AMENDED ENVIRONMENTAL IMPACT STATEMENT

THE NEXT GENERATION: ENERGY FROM WASTE

HONEYCOMB DRIVE, EASTERN CREEK

SSD 6236
AMENDED EIS & RESPONSE TO SUBMISSIONS
NOVEMBER 2016

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GLOSSARY OF TERMS

ITEM	EXPLANATION
ACC	Air Cooled Condenser
ACHAR	Aboriginal Cultural Heritage Assessment Report
ANZECC/ARMCANZ	National Water Quality Management Strategy: Water Quality Management
APC	Air Pollution Control
APZ	Asset Protection Zones
ATR	Aboriginal Archaeological Technical Report
AWT	Alternative Waste Treatment
BAT	Best Available Technology
BLEP	*Bankstown Local Environmental Plan 1988*
C&D	Construction and Demolition
C&I	Commercial and Industrial
CASA	Civil Aviation Safety Authority
CEMP	Construction Environmental Management Plan
CEMS	Continuous Emission Measuring System
CIV	Capital Investment Value
COAG	Council of Australian Governments
COPC	Chemical of Potential Concern
CPTED	Crime Prevention Through Environmental Design
CPW	Cumberland Plain Woodlands
CRW	Chute Residual Waste
CV	Calorific Value
DACHA	Darug Aboriginal Cultural Heritage Assessments
DADI	Dial a Dump Industries
DALC	Darug Aboriginal Landcare
DCAC	Darug Custodian Aboriginal Corporation
DCP	Development Control Plan
DCS	Distributed Control System
DECC	Department of Environment and Climate Change
Director Generals Requirements	DGR
DICL	Ductile Iron Cement Lined
DIRG	Department of Infrastructure and Regional Development
DLALC	Deerubbin Local Aboriginal Land Council
DLO	Darug Land Observations
DSI	Detailed Site Investigation
DTAC	Darug Tribal Aboriginal Corporation
EfW	Energy From Waste
EHRA	Environmental Health Risk Assessment
EIS	Environmental Impact Statement
enHealth Guildelines	Environmental Health Risk Assessment: Guidelines For Assessing Human Health Risks From Environmental Hazards. Department of Health and Ageing and Enhealth Council, Commonwealth Of Australia.
ENMM	Environmental Noise Management Manual, RMS, 2001.
EPA	NSW Environmental Protection Authority
EPBC Act 1999	*Environment Protection and Biodiversity Conservation Act 1999*
ERA	Extended Regulated Area
ESCP	Erosion and Sediment Control Plan
ESD	Ecologically Sustainable Development
EU	European Union
FGR	Flue Gas Recirculation
FGT	Flue Gas Treatment
FRA	Fire Risk Assessment

GHG	Greenhouse Gas
GHG Protocol	Sustainable Development Greenhouse Gas Protocol
GLC	Ground Level Concentration
GO	Garden/Green Organics
HIL	Health Based Investigation Levels
HIS	Heritage Impact Statement
HV	High Voltage
HZI	Hitachu Zosen Inova
IBA	Incinerated Bottom Ash
ICNG	Interim Construction Noise Guideline, EPA, 2008.
IED	Industrial Emissions Directive
IN1	General Industrial Zone
INP	Industrial Noise Policy's
IRAP	Industrial Risk Assessment Program-Human Health
ISO	International Organization For Standardization
KNAC	Koomurri Ngunawal Aboriginal Corporation
KYWC	Kamilaroi-Yankuntjatjara Working Group
Genesis MPC	Genesis Xero Waste Facility Materials Processing Centre
MPA	Major Project Application
MRF waste	Material Recovery Facility waste
MSW	Municipal Solid Waste
MW	Mega Watts
MWe	Mega Watts of Electrical Energy
NIA	Noise Impact Assessment
NOW	NSW Office of Water
OEH	Office of Environment and Heritage
PAC	Powdered Activated Carbon
PAHs	Polycyclic -Aromatic Hydrocarbons
PCBs	Polychlorinated Biphenyls
PHA	Preliminary Hazard Assessment
PM	Particulate Matter
POEO Act	*Protection Of The Environment Operations Act 1997*
Proposed Facility	Proposed TNG Energy From Waste Facility
PSC	Pre-Sort Centre
Residual Waste Fuel	Feedstock (waste fuel) for the Facility
RMS	Roads And Maritime Services
SCC	Secondary Combustion Chamber
SEPP - ISEPP	State Environmental Planning Policy (Infrastructure) 2007
SEPP (State and Regional Development)	State Environmental Planning Policy (State And Regional Development) 2011
SEPP (WSEA)	State Environmental Planning Policy (Western Sydney Employment Area) 2009
SMA	Segregated Material Stockpile Area
SNCR	Selective Non-Catalytic Reduction
SO2	Sulphur Dioxide
SRF	Solid Recovered Fuel Or Biomass
SSD	State Significant Development
SSDA	State Significant Development Application
SSI	State Significant Infrastructure
TER	Test Excavation Report
The broader site	Lots 1, 2 and 3, In DP 1145808 and Part Lot 8 DP1200048 containing both the proposed development Site and the Genesis Xero Waste Facility
The Precinct	Eastern Creek Precinct
The Proposed Development	Subdivision, construction works and operation of proposed Facility

The Site	The location of the proposed Development including the proposed Facility is referred to as the 'Site'.
TMI	Tolerable Monthly Intake
TNG	The Next Generation NSW Pty Ltd
TOC/s	Total Organic Compound/s
TPA	Tonnes Per Annum
Urbis	Urbis Pty Ltd
USEPA	United States Environment Protection Agency
VOCs	Volatile Organic Compounds
VPA	Voluntary Planning Agreement

DECLARATION

SUBMISSION OF AMENDED ENVIRONMENTAL IMPACT STATEMENT:

Prepared in accordance with Schedule 6 of the *Environmental Planning and Assessment Regulation 2000.*

AMENDED ENVIRONMENTAL IMPACT STATEMENT PREPARED BY:

Names: Stephen White, Director
Rachael Snape, Senior Consultant

Address: Urbis Pty Ltd
Level 23, Tower 2
201 Sussex Street
SYDNEY NSW 2000

In respect of: Energy from Waste, Eastern Creek (SSD 6236)

PROPONENT AND LAND DETAILS

Proponent: The Next Generation NSW Pty Ltd

Proponent Address: 32 Burrows Road, Alexandria NSW 2015

Land to be redeveloped: Honeycomb Drive, Eastern Creek

Legal Description: Pt Lot 1, Pt Lot 2 and Lot 3 in DP1145808

Project Name: Energy from Waste, Eastern Creek

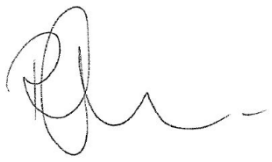
Amended Project Description: The construction and operation of an Electricity Generating Facility which includes:

- Implementation of moving grate technology with an engineered 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 per annum to be implemented over two (2) phases;
- Civil works to include bulk earthworks, road and conveyor construction and installation and connection to utilities and services;
- Tree and vegetation removal; and
- Landscaping and revegetation works.

DECLARATION

I certify that the content of this amended Environmental Impact Statement to the best of my knowledge has been prepared as follows:

- In accordance with Schedule 2 of the *Environmental Planning and Assessment Regulations 2000*;
- In accordance with the requirements of the *Environmental Planning and Assessment Regulations 2000* and State Environmental Planning Policy (State and Regional Development) 2011;
- This statement and its appendices contain all available information that is relevant to the environmental assessment of the proposed development; and
- To the best of my knowledge the information contained in this report is neither false nor misleading.

	Prepared By	**Peer Reviewed**
Name	Rachael Snape	Stephen White
Qualifications	B. Urban & Regional Planning, UNE	B.Sc. Economic Geography, UNSW Masters Urban Development & Design, UNSW
Signature		
Date:	29 November 2016	29 November 2016

PREAMABLE

Energy from Waste (EfW) is a process of thermally treating residual waste fuels to generate electricity and reduce waste going to landfill. The Next Generation, EfW is intended to divert up to 1,105,000 tonnes of residual waste from landfill in Sydney Metropolitan Area and generate electricity for up to 200,000 homes.

The EfW facility will be constructed on part Lot 1, part Lot 2 and Lot 3 in DP 1145808 within the Eastern Creek Industrial Estate, Eastern Creek (the site). The broader site presently supports an established waste recovery facility and material processing centre known as Genesis Xero Waste as well as a former quarry now utilised as a waste landfill for materials that cannot be reused or recycled. The Facility will have direct synergies with the existing Genesis Xero Waste Facility located immediately north of the Facility to allow for the transfer, via an underground culvert, of appropriate waste materials.

The proposed Facility comprises an *Electricity Generating Works* with a capital investment value of approximately $557,902,333 and is defined as State Significant Development under State Environmental Planning Policy (State and Regional Development) 2011.

THE APPLICANT

The Next Generation NSW Pty Ltd, a stand-alone company, has been formed by Dial a Dump Industries and Genesis Xero Waste Facility.

BACKGROUND AND PURPOSE OF THIS REPORT

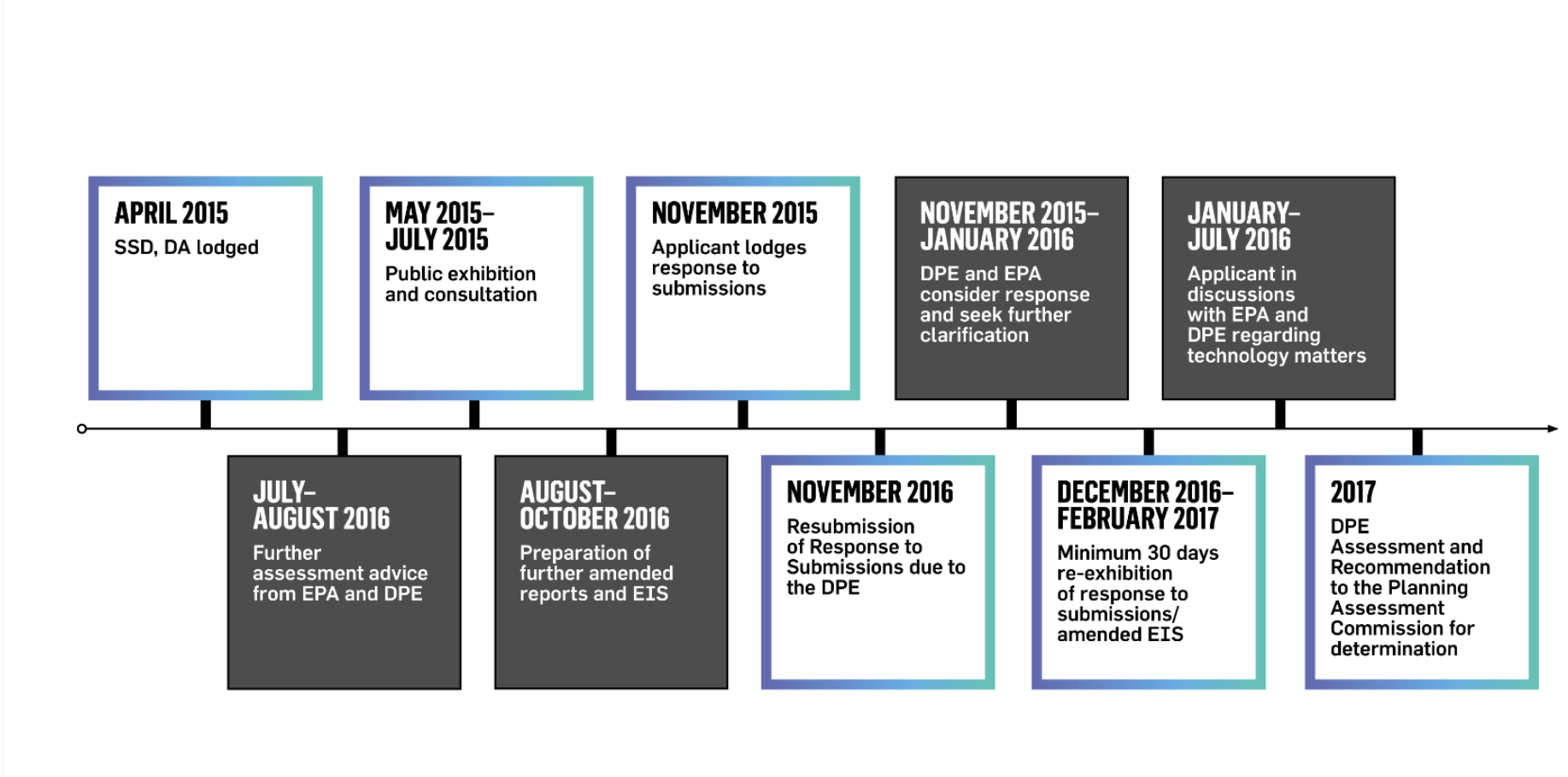
The State Significant Development Application was lodged in April 2015 and accompanied by an EIS, that was placed on public exhibition between 27 May 2015 and 27 July 2015. During this time the community, key stakeholders and interest groups were invited to make a submission either using the online submission tool on NSW Department of Planning and Environment (DPE) website or by providing a written submission.

An overview of the project time line and progress since lodgement in April 2015 is provided in Figure 1**.** This document incorporates and provides a Response to Submissions as required under Division 6 and clause 85A (2) of the *Environmental Planning and Assessment Regulation 2000* (The Regulations).

In responding to the submissions and assessment outcomes, the technology report initially prepared by Fichtner has been superseded by the Ramboll Project Definition Brief (PDB). Accordingly, to align the proposed development with the project definition brief, the application has been formally amended in accordance with clause 55 of the Regulations. This amended EIS provides:

- an overview of the amended Project:
- details of the proposed amendments and additional investigations that have been undertaken since the public exhibition of the EIS;
- a response matters raised by the Department of Planning and Environment, NSW Environmental Protection Authority (and their appointed experts ARUP and EnRisK);
- responses to matters raised in community and agency submissions;
- an updated environmental assessment foe the project that considers all amended and additional information that has been developed since exhibition in November 2015; and
- an updated risk assessment matrix combined with a revised and consolidated list of environmental management measures proposed for the Project (including revisions made through design changes and additional investigations).

Figure 1 – Project timeline and progress



SUMMARY OF CONSULTATION OUTCOMES, SUBMISSIONS AND KEY ISSUES

A total of 45 submissions were made to the Department of Planning and Environment in response to the exhibition of the EIS and included:

- 45 individual submissions (at least two submitters made more than one (1) submission); and
- An online petition prepared by the *"concerned residents group of western Sydney"* that was signed by 200 members of the public. As a petition the issues raised are considered as a single submission.

