this proposal is important from a management of waste perspective and will provide clean energy production to the local community and wider Metropolitan Sydney. In addition to this, there are limited environmental impacts on the locality arising from the proposal. In conclusion, this development represents an appropriate and sustainable development of the site.

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# **APPENDIX A      GOVERNMENT AGENCY AND INDUSTRY SUBMISSIONS SUMMARY AND ANALYSIS**

# **APPENDIX B      COMMUNITY SUBMISSIONS SUMMARY AND ANALYSIS**

# APPENDIX C

# CAPITAL INVESTMENT VALUE REPORT

# APPENDIX D

# PROJECT DEFINITION BRIEF

# APPENDIX E

# ARCHITECTURAL PLANS

# **APPENDIX F      CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN**

# **APPENDIX G      BIODIVERSITY OFFSET STRATEGY & BUSHFIRE ASSESSMENT REPORT**

# APPENDIX H

# CIVIL INFRASTRUCTURE WORKS

# APPENDIX I

# PLAN OF SUBDIVISION

# APPENDIX J

# WASTE MANAGEMENT REPORT

# APPENDIX K

# ASBESTOS TECHNICAL MEMO

# APPENDIX L PLUME RISE ASSESSMENT

# APPENDIX M      BEST AVAILABLE TECHNIQUES

# APPENDIX N AIR QUALITY ASSESSMENT

# APPENDIX O

# HUMAN HEALTH RISK ASSESSMENT

**APPENDIX P**

**NOISE AND VIBRATION ASSESSMENT**

# APPENDIX Q

# ODOUR ASSESSMENT

# APPENDIX R OZONE ASSESSMENT

# APPENDIX S

# VISUAL IMPACT ASSESSMENT

# APPENDIX T

# CONCEPT LANDSCAPE PLAN

# APPENDIX U      TRAFFIC STATEMENT

**APPENDIX V      PRELIMINARY HAZARD ASSESSMENT  
REVIEW**

# **APPENDIX W      AIRSPACE OPERATIONS ASSESSMENT**

# **APPENDIX X      PROOF OF PERFORMANCE**

# APPENDIX Y ABORIGINAL CULTURAL HERITAGE ASSESSMENT

# APPENDIX Z      CONTAMINATION ASSESSMENT

# **APPENDIX AA    NON-ABORIGINAL CULTURAL HERITAGE ASSESSMENT**

# **APPENDIX BB PERCHED GROUNDWATER AND SURFACE WATER ASSESSMENT**

# **APPENDIX CC SUPPLEMENTARY STATEMENT OF COMMITMENT LETTERS**



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