A summary of origin of the submissions and the nature of the response is provided in Table 1.

Table 1 – Summary of submissions

Position	Community	Government & Agency	Organisation	Total
Support	Nil	1	Nil	1 (2.17%)
Object	25^	3	5	32 (71.7%)
Comment	1	9	2	12 (26.0%)
Total	**26**	**20***		**46**

* Both Penrith City Council and the Boomerang Alliance made two (2) submissions.

^ includes online petition as one (1) submission of objection.

Key Issues

A summary of the key matters raised in the submissions across both broad stakeholder groups, are summarised in the table below.

Issue	Community	Agency/Government/Organisations
Heritage/Archaeology		✓
Civil		✓
Consultation	✓	✓
Construction		✓
Contamination		✓
Flora and Fauna	✓	✓
Hazard and Risk (storage of materials/Fire)		✓
Human Health Risk	✓	✓

Issue	Community	Agency/Government/Organisations
Noise	✓	✓
Airspace Operations		✓
Odour	✓	✓
Air Quality/GHG	✓	✓
Soil and Water	✓	✓
Town planning		✓
Technology	✓	✓
Traffic and Transport	✓	✓
Visual Impact	✓	✓
Waste Management	✓	✓
Location of Facility	✓	
Economic and Social Impacts	✓	

SUMMARY OF AMENDMENTS AND ADDITIONAL INFORMATION

An application for approval of an Electricity Generating Facility under section 89D(1) of the *Environmental Planning and Assessment Act 1979* was lodged with the Department of Planning and Environment in April 2015. An Environmental Impact Statement (EIS) was prepared and placed on exhibition from 27 May 2015 to 27 August 2015. 43 submissions including one (1) petition were recorded in response to the exhibition of the EIS of the project.

The purpose of this report is to amend the EIS and SSD, DA in accordance with clause 55 of the *Environmental Planning and Assessment Regulation 2000* and provide a response to submissions aimed at:

- describing the changes made to the proposal since the public exhibition of the EIS;
- provide an updated environmental assessment for the proposal, that considers the changes and associated technical and environmental assessment reports that amended as a consequence of the amended project definition brief; and
- responding to the submissions made as part of the public exhibition of the EIS.

In response to the issues raised during the submission and exhibition process the following changes have been made:

- Reduction in the identified volume of residual waste to be thermally treated from 1.35 million tonnes to a maximum of 1.105 million tonnes per annum;
- 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; and

- Modified subdivision layout and amendment to the description of land to which the application relates to part Lot 1, part Lot 2 and Lot 3 in DP 1145808.

Combined with the above, the amended application seeks to withdraw and replace the Fichtner concept design report with the Ramboll Project Definition Brief. In general, the 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.

The key areas of the project amended by the Project Definition Brief, include:

- Adoption of a design capacity of 1.35M tonnes;
- Amended design fuel profile and composition;
- Amended waste volume outputs (Ash and APC volumes); and
- Refined technology design that optimises the SNCR to reduce NO_x emissions.

As outlined above, the Ramboll Project Definition Brief forms the basis of the project design providing key parameters on which other key technical documents have been prepared. Accordingly, the following technical reports have been amended:

- Air Quality and Greenhouse Gas Report;
- Ozone Report;
- Odour Impact Assessment Report;
- Noise and Vibration Report;
- Human Health Risk Assessment Report; and
- Traffic Impact Statement.

As the facility has a technological design capacity of the of 1.35 million tonnes this has been adopted as a "worst case scenario" and forms the basis of all technical and environmental assessments.

In conjunction with the project amendments, further technical information and reports has been prepared or sourced to respond to matters raised by Agencies and Government in response to exhibition. These additional reports include:

- A plume rise assessment report to consider the potential for stack emissions to affect aircraft;
- An airspace operations assessment to consider the potential for emissions stacks to interfere with existing or future Obstacle Limitation Surfaces or PAN OPS of airports within the Sydney Metropolitan Area;
- An assessment of the development against the Best Available Technology;
- Historical contamination investigations undertaken during 1994 and 1998;
- The development of an ongoing community consultation strategy to be implemented post consent; and
- Development of a Proof of Performance Framework to align with the NSW EPA Energy from Waste Policy.

Table 2 provides a high-level summary of the key amendments in the project since exhibition.

Table 2 – Summary of amendments

Project Item	Exhibited EIS	Amended EIS
Amended land description	Lots 1, 2, 3 and 4 in DP 1145808.	part Lot 1, part Lot 2 and Lot 3 in DP 1145808
Subdivision	11 industrial lots	Three (3) lots.
Technological Design Capacity	1.35M tonnes per annum	1.35M tonnes per annum
Facility Processing Volumes (per annum)	Thermal treatment of maximum 1.35M tonnes per annum of residual waste fuels.	Thermal treatment of a maximum of 1.105M tonnes per annum of residual waste fuels. Implemented over two (2) phases each 552,500 tonnes.
Technology Engineering	Concept Definition Report prepared by Fichtner	Project Definition Brief prepared by Ramboll
Design Fuel	Inconsistent design fuels identified in the EIS, Fichtner Concept Report and the Waste Management Report.	Consistent Design Fuel profile adopted across all technical reports.
Chemical Profile of Design Fuel	Difference in the design fuel profile, contributed to inconsistencies in the chemical profile of the design fuel.	As above, removing the Ftchtner report has allowed for adoption of a consistent chemical profile.
Waste Outputs	**Fichtner/Concept Design Report:** • Bottom ash (wet): 321,000 tpa; and • APC: 51,700 tpa	**Ramboll/Project Definition Brief:** • Bottom ash (wet): 400,000 tpa; and • APC: No change.
Waste output – reuse.	Proposed re-use of ash materials as road base or similar.	Does not propose the reuse of any ash or residue material
Vehicle Movements	454 vehicles per day	614 vehicles per day: • 110 cars; and • 504 trucks.
Parking Numbers and Layout	40 parking spaces, over two (2) car parks	42 spaces, three (3) car parks.
Greenhouse Gas Emissions	Net positive 1.5 million tonnes CO_2 (i.e. emissions diverted)	Net positive 2.99 million CO_2 (i.e. emissions diverted)
In-stack emissions (as the basis for Air Quality Assessment).	Emission rates based on IED Limits.	Used in-stack emissions data for existing operating EfW facilities.

Project Item	Exhibited EIS	Amended EIS
Flue Gas Treatment	Selective Non-Catalytic Reduction (SNCR)	Optimised SNCR design to reduce NO_x emissions
Proof of Performance Framework	Not specified.	Proof Performance Framework developed to support implementation and testing of facility before full operation commences.
Job creation	• 55 operational full times jobs; and • 250 construction jobs.	• 55 operational full times jobs; and • 500 construction jobs.

SUMMARY OF POTENTIAL IMPACTS

This amended Environmental Impact Statement includes a detailed re-assessment of the potential environmental and social impacts of the Energy from Waste Facility and has sought to provide clear and aligned management, mitigation and offset measures that will be implemented as part of the proposed development.

It is noted that in many cases the amendment of the proposal, to include the refinement of the facility design, including the operational and environmental management controls inherent to operation of the Facility adequately manage the potential impacts. A summary of the key findings of the assessment is provided in Table 3 below.

Table 3 – Overview of Potential Impacts and Mitigation

Environmental/Social Issue	Overview of Potential Impacts and Mitigation/environmental control measures
Waste	• The proposed Facility will generate the following solid, liquid and gaseous waste streams: • Ash Residue (bottom ash, boiler ash, Air Pollution Control [APC] ash) • Gaseous emissions (pyrolytic gas) • The operational controls and procedures described below will adequately manage the potential impacts of residual wastes from the EfW process. • 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, which will be recycled. • APC residue ash 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.

Environmental/Social Issue	Overview of Potential Impacts and Mitigation/environmental control measures
	• Boiler ash 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. • In addition, further operational controls and procedures will be detailed and documented in an Environmental Management Plan before operation to further support the above controls.
Air Quality	• The primary emissions from the proposed Facility, as defined by emission limits for waste incineration set by the Industrial Emissions Directive (2010/75/EU), are: – Particulate matter (PM), assumed to be emitted as PM_{10} and $PM_{2.5.}$ – Hydrogen Chloride (HCl). – Hydrogen Fluoride (HF). – Carbon Monoxide (CO) – Sulphur Dioxide (SO2). – Oxides of nitrogen (NOx).(expressed as Nitrogen Dioxide (NO_2)). – Heavy metals (including Mercury (Hg), Cadmium (Cd), Arsenic (As), Chromium (Cr). – Gaseous and vaporous organic substances (expressed as total organic carbon (TOC)). – Dioxins and furans. • Flue gas treatment is incorporated into the design of the Facility and is designed to meet the in-stack concentrations limits for waste incineration set by the Industrial Emissions Directive (IED) (2010/75/EU). The BAT includes Selective Non-Catalytic Reduction (SNCR) for reducing emissions of NOx. VOCs will be minimised through combustion control with additional controls afforded from activated carbon injection as part of the flue gas treatment. • Mitigation measures implemented into the operation and design of the EfW facility.
Human Health	• The proposed Facility may release substances to atmosphere which have the potential to harm human health. • The total intake for all receptors is well below the Tolerable Monthly Intake (TMI).

Environmental/Social Issue	Overview of Potential Impacts and Mitigation/environmental control measures
	• Mitigation measures implemented into the operation and design of the EfW facility.
Odour	• Operation of the proposed Facility is not anticipated to result in an adverse impact on the local air environment in reference to odour. • All waste storage and unloading will take place within the tipping hall building, which is kept at negative pressure with air extracted from the building used as combustion air in the boiler. • No mitigation required.
Noise	**Construction noise:** • Construction noise impacts are anticipated at both residential and industrial receivers. Exceedances at residential receivers are minor (1dBA above the acceptable criteria level) and were predicted on the assumption of all plant operating simultaneously at the boundary. As this is unlikely to the be the case, development and implementation of noise management measures can reduce the predicated impact. • Industrial receivers, in particular Hanson will be exposed to high noise levels in early and late phase construction. However the site is currently vacant. **Operational Noise.** • Operational noise emissions from the facility would comply with the most stringent criteria under both neutral and adverse meteorological conditions. In light of the predicted exceedances at the Hanson Facility and residential receivers in Erskine Park for selected scenarios a construction noise management plan will be developed to mitigate these exceedances.
Soil and Water	• Groundwater flows are low and saline, with low hydraulic connectivity to the tributary. .Accordingly the contribution of groundwater flows to supporting groundwater dependant ecosystems (GDE) is considered to be limited. • Soil character is highly erodible and dispersive and will require soil and erosion control measures during earthworks. Laydown pads should be stabilised as soon as practicable with a suitable groundcover. • DSI confirms that soil is suitable for use in commercial and industrial contexts. Cut and fill of the site will utilise spoil from the site and import clean fill for the balance. • The site has been designed to avoid impact from intermittent flooding of the tributary, with the facility 2 metres above the flood level.

Environmental/Social Issue	Overview of Potential Impacts and Mitigation/environmental control measures
	• Adequate and appropriate stormwater management has been provided to the south of the site and is consistent with the design requirements of Blacktown City Council.
Traffic and Parking	• The increase in vehicle trips associated with the construction and operation of the proposed Facility can be readily accommodated by the surrounding road network with no change to existing Level of Service. • No mitigation required.
Biodiversity	• Approximately 0.27 ha Cumberland Plain Woodland and 2.89 ha Eucalypt River-flat forest will be cleared for the Development. Eight habitat trees within the proposal footprint will be cleared. • Offsetting will be achieved with approximately 0.54 ha of Cumberland Plain Woodland and 4.98 ha of River Flat Eucalypt Forest to be regenerated or replanted. • The loss of hollow-bearing trees will also be offset through the installation of twenty fauna roosting/nesting boxes. • Sediment fencing, weed removal, locally indigenous landscape planting, and stormwater quality discharge control will also be adopted as mitigation measures. • A pre-clearance 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.
Aboriginal Cultural Heritage	• An Aboriginal heritage artefact assemblage is located within the development footprint. • To mitigate against the Facility's development impacts, the found artefacts will be reburied within the riparian area within 'EFW South' as it will not be impacted by any future development works. This location was supported by the identified Aboriginal Stakeholders. No further impacts are anticipated.
Visual	• From most locations, the lower parts of the Facility will be totally obscured from view. Where views are possible, these will generally be of the upper parts of the buildings and the slender twin vent stacks protruding above the tree canopy or building line. • Proposed landscaping will assist in softening the appearance of the Facility.

Environmental/Social Issue	Overview of Potential Impacts and Mitigation/environmental control measures
	• All external lighting associated with the Facility will comply with Australian Standard AS 4282: 1997 – *Control of the Obtrusive Effects of Outdoor Lighting*.
Greenhouse Gas	• The operation of the proposed Facility would have a net positive GHG effect, potentially eliminating approximately 3 million tonnes of CO_2-e per annum. The emission intensity for electricity generated from waste incineration is significantly lower than that derived from the current NSW electricity grid. • No mitigation required.

This amended EIS includes commitments by The Next Generation NSW regarding the implementation of comprehensive management, mitigation and offset measures to minimise and counterbalance predicted impacts of the proposed development. These commitments are detailed in **section 27.**

The proposed development has been assessed against the principles of Ecologically Sustainable Development as required by the *Environmental Planning and Assessment Act 1979* (the Act). This assessment concludes the proposed Development is consistent with the principles of Ecologically Sustainable Development providing inter-generational equity through a clean and reliable form of energy generation.

PROJECT OBJECTIVES AND JUSTIFICATION

The main objectives of the proposed Development remain consistent with the original application:

- 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 deliver a net positive Greenhouse Gas effect, eliminating approximately 3 million tonnes of CO^2 per annum;
- 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. The proposed Facility utilise proven technology that currently operates reliably in the United Kingdom and continental Europe and has a successful track record in treating a wide range of residual waste fuels that are comparable to those that will be treated by TNG.

The importance of the recovery of energy from waste as part of effective waste management is reflected in *NSW Energy from Waste Policy Statement 2014.*

> *The Environmental Protection Authority (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. Energy from waste can be a valid pathway for residual waste where:*

- *Further material recovery through reuse, reprocessing or recycling is not financially sustainable or technically achievable;*

- *Community acceptance to operate such a process has been obtained.*

The NSW Government recognises the diversion of waste from landfill, and consequent reduction in potential for methane emissions, and the provision of low carbon, renewable energy, as important contributions for dealing with NSW waste challenges.

It is considered the 'Do Nothing' scenario is not appropriate given the established need for new energy generation, including a need for low carbon generation. The alternative to the proposed Development proceeding would be continued operation of traditional landfill waste management operations which have been found to be inefficient and undesirable as a long term sustainable solutions to Sydney's expanding population and increasing waste generation.

The selection of the site for the proposed Development is directly related to its proximity to the M4 and M7 motorways, local electricity grid, and the direct synergies between the proposed Development and the adjoining Genesis MPC currently in operation which will provide a high percentage of the waste fuels.

The proposed Development represents a positive development outcome for the following reasons:

- The proposed Facility will provide the State of NSW with the world's leading technology to break reliance on landfilling in the future.
- The proposed Facility will provide a safe, clean and reliable form of energy generation for Metropolitan Sydney now and in the future, while providing a means of waste management resulting in improved management or reduction for the need for landfill in the Metropolitan Sydney;
- The proposed Facility provides a sustainable solution to Sydney's growing waste generation.
- The proposed Facility will result in a net positive Greenhouse Gas effect, eliminating the emission of approximately 3 million tonnes of CO^2 per annum from landfill.
- No adverse impacts will be experienced by residential properties as the development is well separated from residential uses.
- The proposed 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 proposed Development is accompanied by a full suite of expert reports and drawings which address all the issues contemplated by the DGRs i.e. 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 Development is in the public interest in that it 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.

Given the benefits of the proposed Development, its importance for the management of waste and clean energy production to the local community and wider Metropolitan Sydney, and given that there are minimal environmental impacts on the locality, the State Significant Development is considered worthy of support.

1. INTRODUCTION

1.1. OVERVIEW

Since lodgement of the SSD, DA in April 2015 the scope of the development has been amended to respond to matters raised by assessment authorities and the community. Accordingly, pursuant to clause 55 of the *Environmental Planning Assessment Regulation 2000* the matters set out in this amended EIS and the appended documentation are intended to be an amended application for the purposes of the Act and the Regulations.

The amended Environmental Impact Statement (EIS) has been prepared in support of a Development Application for State Significant Development pursuant to Division 4.1 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

The application seeks consent for a Project Approval involving the construction and operation of an "*electricity generating facility"* utilising Energy from Waste technology to thermally treat a range of non-putrescible residual waste fuels.

The development site is located in the Western Sydney Employment Area of Eastern Creek, and forms part of larger landholding that will deliver an integrated approach to waste management, that aligns with the NSW EPA Waste Management hierarchy offering a viable and beneficial alternative to landfill whilst ensuring that avoiding, recycling and reusing waste materials where possible is at the forefront of the process.

The main objective of the proposed Facility is to provide an alternative use for non-reusable or recyclable waste. The outcome being improved resource efficiency and increase in the sustainability of our communities, businesses and industries

Extensive liaison with European technology and engineering specialists has informed the design which will utilise tried and proven moving grate technology. Energy from Waste is the generic term given to a process by which the energy stored in waste (chemical energy) is extracted in the form of electricity, heat and/or a fuel for use in a decentralised energy generation plant.

The Facility will be designed to meet the emission limits contained within the Chapter IV and Annex VI if the Industrial Emissions Directive (IED) (Directive 2010/75/EU) for waste incineration and co-incineration plants.

This amended EIS has been prepared in accordance with the following:

- Division 4.1 of the Environmental Planning and Assessment Act 1979 (the Act);
- Schedule 2 of the Environmental Planning and Assessment Regulation 2000; and
- The Director Generals Requirements (DGRs) issued under section 78A(8A) of the Act.

Under section 89D(1) of the Act, the SSD, DA is lodged with the Department of Planning and Environment and determined by the Minister.

In summary, the amended Development Application for State Significant Development (SSD_6236) seeks consent for project approval involving construction and use of "*electricity generating facility"* utilising energy from waste technology. The amended development will generally include the following:

- Implementation of moving grate energy from waste technology with the 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 to be implemented over two (2) phases;
- Civil works to include bulk earthworks, road construction and installation and connection to utilities and services;
- Tree removal; and
- Landscaping and revegetation works.

This amended EIS has been prepared by Urbis on behalf of the proponent, The Next Generation. The Director General's Requirements (DGRs) for the project were issued in December 2013 which identifies 11 key areas to be addressed in the preparation of the amended EIS.

This amended EIS has been prepared in accordance with Schedule 2 of the *State Environmental Planning Policy (State and Regional Development) 2011* and the DGRs. The amended EIS includes the following sections:

- **Context and Site:** Provides a description of the EfW plant site, and the local and wider regional context. This section also outlines the constraints and opportunities identified for development of the site.
- **The Proposal:** Provides a description detailed description of the proposed works, construction and operation including an explanation of key technology and processes.
- **Justification and Assessment of Alternatives:** Details the justification for the proposed works which will facilitate the future development of the site and consideration of alternatives.
- **Consultation:** Details the consultation process undertaken to date and the specific consultation undertaken as a part of this application.
- **Planning Framework Assessment:** Provides a detailed review of the proposal against the commonwealth, state and local planning framework including an assessment of statutory and strategic planning considerations.
- **Environmental Assessment:** Details an in-depth assessment of the existing environment and the potential impacts for each of the key criteria in the DGRs.
- **Risk Assessment:** A risk assessment matrix summarises all potential impacts and their likelihood of occurring and sphere of influence has been prepared and includes an indication of the mitigation response proposed to be implemented.
- **Recommendations and Mitigation Measures:** Provides a consolidated list of recommendations and mitigation measures based on the technical studies undertaken as part of this application.
- **Conclusion:** Provides a summary of the impact assessment with concluding comments.

The proposal is supported by specialist consultant reports provided in the appendices of this report, together with plans detailing the proposed works. These technical studies were undertaken to assess specific potential environmental impacts. This submission consists of this amended EIS and supporting documentation (**Appendices A to LL**).

1.2. PROJECT OBJECTIVES

The core project objective is to construct and operate an energy from waste facility. The facility will have a technological capacity to process up to 1.35 million tonnes of residual waste fuels for which there is no higher order or economic use. The main objectives of the proposed development are:

- To offer a viable alternative to the burning of fossil fuels by utilising a green and renewable energy source capable of servicing approximately 200,000 homes through the export of 137.3 MW energy;
- To deliver a net positive Greenhouse Gas effect, eliminating some 3 million tonnes of CO_2 per annum;
- To reduce the demand and need for landfill in the Metropolitan Sydney;
- To provide New South Wales with the highest standard of technology for Energy from Waste that compliments the *EPA NSW Energy from Waste Policy* utilising technology that is tried and proven and assists in the delivery of the targets of NSW Renewable Action Plan;
- To create a consistent source of green energy back into the 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 land with high conservation value.

Additionally, the proposed development supports the objectives of the state significant employment land (as outlined within the (SEPP (WSEA)) in that it:

- Promotes the economic use of land;
- Reflects a coordinate approach to planning by clustering compatible land uses involved in the waste recovery and management industry allowing for economic efficiencies, securing long term delivery of jobs to the local area;
- Seeks to create additional employment within the Western Sydney Employment Area, directly employing 55 staff and up to 500 during construction stage;
- Promotes positive environmental goals through the reduction of Greenhouse Gas emissions and leachate associated with landfill operations;
- Is consistent with established land uses on the immediately adjacent sites; and
- It seeks to provide a safe, clean and reliable form of energy generation for Metropolitan Sydney and contributes to alternative energy sources other than the burning of fossil fuels.

1.3. VALUE OF PROJECT

The project has Capital Investment Value (CIV), as defined under clause 3 of the *Environmental Planning and Assessment Regulation 2000*, is $557,902,333.

A Quantity Surveyors Certificate of cost prepared by MMDC certifying the CIV of the proposed development is attached as **Appendix I**.

1.4. DIRECTOR GENERALS REQUIREMENTS

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 a full copy is included at **Appendix B**.

Table 4 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 4 – Summary of the DGRs

Director General's Requirements	Amended EIS Reference	Appendix
ENVIRONMENTAL IMPACT STATEMENT: GENERAL REQUIREMENTS		
detailed description of the site, and any existing or approved operations	Section 2	N/A
detailed description of the development, including:	Section 3 and 4	Appendix A

Director General's Requirements	Amended EIS Reference	Appendix
• likely interactions between the development and existing, approved and proposed operations in the vicinity of the site;	Section 27	N/A
• consideration of any relevant statutory provisions;	Section 8	N/A
• risk assessment of the potential environmental impacts of the development, identifying the key issues for further assessment;	Section 26	N/A
• detailed assessment of the key issues specified below, and any other significant issues identified in this risk assessment;	Sections 9 - 25	N/A
• consolidated summary of all the proposed environmental management, mitigation and monitoring measures, highlighting all commitments included in the EIS.	Section 28.2	N/A
• a detailed calculation of the capital investment value (CIV) of the development (as defined in clause 3 of the *Environmental Planning and Assessment Regulation 2000*), 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	Section 1.3	Appendix I
• a close estimate of the jobs that will be created by the development during construction and operation;	Section 3.4; Section 4.7.3	N/A
KEY IMPACTS		
Strategic Planning	Section 7	N/A
Waste Management	Section 10	Appendix J
Air Quality and Human Health	Sections 11 & Section 17	Appendices K and N
Odour	Section 14	Appendix L
Noise and Vibration	Section 15	Appendix O
Soils and Water	Section 16	Appendix P
Traffic and Transport	Section 18	Appendix Q
Hazards and Risk	Section 23 & 24	Appendix Y

Director General's Requirements	Amended EIS Reference	Appendix
Flora and Fauna	Section 19	Appendix G
Visual, including photomontages, plume assessment & airspace operations	Section 20 & 21	Appendices H, EE and FF
Greenhouse Gas	Section 12	Appendix K
Aboriginal and non-Aboriginal Cultural Heritage	Section 22	Appendices T and U
PLANS AND DOCUMENTS		
The EIS must include the following:		
• Architectural drawings	Section 3	Appendix C
• Site Survey Plan, showing existing levels, location and height of existing and adjacent structures/buildings and boundaries;	N/A	Appendix A
• Site Analysis Plan;	N/A	Appendix C
• Stormwater Concept Plan including easements and associated overland flow paths;	N/A	Appendix E
• View Analysis/Photomontages; Shadow Diagrams;	Section 20	Appendix C
• Landscape Plan;	Section 9.2	Appendix D
• Preliminary Construction Management Plan	Section 3	Appendix BB
• Schedule of materials and finishes.	Section 3.3.4	Appendix C
CONSULTATION		
Details of consultation with relevant local, State and Commonwealth Government authorities, and community stakeholders.	Section 6	Appendices W & II

1.5. SUPPORTING TECHNICAL STUDIES AND DOCUMENTATION

The SSD, DA is supported by specialist consultant reports provided in the appendices of this amended EIS as noted above. These technical studies were undertaken to inform the design of the proposed Facility and associated works in the context of future land uses, urban structure and built form and to assess potential social and environmental impacts.

The amended EIS was prepared based on all documents listed at the front of and appended to this Statement.

1.5.1. Amended Reports

The following documentation has been amended following exhibition and amendment of the application:

- Air Quality and Greenhouse Gas Report;
- Ozone Report;
- Odour Impact Assessment Report;
- Noise and Vibration Report;
- Human Health Risk Assessment Report;
- Traffic Impact Statement; and
- Waste Management Report.

1.5.2. Addenda Submissions

As this amended EIS also incorporates a response to submissions in accordance with clause 85A (2) a range of addenda reports were prepared to supplement and clarify the proposal. These addenda reports are provided at **Appendix HH** and include the following:

- AT&L Civil Response and Addenda to Civil Infrastructure Report;
- Edison Environment Addenda Soil and Water Report;
- Abel Ecology Addenda Flora and Fauna Assessment Report; and
- DADI Response Report.

Where relevant to details provided in these addenda report have been incorporated into the environmental assessment of the amended project.

1.6. REPORT STRUCTURE

The amended EIS is structured as follows:

- **Section 2 – Site Context Analysis:** Provides a description of Site and broader site, the regional and local context and an assessment of the opportunities and constraints presented by the Site.
- **Sections 3 and 4 – The Proposed Development:** Provides a description of the construction and operation phases of the development, including staged implementation.
- **Section 5 – Analysis of Feasible Alternatives:** Analysis of alternatives considered during the design process.
- **Section 6 – Consultation:** Details the consultation process and outcomes from discussions with local, State and Federal agencies and the community. Combined with an overview of the outcomes of exhibition and assessment 2015 – 2016.
- **Section 7 – Strategic Planning Context:** Provides a review of the proposed Development in light of the applicable strategic policy documents.
- **Section 8 – Statutory Planning Framework:** Provides a detailed review of the proposed Development against the Federal, State and local planning framework.
- **Section 9 – 26 Assessment of Key Issues:** Details an in-depth assessment of the existing environment, the potential impacts and mitigation measures for each of the key criteria in the SSD, DA DGRs.
- **Section 27 – Risk Analysis –** Identification of key risks.
- **Section 28 – Cumulative Impacts and Mitigation Measures:** Description of the measures proposed to mitigate any adverse effects of the development on the environment.

- **Section 29 – Justification:** Provides justification for the proposed Development.
- **Section 30 – Summary and Concluding Comments:** Provides a detailed summary of the impact assessment with concluding comments.

2. CONTEXT AND SITE ANALYSIS

The ‘development site’ for The Next Generation (TNG) EfW forms part of a larger landholding (outlined in blue) owned by the same corporate that also contains the Genesis Xero Waste Facility and landfill and is referred to as the ‘broader site’ (outlined in blue in Figure 2 below). The “development site” is the site of the future EfW plant and is shown hatched red in Figure 2 below.

Figure 2 – Regional Context Aerial

2.1. REGIONAL CONTEXT

The broader site is located within the Eastern Creek Precinct (the Precinct) which is strategically located in Central Western Sydney, approximately 36 kilometres from the Sydney CBD, 18 km west of Parramatta and 12 km east of Penrith. The Precinct is prominently located west of the corner of the M4 Motorway and Wallgrove Road, where the M4 Motorway intersects the M7 Motorway (refer to Figure 3).

The broader site is linked to Sydney CBD in the east and the Blue Mountains in the west by the M4 Motorway. While the M7 Motorway provides connections to Sydney’s orbital motorway network, north to the M2 and south to the M5 with links to Port Botany shipping terminal, Sydney’s international and domestic airports, and Canberra.

Land use in the region includes residential, commercial and industrial developments, small rural and rural residential allotments combined with unimproved greenfield sites with varying levels of vegetative cover and environmental constraint. The land north of the M4 Motorway comprises a disused animal quarantine station, lawn cemetery and crematorium, and the Minchinbury industrial and residential area. Land to the west forms part of the Ropes Creek regional open space corridor and is located within the adjoining Local Government Area of Penrith.

The land, including the development site, lies within Blacktown Local Government Area. Fairfield Local Government Area adjoins the Precinct immediately to the south, and Penrith Local Government Area to the west. Land to the east of Wallgrove Road forms a north-south green belt, providing open space, a range of recreational opportunities and a visual and physical break between areas of urban development, including the Prospect Reservoir.

2.2. LOCAL CONTEXT AND SURROUNDING DEVELOPMENT

The broader site is accessed via Honeycomb Drive at Eastern Creek. The M4 motorway runs adjacent to the northern boundary of the broader site. Archbold Road forms the western boundary with a buffer of unoccupied land further to the west and open grazing land to the south and along part of its eastern boundary. The remaining part of the eastern boundary of the broader site is occupied by the Hanson Asphalt Batching Plant and the Hanson yard ('Hanson site') (refer to Figure 3).

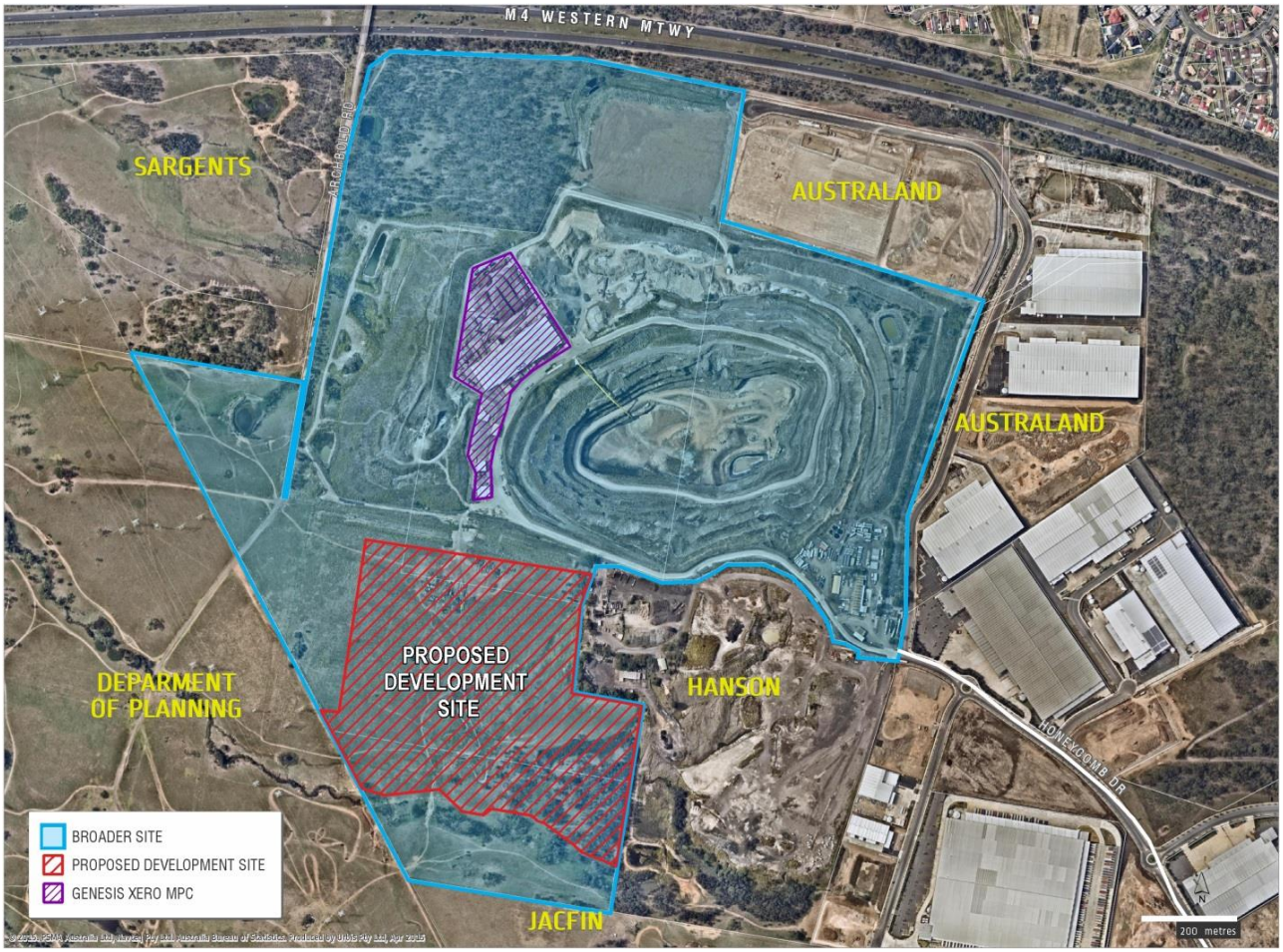
Figure 3 – Local Context Map

As shown in Figure 3and Figure 4**,** land adjoining the boarder site boundaries is owned by:

- The Corporate Group Alexandria Landfill Pty Ltd;
- ThaQuarry Pty Ltd;
- Australand;
- Hanson;
- Jacfin;
- The Department of Planning and Environment; and
- Sargents.

The above sites are identified for potential redevelopment for higher end industrial and employment uses over the next decade under the State Environmental Planning Policy (Western Sydney Employment Area) (SEPP (WSEA)). The location of these properties is indicated in Figure 4.

Figure 4 – Surrounding land ownership



As shown in Figure 3 the nearest residential areas include:

- Minchinbury approximately 1 kilometre from the northern boundary of the broader site; and
- Erskine Park, approximately 1km west of the broader site.

All are low density residential housing areas, characterised by single and two (2) storey dwelling houses with private open space. Combined with local public recreation and open space areas.

2.3. SITE DESCRIPTION

The broader site is legally described as Lots 1, 2 and 3 in DP 1145808 and Lot 8 in DP1200048. A detailed survey is provided in **Appendix A**. The site is located on Honeycomb Drive, Eastern Creek, and is situated in the area known as the M7 Business Hub, a major employment hub for Western Sydney. The proposed Development will be sited on part Lot 1 and part Lot 2 and Lot 3 in DP 1145808.

The site description has focused on that area of defined as the development, located to the south of the broader site.

2.3.1. Existing Site Layout and Improvements

The southern portion of part Lot 1 and part Lots2 and all of Lot 3 in DP 1145808 are currently undeveloped and classified as a “Greenfield” site. The broader site generally falls from the north-east corner at RL78.99 down to the south west corner at RL 54.2 adjacent a Ropes Creek tributary to the south of the development.

The Alexandria Landfill Group currently operates a state of the art construction and demolition waste and commercial and industrial waste material processing centre and landfill known as Genesis Xero Waste Facility, within Lot 1 immediately adjacent to and north of the proposed Facility location. The landfill associated with this facility is located over part lot 1 in DP 1145808 and Lot 8 in DP1200048 (refer to Figure 33).

Figure 5 shows the approved layout of existing operations on the adjacent land to the north, including the spatial relationship of the existing MPC and landfill operations.

Figure 5 – Existing site layout (Source: Axis Architectural)

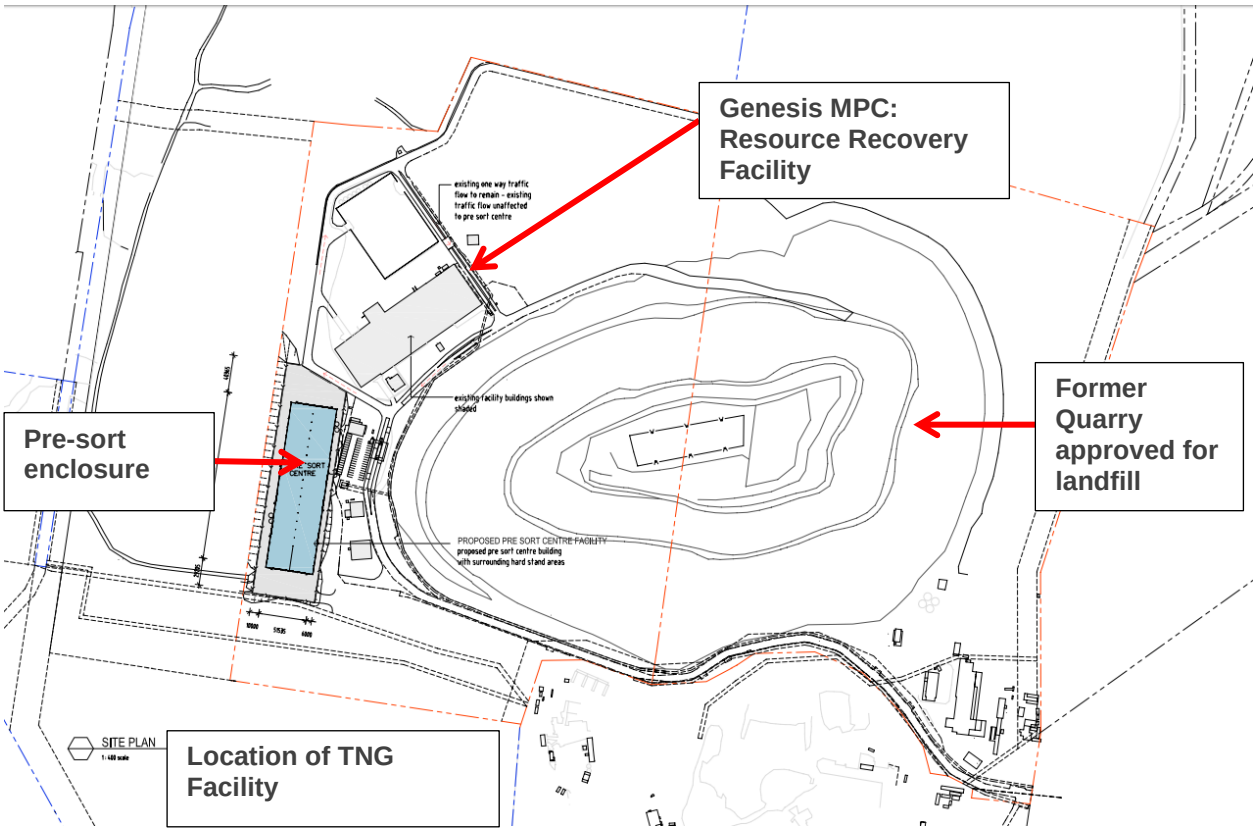


Figure 6 – View of existing site layout and operations

Picture 1 – Genesis Xero Waste MPC and Landfill

Source: TNG

Picture 2 – Genesis MPC

Source: TNG

2.3.1.1. Current Operations

The current operation of the site commenced in November 2009 following the issue of MP_06_139 to ThaQuarry Pty Ltd and ACN 114 843 453 Pty Ltd to construct and operate a resource recovery and non-putrescible landfill Facility at the former Pioneer Quarry site, Eastern Creek (Lots 1 DP 1145808 and Lot 8 in DP1200048).

Current operations of the broader site include:

- A Waste Recovery Facility including materials processing centre (MPC) and green waste area;
- Rehabilitation of the quarry void via a Class 2 (non-putrescible) landfill;
- A total throughput of up to 2 million tonnes of material per calendar year;
- Landfilling of up to 700,000 tonnes of non-putrescible waste (including asbestos);
- Stockpiling of up to 50 tonnes of tyres at any one time; and
- Stockpiling of up to 20,000 tonnes of green waste at any one time.

The landfill and MPC are shown in Figure 6 (Pictures 1 and 2).

2.3.1.2. Waste processing

The facility operates to strict waste classification management standards including the screening loads by weighbridge camera and then spotters at various positions throughout the facility. This will not change under this proposed Development.

The Genesis MPC has the approval to accept and process up to two (2) million tonnes of waste per annum. Waste categories combined with a description of typical profiles are provided in Table 5.

Table 5 – Typical waste categories and profile description received and processed by MPC

Categories	Composition Description
Segregated hard-fill materials	This is material capable of being recovered or recycled by a series of processes. Carried on externally to the MPC. After reprocessing and/or recovery, recycled hard-fill materials [brick concrete, sand soil stone bitumen] are stored on-site within the segregated material stockpile area (SMA) until sold.
Segregated Timber Green Waste Area	This is material capable of being recovered or recycled by a series of processes. Carried on externally to the MPC but within its own self bunded area. After reprocessing woodchip and mulch are stored on-site within the bunded location (SMA) until sold
Co-mingled construction and demolition waste and commercial and industrial waste	Consisting of metals, brick, concrete, plasterboard, soil, aggregates, plastics and a range of building and demolition wastes. These materials are delivered to the MPC for classification and processing.
Land-fill	The remainder of incoming waste materials is directed straight to landfill for disposal. This is either due to its chemical composition and waste classification which requires that it be disposed of by landfilling, or because it is a residual waste from another substantial recycling process and its destination has been determined prior to arrival at site.

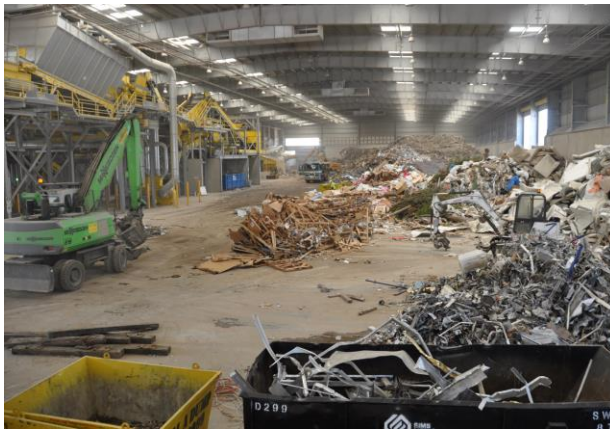
2.3.1.3. Materials Receipt and Processing: Genesis MPC

In accordance with approved environmental management strategies for the Genesis Xero Waste Facility, mixed or comingled building and demolition waste is transported by truck to the MPC where it is unloaded for pre-sorting and screening. Following this further processing of the mixed waste material takes place within the MPC.

The MPC is a large building containing fixed plant atop a cast concrete slab within a steel and Colorbond building typical of the surrounding industrial buildings within the Precinct.

The fixed plant, shown in the figures below, comprises a large and complex piece of machinery involving up to 52 interconnected electrically driven conveyors and a range of magnets, graders, screens sieves and hand sorting stations.

Figure 7 – Images of MPC Sorting and Screening process



Picture 3 – Waste separation and screening

Source: TNG

Picture 4 – Typical Loading Machinery Inside the MPC

Source: TNG

2.3.1.4. Materials Receivable

Waste materials are currently delivered to the MPC by a combination of light, medium and heavy vehicles, with loads typically varying from approximately one to 40 tonnes (t) in weight. Picture 3, Figure 7 provides an indication of the types of waste processed at MPC.

DADI has developed specific processing and inspection procedures for receiving and checking waste that is directed to and processed by MPC. Broadly these include:

- Preliminary classification of waste is based on advice from the carrier, inspection of the carrier's documentation prepared in accordance with the EPA (2008) Waste Classification Guidelines and verification of this information by visual inspection using the weighbridge camera (**Check Point 1**);
- Mixed loads are directed to tip at the MPC work floor after a physical visual inspection at the specially designed Spotter station (**Check Point 2**); and
- Loads are further inspected by trained staff working on the floor at the time of opening the tailgates and again when the load is tipped out on the floor (**Check Point 3)**.

2.3.1.5. Sorting

Mixed loads delivered to the MPC undergo initial a pre-sorting process to remove larger items that may impede the production of the plant. These wastes are segregated by material type and placed in designated bays and bins for transport to appropriate areas for recycling, landfilling or off-site (as required). This is when most hard plastics and PVC are removed from the waste stream.

After pre-sorting the waste is introduced to the recycling plant extending the full length of the MPC, commencing with the primary shredder which reduces the mean size of the waste to ease separation throughout the rest of the plant. Waste is then transported through the Plant by a series of electrically driven conveyors, upon which the separation and sorting of various the waste types takes place automatically.

Ferrous and non-ferrous metals recovered through the sorting process (generally by use of a magnet and eddy current separators) as well as plastics and paper/ cardboard are sorted, placed into bays and bins and stored until sold or transported from site for recycling by others.

Timber wood waste is recovered from the mixed materials during the separation sorting process and is processed for resale as woodchip or for use as fuel by others.

Sand, soil, aggregates and rubble are sorted by the same processes and deposited outside of the western wall of the MPC. They are then further processed for resale.

The residual wastes from the recycling plant are transported by a continuous conveyor (Figure 8**,** Picture 5) that runs through the plant and exits at the rear of the MPC which is then weighed for EPA compliance and connects chute (Figure 8**,** Picture 6) which deposits the residual waste at in the base of the landfill.

Figure 8 – Waste Management

Picture 5 – The Conveyor from the western side of the MPC building

Source: TNG

Picture 6 – Genesis Xero Waste Chute System

Source: TNG

Specific environmental management procedures have been developed in accordance with best practice to maximise resource recovery and minimise biodegradable material from being land-filled in accordance with relevant legislative requirements.

2.3.2. Site Access and Road Hierarchy

Both the broader site and the development are well serviced by the existing road network. Key access roads servicing of the site include:

- **M7 Motorway**: an arterial road that provides Sydney with a key orbital connection between numerous radial arterial roads including the M4 to the north and the M5 to the south.
- **M4 Motorway**: an RMS State Road that forms the primary east-west arterial link between the Sydney CBD and the Western Suburbs. Site access to the M4 is available via Wallgrove Road.
- **Wallgrove Road**: a classified road that traverses in a north-south direction to the east of the site.
- **Wonderland Drive**: a local road that lies to the east of the site and generally traverses in an east-west direction between Honeycomb Drive in the west and Wallgrove Road in the east. It provides direct access to Wallgrove Road and will form a primary route used by vehicles to/from the M4 motorway.
- **Honeycomb Drive:** a local road that generally runs in an eastbound direction from Wonderland Drive.
- **Archbold Road**: a local road that runs in a north-south direction to the west of the site. Archbold Road is currently constructed with an unsealed carriageway to the south of its bridge over the M4 Motorway with restricted access conditions.

2.3.3. Heritage and Archaeology

Neither the broader site or the development are identified as items of environmental heritage under any legislation or environmental planning instruments relating to the land. Moreover, the land is not located adjacent to any items of environmental heritage or within a conservation area.

Due to previous disturbance of the site since European settlement the potential for historical archaeological remains (non-aboriginal) is low.

The site, along with the broader Eastern Creek Area, forms part of the Darug Landscape and has been identified through consultation as being culturally significant.

A total of three (3) Aboriginal sites have been identified within the broader site, only one (1) is likely to be directly affected by the proposed project works, this site is known as EfW South. Through a combination of extensive literature review, consultation with Aboriginal groups and test excavation the site has been identified as a potential former transient campsite related to the movement of Aboriginal people across the landscape, a type of "low density site" common across the Eastern Creek area and wider Cumberland Plain region.

2.3.4. Physical Characteristics

2.3.4.1. Topography

The site is situated on the side of a valley at an elevation varying between 85 metre and 50 metres above mean sea level, topography is sloping from north to south down towards the Ropes Creek Tributary with some undulations in various directions. Refer to survey provided at **Appendix A.**

2.3.4.2. Geology and Soil

A D Envirotech Australia have identified the local geology and soil, as forming part of the Blacktown Soil, using the Penrith Soil Landscape Maps prepared by Soil Conservation Services, NSW. The soil has is described as having the following characteristics:

- The topsoil (A1 Horizon) consists of a friable brownish-black loam with moderately pedal sub angular blocky structure and rough-faced porous ped fabric. The pH ranges from slightly acidic (pH 5.5) to neutral (pH 7.0). Roots are common. Shale and charcoal fragments are sometimes present.
- Below the top soil, the B Horizon consists of hardsetting brown clay loam to silty clay loam with an apedal massive to weakly pedal structure and slowly porous earthy fabric. The pH varies from moderately acid (pH 5.0) to slightly acid (pH6.5). Platy ironstone gravel-sized shale fragments are common. Roots and charcoal fragments are absent.
- The subsoils consist of two B horizons. The shallow subsoil consists of a strongly pedal, brown light to medium clay with a smooth-faced dense ped fabric. Soil texture often increases with depth as does red, yellow and grey clay mottling. The pH ranges from strongly acidic (pH 4.5) to slightly acidic (pH 6.5). Fine to coarse gravel-sized shale fragments are common, often occurring in stratified bands. Roots and charcoal fragments are rare.

Edison Environmental and Engineering Pty Ltd (EEE) concludes that soils present on the site have high erodibility and dispersive characteristics.

Acid Sulphate Soils

Published Acid Sulphate Soil maps confirm that there is no actual or potential acid sulphate soils expected to occur in the area. This was supported by on site soil finding of PSM (2005) (EEE, 2016) that did not indicate high soluble sulphate or low pH levels in the site soil.

Salinity

Edison Environmental have undertaken a soil and water investigations of the site and determined that soils on site are moderately saline. Salinity in the shallow groundwater is low on the higher ground and mid-slopes increasing with proximity to the creek.

2.3.4.3. Hydrology

Surface Water

Ropes Creek is located approximately 400 metres west of the site boundary (at its closest point). Notable surface water features within the development site include:

- Ropes Creek Tributary; traversing the southern extent of the site in an east-west direction;
- A constructed dam (identified as ephemeral); and

- A small north-south: ephemeral water course (drainage line from the constructed dam to the Tributary).

The small, north-south stream, functions as a drainage line between the constructed dam to the Tributary that runs from east to west through the southern portion of the site and joins Ropes Creek approximately one kilometre north-west and downstream of the site boundary.

The Ropes Creek Tributary extends along the southern boundary of the site, reaching up to 750 metres upstream from the site boundary and has a total area from the top of the catchment to the confluence with Ropes Creek of 119 ha.

Flooding

The Ropes Creek Tributary to the south of the development site is identified in the local planning documents as being subject to intermittent periods of flood affectation.

Notwithstanding the above, flood levels along the Tributary are at least 2 metres below the finished ground levels of the site and will not affect the development.

Ground Water

Groundwater at the TNG site may be encountered in fractured rock aquifers beneath the site at depths of 40 metres above Australian Height Datum (AHD) to 50 metres AHD. That is to say that where groundwater is present it is a shallow in depth.

Despite the local topography and the presence of surface hydrology features to the south and west of the site, groundwater directional flow is towards the Quarry in the north due to the effects of depressurisation associated with leachate management (dewatering).

Geotechnical investigation was undertaken in the areas of proposed excavation in particular excavation in the footprint of the waste bunker, and no groundwater was encountered with the exception of one borehole (BH23) in the south-east of the site, near the Ropes Creek Tributary.

In general there was an absence of groundwater inflows indicative of limited ground water occurrence and low hydraulic connectivity (i.e. low connectivity between ground and surface water hydrology features).

2.3.4.4. Bushfire

The site is not identified as bushfire affected on the Blacktown Council bushfire planning maps.

2.3.4.5. Flora and Fauna

The majority of the site has been cleared of native vegetation to allow for industrial land use operations, in particular the previous quarrying operations. Notwithstanding this two (2) fragmented patches of vegetation remain to the north and south of the site. Flora and Fauna surveys were undertaken by Abel Ecology and identified the following:

- A total of 47 fauna species were recorded as present on the site. Of these two (2) were identified as being species listed under the *Threatened Species Act 1995;*
- No evidence of aquatic life was observed in the Ropes Creek Tributary;
- Two (2) Ecological Flora Communities of Significant were recorded, including the Cumberland Plain Woodland, listed as critically endangered under the *Environmental Protection and Biodiversity Act 1999* and the River Flat Eucalypt Forest, listed as an endangered ecological community; and
- Eight (8) habitat trees were identified on the site across the two (2) ecological communities.

River Flat Eucalypt Forest (RFEF)

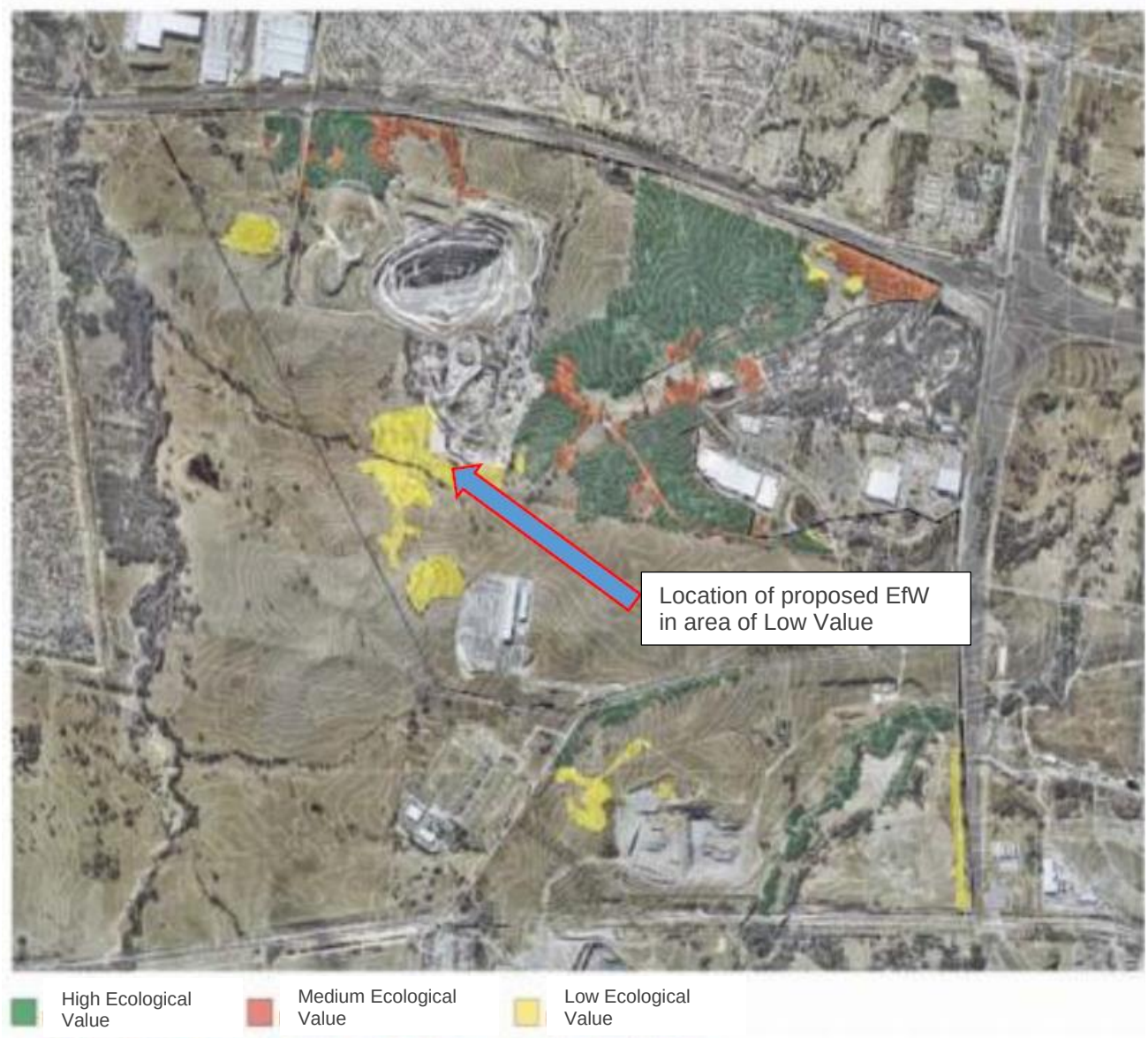
An area of River Flat Eucalypt Forest (an identified EEC) is located with the footprint of the works, this vegetation has been mapped under former SEPP 59 as being of low ecological value (refer to extract of map in Figure 9).

Cumberland Plain Woodland (CPW)

There are two (2) fragmented patches of CPW located within the broader site, these include:

- An area located in the north-west corner of the site to the south of the M7 Motorway. This area of land is zoned E2 Environmental Conservation and is clear of any proposed works and will therefore not be impacted on by the development.
- The second area is a small fragment located in the southwest of the site, that consists of 13 trees (refer to refer to Ecology Report in **Appendix G**) immediately adjacent to the existing and currently operating Asphalt batching plant located on the adjacent Hanson owned land.

Figure 9 – SEPP 59: Mapped Ecological Values



2.4. BACKGROUND: CONSENT HISTORY

2.4.1. Project Approvals

Set out below is a summary of the approvals issued for the development and operation of the Genesis Xero Waste Facility.

Table 6 – Summary of existing consents

Approval Date	Reference	Description of Works
	MP 06_0139	Construction and operation of a resource recovery and non-putrescible landfill facility
30 September 2010	MP_06_0139_MOD 1	To carry out the following additional works, electrically powered conveyor and chute; postponed commencement of construction; two way traffic on Fourth Avenue; concrete bay walls within the green waste processing area; and relocation of the wheel wash.
9 November 2010	MP_06_0139_MOD 2	Correction of mis-description of land details, to reference land being Lots 1, 2, 3 and 4 in DP 1145808
5 December 2011	MP_06_0139_MOD 3	To modify the final landform levels for fill pad at Area D combined with operational levels and site stormwater design. Combined with new minor building works to include internal office and external amenities to the Weighbridge; new amenities building; new amenities building associated with the spotter stations; new administrative/office building; new amenities at the tarp stand area; approval for the use and relocation of the vehicle turning bay which works have already been carried out. Execution of a Voluntary Planning Agreement.
14 December 2013	MP_06_0139_MOD 4	Variation to hours of operation to permit operational hours of 6am to 10pm Monday to Friday, and 6am to 4pm Weekends and Public Holidays.
17 March 2016	MP_06_0139_MOD 5	Construction of a pre-sort enclosure adjacent to the existing Genesis MPC to provide additional space for the sorting and separation of waste materials aimed at improving recycling capability of the facility.

2.4.2. Environmental Protection Licences

The Waste Recovery Facility is known as Genesis Xero Waste Facility (“The Genesis Facility”) which the largest integrated recycling/landfill facility in the Southern Hemisphere. The Genesis Facility operates with two (2) Environmental Protection Licences (EPL) issued by the NSW Environmental Protection Authority (EPA). These include:

- EPL No. 20121, relates to the Recycling and resource recovery arm of the operation, while; and
- EPL No. 13426 relates to the management and regulation of the general solid waste (non-putrescible) landfill operation.

3. THE PROPOSED DEVELOPMENT: CONSTRUCTION

3.1. INTRODUCTION

The proposed development involves the construction and operation of an Energy from Waste facility using moving grate technology, that has the technological capacity to thermally treat up to 1.35 million tonnes of waste per annum.

Energy recovery from waste forms part of the waste, resource recovery framework adopted and implemented by the NSW EPA. TNG will be delivered as part of a broader and integrated waste management operation that includes:

- Recycling and Resource Recovery through the Genesis MPC; and
- Waste Disposal and Landfill: the current (and only solution) to chute waste residual, representing the waste fraction that cannot be recovered for reuse, from Genesis and other processing facilities.

Brookfield Multiplex have been engaged to undertake the construction works and have prepared a preliminary Construction Environment Management Plan (CEMP) (refer to **Appendix BB**). The CEMP establishes two (2) broad phases of construction works as follows:

- **Construction and Enabling Works:** Site/ground preparation and civil infrastructure and services)**;** and
- **Main Construction Works:** Structural Works.

Each phase is described in detail in the following sections.

3.2. CONSTRUCTION & ENABLING WORKS

Stage 1 of the construction works will include the following:

- Site establishment;
- Bulk earthworks;
- Piling and foundations;
- Services location and reticulation;
- Internal and external road works; and
- Car Parking and other civil infrastructure.

3.2.1. Site Preparation Works

General site preparation works will be undertaken to support the delivery of the facility including removal of existing vegetation, and ground levelling works to facilitate the construction of the facility and provide suitable temporary use areas (i.e. laydown pads) to support the establishment of site offices, parking and storage.

Construction and stabilisation of laydown areas as shown light brown and free of improvements in Figure 10. As outlined above, these areas will be used for temporary material storage and site offices throughout construction. All materials will be removed following completion of construction works. Refer to section 3.2.2.1.

3.2.2. Bulk Earth Works: Cut and Fill

Cut and fill will be undertaken across the development site to establish a level construction pad, appropriate road gradients and excavation to support construction of the proposed waste bunker.

A total of 294,500m^3 of soil and rock will be excavated from the site, where possible spoil removed through cut will be reused on site to reduce the need to import fill. A Detailed Site Investigation undertaken by A.D. Envirotech concludes that soil sampled on site is below the National Environment Protection Measure (NEPM) limits for industrial and commercial use.

Notwithstanding the above, AT&L have estimated that import of up to 135,100 m^3 will be required to implement the works. Details of the location and extent of cut and fill proposed is detailed in the civil works package provided at **Appendix E.**

3.2.2.1. Lay-down Pads

The three lay-down pads will be constructed for the storage of the materials used in constructing the EfW facility, including the site office building, parking, lunch rooms and the storage of plant equipment and construction materials as well as providing space to allow pre-erection of some of the components (refer to Figure 10).

The lay-down pads must allow efficient and safe movement through providing adequate access of materials and plant equipment consistent with Workplace Health and Safety objectives. The use of these areas is temporary to support the ongoing construction works. No consent is sought for ongoing use of these areas.

3.2.3. Civil and Stormwater Management

A Stormwater management plan and civil design package has been prepared by AT&L. Stormwater management delivered as part of the project will include on site detention basin is proposed at the southern edge of the site. The detention basin has been designed in accordance with Blacktown Council design requirements and will incorporate Water Sensitive Urban Design elements to include bio-retention features aimed at improving water quality prior to being discharged to Ropes Creek Tributary via a pit and pipe system to control the outflow and ensure post developed flows do not exceed pre-development flow for all storms up to the 100 year ARI events.

A full set of civil and stormwater management drawings, along with supporting information have been prepared by AT&L and are submitted at **Appendix E**.

3.2.4. Internal Roads

The development will deliver new road connections within the site, including the following:

- A new estate road, running east west to the north of the TNG plant; and
- a road connection, including underpass/culvert beneath the Estate Road, to the existing Genesis MPC Facility to the north of the TNG site and beyond the Estate Road.

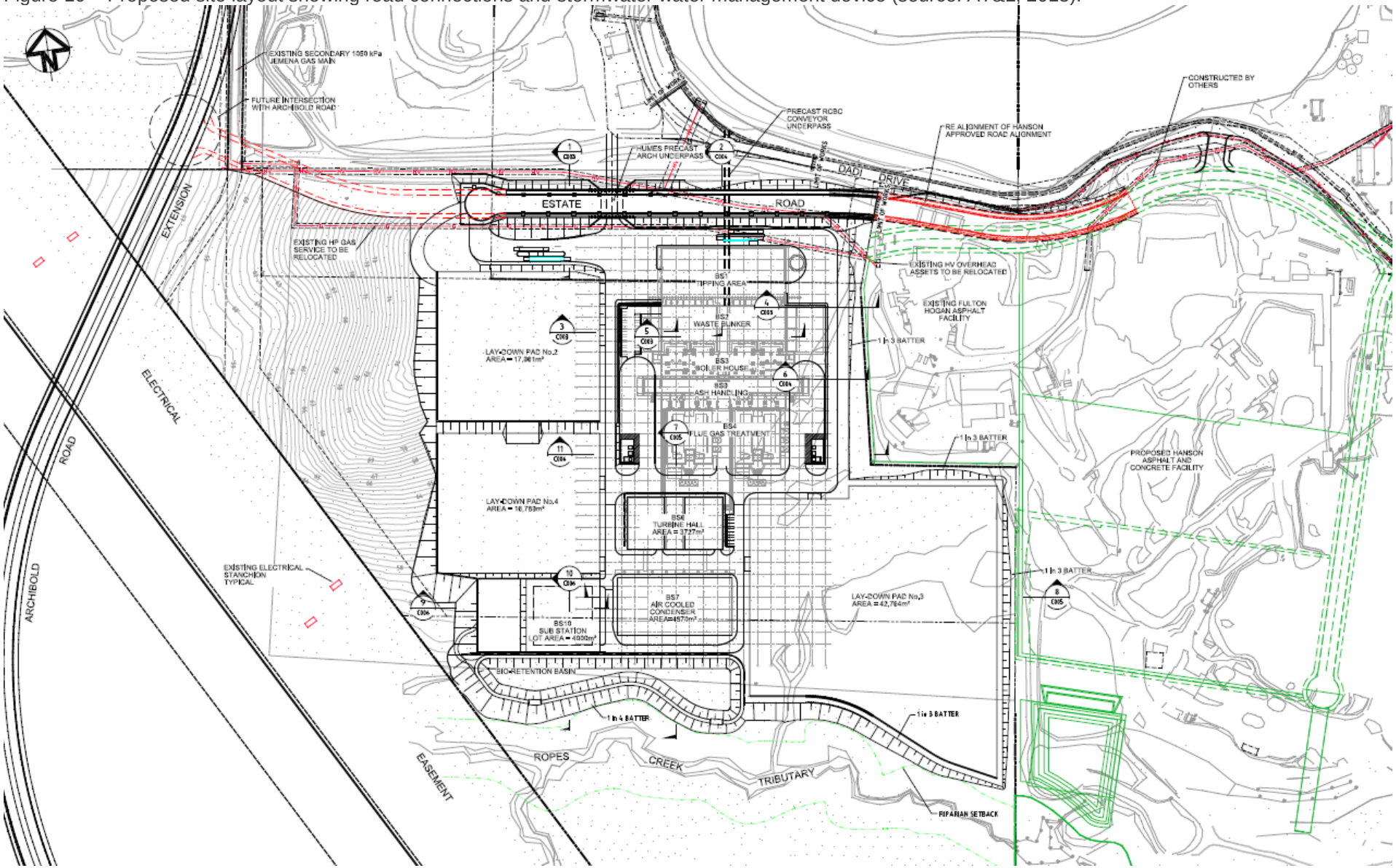
The proposed Estate Road, shown in Figure 10 below, has been designed and sited so as to ensure future connectivity with the planned precinct road connection to Archbold Road (to the west) and across the Hanson site (to the east) the latter allowing for connection to Honeycomb Drive.

A complete civil design package including, typical road profiles, cut and fill plans to support the works has been prepared by AT& L. Refer to **Appendix E.**

3.2.5. Services

Services including sewer, water, power and telecommunication can and will be made available to the site as part of the project.

Figure 10 – Proposed site layout showing road connections and stormwater water management device (source: AT&L; 2015).



3.3. MAIN CONSTRUCTION WORKS

3.3.1. Site Layout and Building Works

The site layout and building design has been developed in consultation with HZI, Brookfield Multiplex and Genesis MPC to ensure optimal functionality and efficiencies within the site and between the complimentary waste management operations. The general layout of the site is shown in Figure 11.

3.3.2. Structure Works

The proposed buildings have varying footprints and heights, with the maximum height reaching 52 metres above ground level, and the stacks reaching 100 metres. The indicative dimensions of the buildings and various components of the facility are outlined in Table 7. In general, the layout of the facility has been informed by a range of operational requirements of key components including the furnace boiler and flue gas treatment that are required to have a linear arrangement.

Table 7 – Indicative Building Dimensions (in metres)

Element	Width	Length	Height
Tipping Hall	109	50	20.5
Waste Bunker	94	30	50 (including 7m below ground level)
Boiler House (per phase)	50	60	52
Flue Gas treatment (per phase)	45	47	37
Stack (per phase)	Outer dimension 3		100
Turbine Hall (per phase)	34	46	26
ACC (per phase)	50	50	23
Bottom Ash Collection area (per phase)	47	13	19
Sub Station (4,000m²) common	63	63	20
Office Block	15	31	11
Workshop	32	35	16.5
Control Room	10	38	38
Weighbridge (in)	40	16	10
Weighbridge (out)	38	15	10
Sprinkler Tank	14.7	13.7	9
East Amenities	30.5	7	4.5
West Amenities	19	6	4.5

Figure 11 – General site layout (source: Kriskis Taylor Architects; 2016)

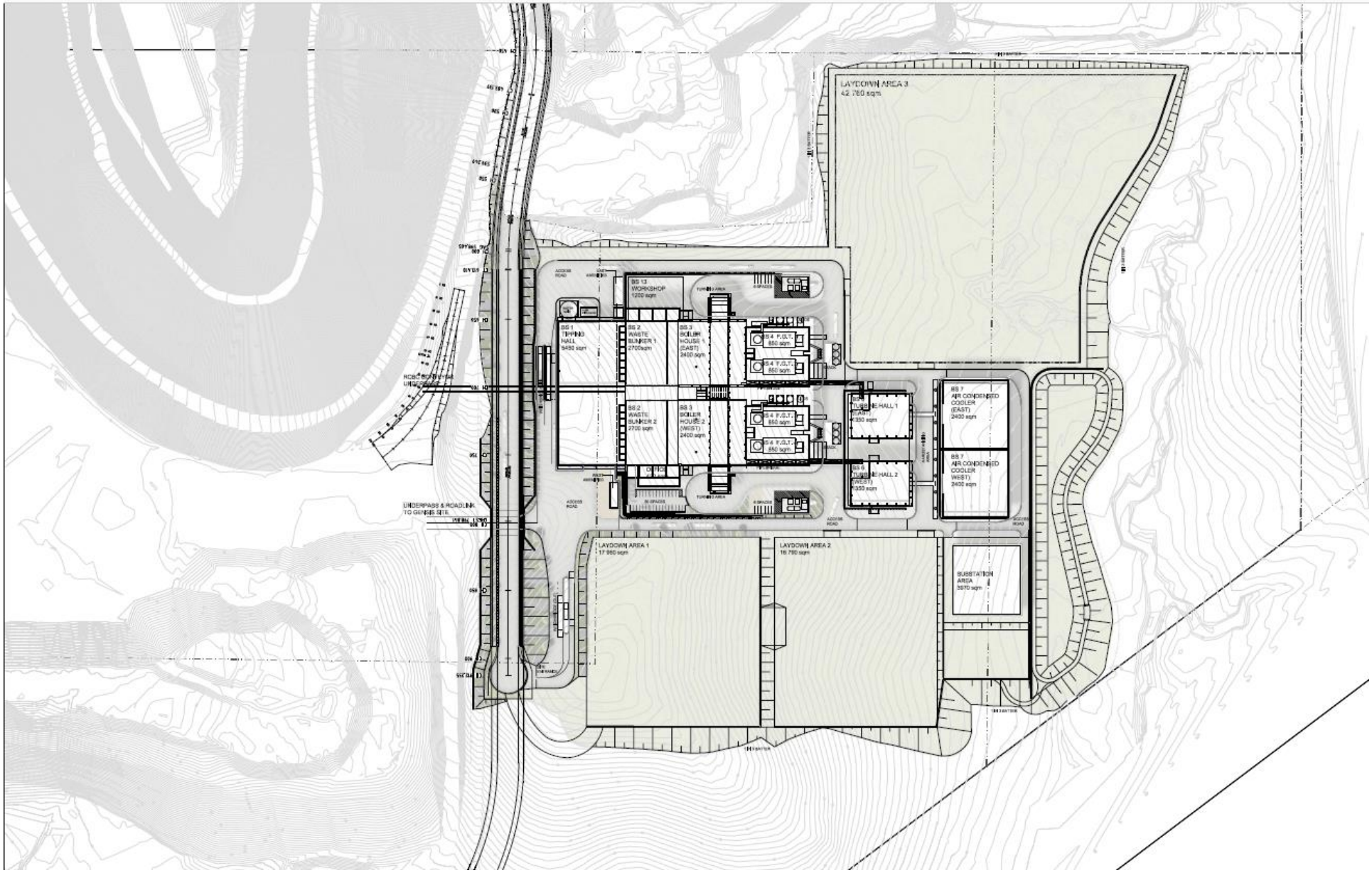


Figure 12 – Building layout and use (source: Krikis Taylor Architects, 2015)

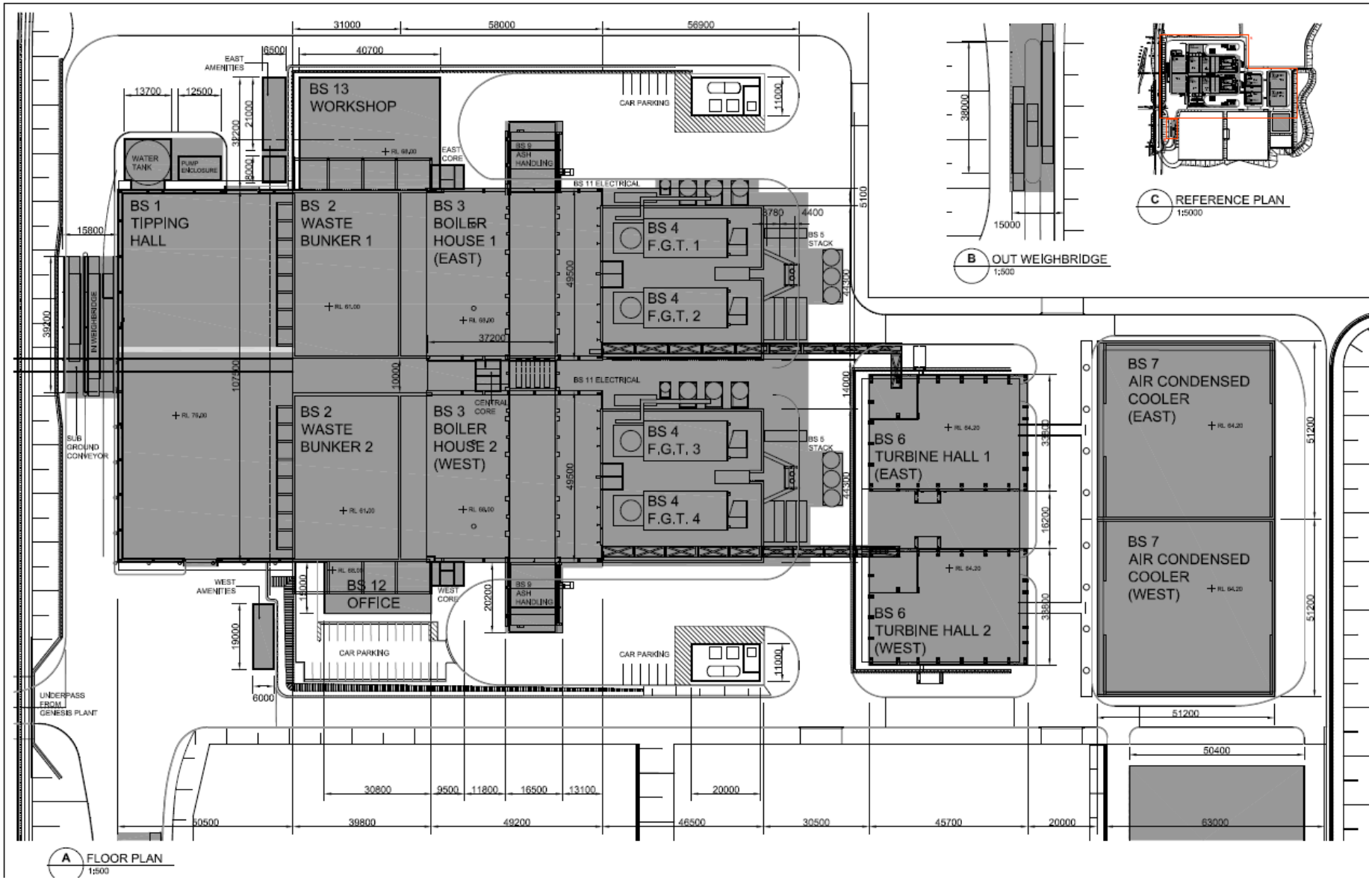


Figure 13 – Western Elevation (source: Krikis Taylor Architects, 2015)

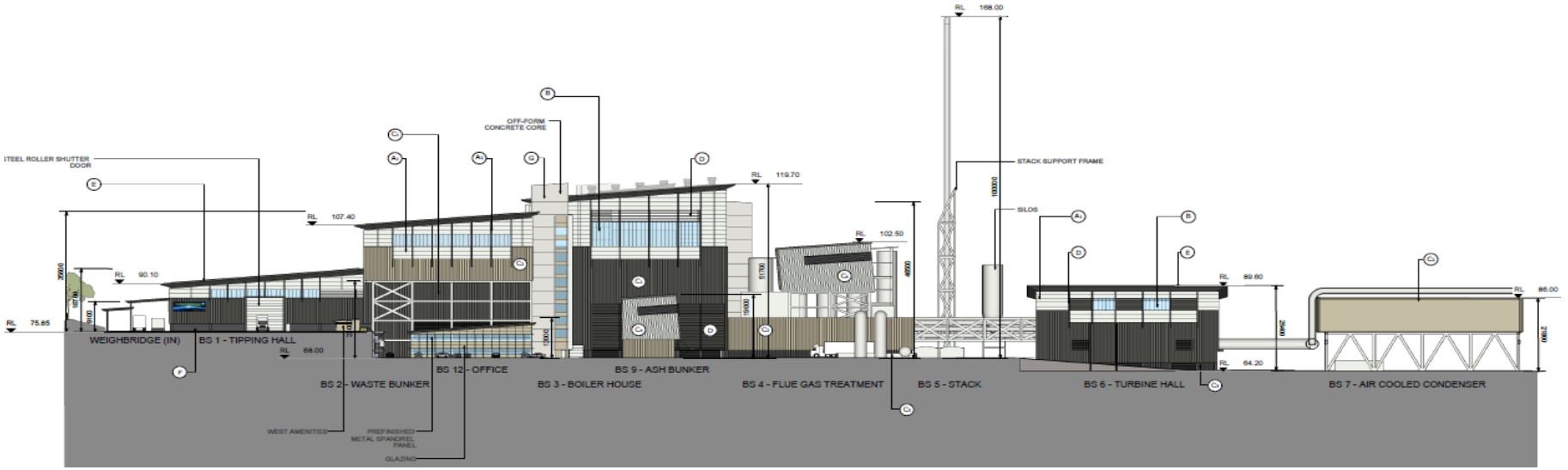


Figure 14 – Eastern Elevation (source: Krikis Taylor Architects, 2015)

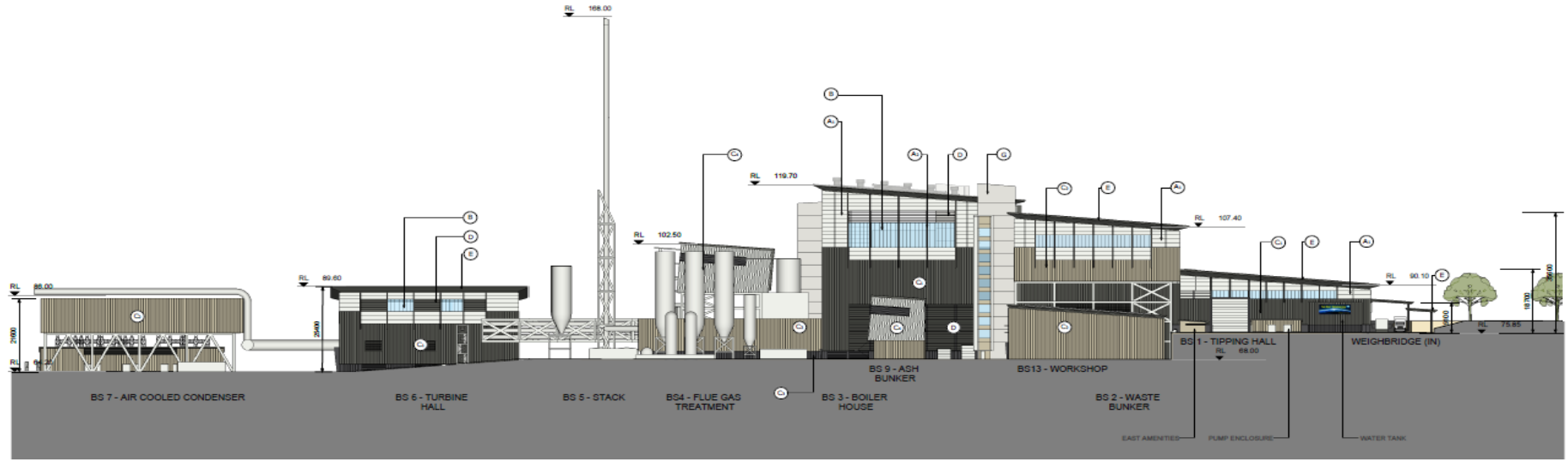


Figure 15 – Southern Elevation (source: Krikis Taylor Architects, 2015)

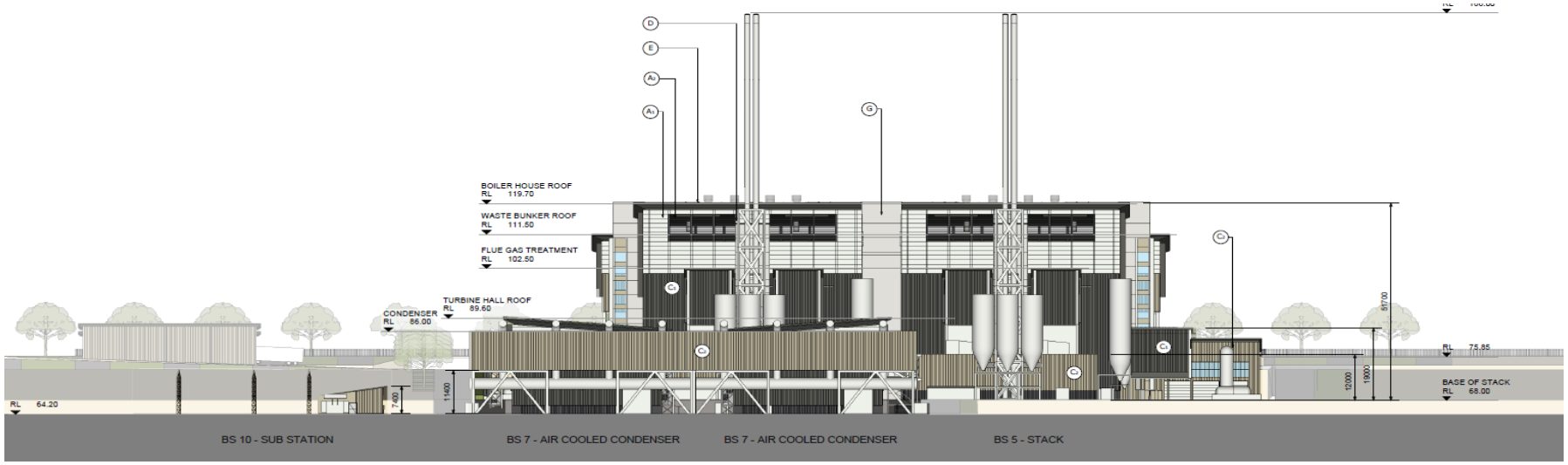
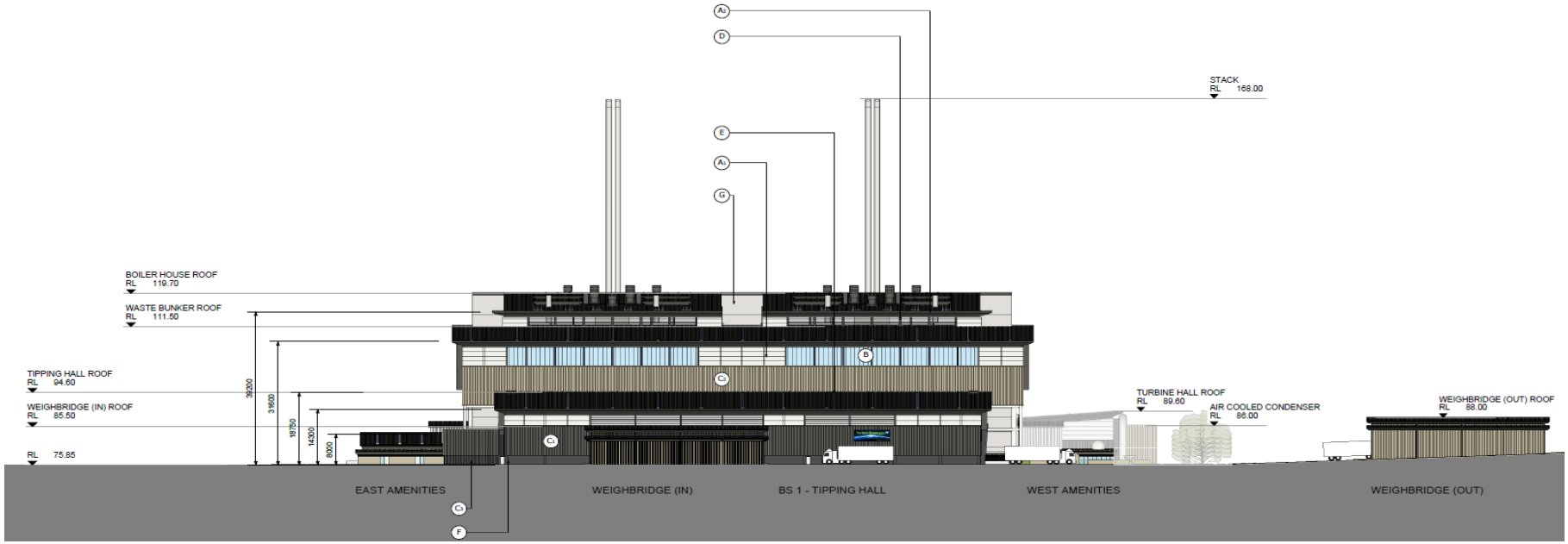


Figure 16 – Northern Elevation (source: Krikis Taylor Architects, 2015)



3.3.3. Weighbridges

The proposed Facility will provide two (2) new weighbridges, one on entry and one on exit. The weighbridges will be constructed within the boundary of the site on the private road south of Estate Road. These bridges can be seen on the site layout plan in the architectural set submitted with this report (**Appendix C**).

Incoming bulk transport vehicles that are predetermined as carrying eligible residual waste fuel from external transfer and recycling facilities will enter the Site through the main entrance for the proposed Facility. They will proceed to the weighbridge where the quantity of incoming fuel is checked and electronically recorded. Vehicle loads will be inspected at the weighbridge to confirm the nature of incoming fuel and only authorised fuel will proceed to the fuel reception area.

Loads will be nominally 22 tonnes for all fuel types. Fuel can be sampled from the vehicle at the weighbridge. The weight of the outgoing vehicles will be recorded on a separate weighbridge as they leave the Site.

Residual Waste Fuel from the Genesis MPC will arrive at the proposed Facility in three (3) ways as described below. The incoming fuel will be pre-weighed and its details are recorded at the Genesis Xero Waste Facility before transported to the proposed Facility:

- By a conveyor transport system which will carry the residual waste output of the Genesis MPC. It will travel via the culvert under the precinct road and will eject directly into the storage bunker;
- Some vehicle transport from Genesis MPC will be required and when this occurs it will be via the archway under the precinct road (yet to be constructed); and
- By vehicle transport system via the culvert under the precinct road in the case that the conveyor is out of service or for unrecyclable wastes that are extracted from mixed waste stream at the pre-sort stage prior to be feed into the recycling plant.

3.3.4. Building Materials and Finishes

The materials and colour palette for TNG Buildings and Emission Stacks was selected to blend with the natural colour and shades of the surrounding landscape character, reflecting a mix of modern industrial with muted and soft natural tones.

Both the material and colour selections have sought to deliver both harmony and contrast, utilising a contrast of textures as well as colours to highlight and define building elements. Refer to the materials and finishes sample sheet is included at **Appendix C.**

3.3.5. Community Safety and Fencing

To ensure public safety, 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.

Figure 17 – 3D image of the Proposed Facility from the west

Figure 18 – 3D image of the proposed facility from the South West

3.3.6. Signage

Three (3) business identification signs are proposed on the north, east and west elevations of the tipping hall. Each sign will be painted on metal background, framed and mounted on building cladding, and illuminated via stalk lighting. Further details on this signage are provided in the Proposed Building Signage Plan at **Appendix C,** an example is provided in Figure 19.

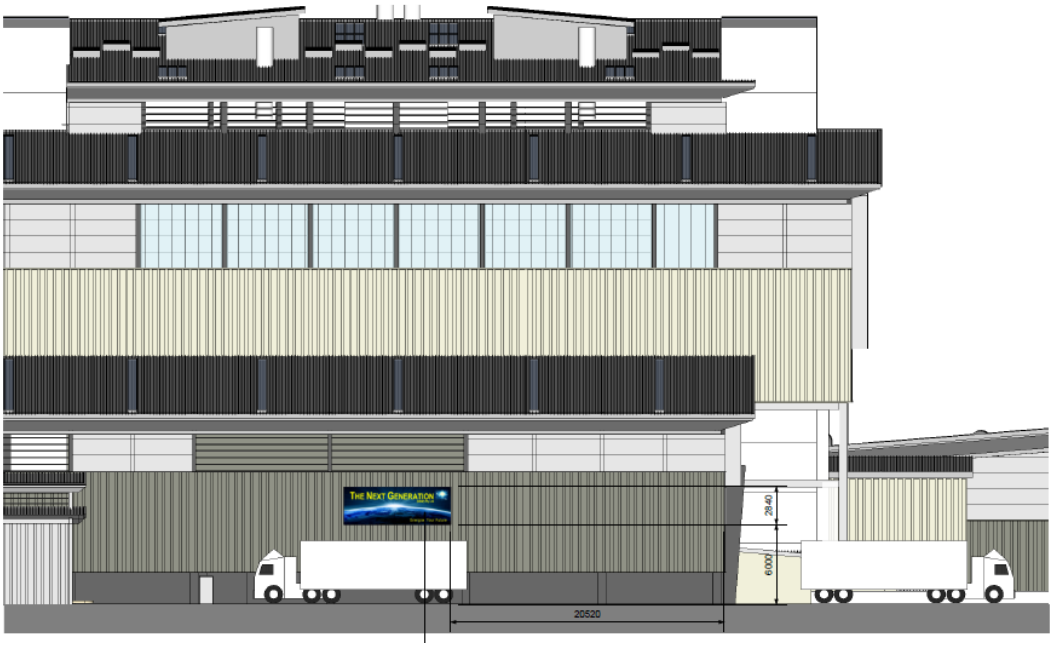
A summary of the proposed signage dimensions and their location is provided in Table 8**.**

In additions to identification signage, directional signage will be implemented along the internal road and to direct vehicle movements within the site.

Table 8 – Summary of signage

Elevation	Height	Dimension	Surface Area
North	6 metres above ground	8m width x 2.84m	22.72m²
West & East	4 metres above ground		

Figure 19 – Proposed Signage on the Northern Elevation



3.3.7. Landscaping

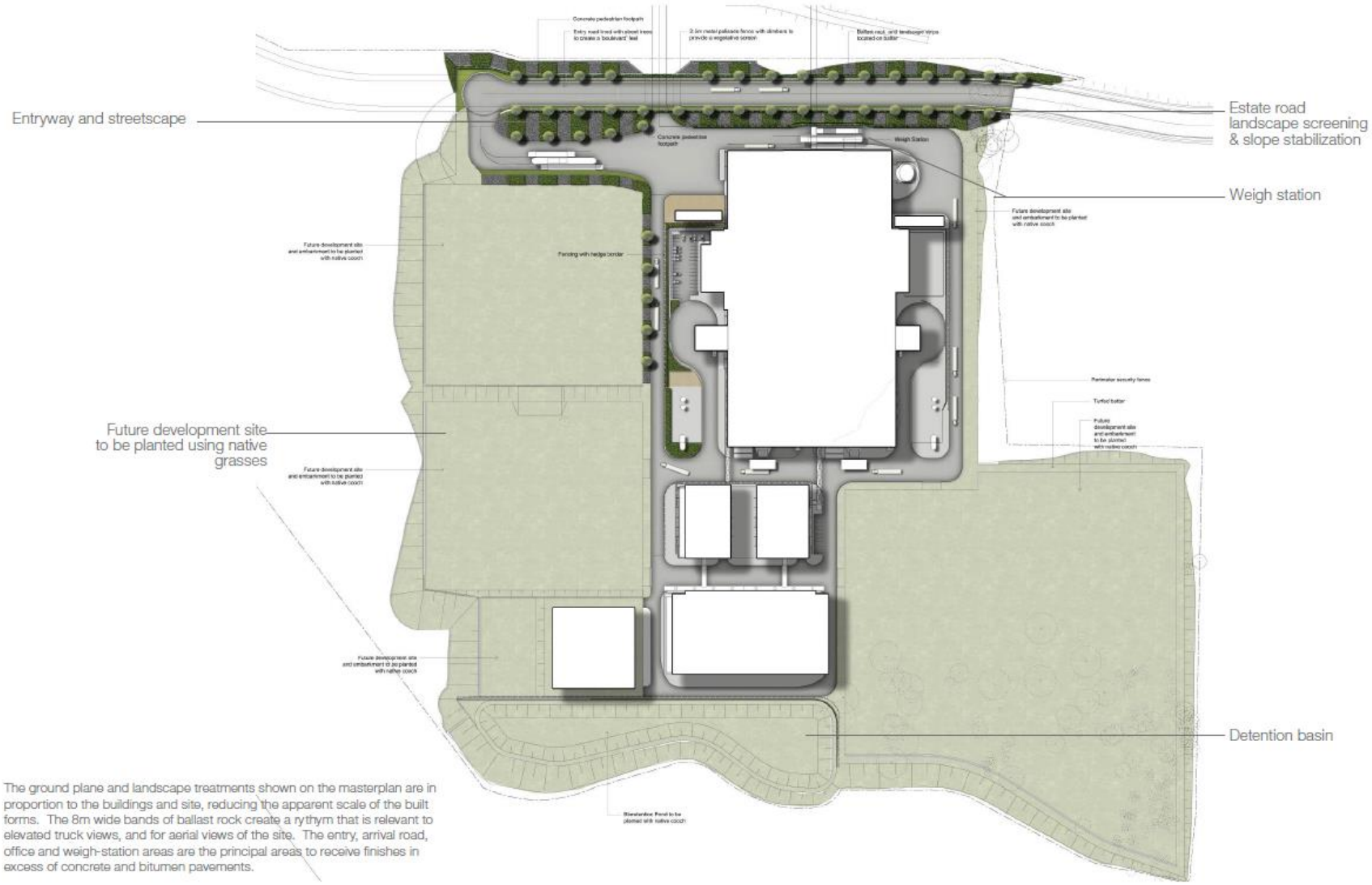
The landscape design approach has sought to maximise landscape opportunities to elevate the visual amenity and aesthetic of the site. Due to the nature of the use, landscaping is generally contained to the edges of the site to allow for vehicle movements, a landscape master plan has been prepared by Site Image, a copy of which is provided at Figure 20. The masterplan is complemented by a detailed landscape design package and report provided at **Appendix D.**

The landscape design approach has sought to achieve the following:

- Provide visual amenity generally against the built form;
- Provide shade;
- Create/ maintain passive surveillance of the Site; avoiding anti-social behaviour;
- Soften the ground plane;
- Provide vertical articulation via feature trees;
- Provide low water demanding plant species; and
- Observe and maintain necessary safety and aesthetic sightlines.

Combined with aesthetic landscaping measures, revegetation of the Ropes Creek Tributary will be undertaken to stabilise the embankment and improve riparian health. As well as compensatory planting within the Ropes Creek Tributary riparian corridor to offset the loss of RFEF and CPW vegetation.

Figure 20 – Landscape Masterplan (source: Site Image; 2015)



3.4. CONSTRUCTION DURATION & EMPLOYMENT GENERATION

Construction is anticipated to take 36 months (3 years) and generate approximately 500 jobs. Within the broadly defined two (2) stages of construction outlined in the above sections, five (5) sub-stages have been identified. Table 9 sets out the expected sequence of construction works, at various times in the construction program some stages of work may be concurrent.

Table 9 – Construction Schedule (adapted from PE NIA; 2016)

Sub-Stage	Description of Works	Duration
Stage 1: Construction and Enabling Work		
(a) Site establishment and clearance	Excavation machinery will be used to clear the site envelope and clear any unwanted vegetation. Setting up of site fences and erosion control measures.	2 months
(b) Bulk Excavation/Detailed Excavation/Services Lead In works	Machinery will be used to commence the cut/fill requirement for the future building structure, as well as completing the bulk excavation of the waste bunker. Removal of top soil will be required using trucks. Utilities required to be brought into the site will be undertaken by excavators. This period should be around 10months.	6 - 10 months
Stage 2: Main Construction Works		
(a) Structure and Concrete Works	The structure will require two methods of construction. The slip form method requires concrete to be poured continuously over a period of 16 days. The second method is standard concrete placing methods, which will occur regularly throughout the structure period during standard hours.	5 months
(b) EFW Technology Provider plant installation and façade/roofing installation	During this period, the main plant and equipment used to install all the required elements to the EFW plant are cranes, EWP, mobile cranes, manitous, forklifts and the like. This occurrence will be daily for a period of 16-18 months. Out of hours construction may occur on up to 45 days during the stage.	16 – 18 months
(c) Landscaping	Nearing completion of the project the final fit out and landscaping stages will acquire minimal plant such as bob cats, backhoes, and smaller excavators. Trucks importing soil may also be required.	5 months

3.5. CONSTRUCTION HOURS

The proposed hours of construction are:

- Monday to Friday - 7.00am to 6.00pm;
- Saturday - 8.00am to 1.00pm; and
- Sundays and Public Holidays - No work permitted.

In addition, the proposal seeks extended construction hours for 7:00am to 8:00am and 1:00pm to 6:00pm Saturdays in conjunction with specific periods of 24-hour construction. Full details of the proposed out of hours' construction works is set out and assessed in detail in **section 15** of this amended EIS, as well as the detailed acoustic assessment provided at **Appendix O.**

3.6. CONSTRUCTION TRAFFIC GENERATION AND ACCESS ROUTES

Construction vehicle access to the site will be via established classified and industrial road networks. Specifically, construction vehicles will utilise the M4; M7 to Wallgrove Road connecting to Wonderland Drive. There is no requirement for construction vehicles to utilise residential road networks.

Construction vehicles will contribute approximately 112 vehicles trips (two-way) per day to the existing road network. Detailed Assessment of the existing road network capacity has been undertaken and the anticipated traffic volumes can be accommodated with no alteration to the existing Level of Service at local key intersections.

4. THE PROPOSED DEVELOPMENT: OPERATION

4.1. INTRODUCTION

The proposed development involves the construction and operation of an Energy from Waste facility. Energy recovery from waste forms part of the waste, resource recovery framework adopted and implemented by the NSW Environmental Protection Authority (NSW EPA). TNG will be delivered as part of a broader and integrated waste management operation that includes:

- Recycling and Resource Recovery through the Genesis MPC; and
- Waste Disposal and Landfill: the current (and only solution) to chute waste residual, representing the waste fraction that cannot be recovered for reuse, from Genesis and other processing facilities.

As well as providing a means of diverting CRW from MPC away from landfill. TNG will also accept suitable and eligible waste fuels from authorised third parties.

The Facility will utilise moving grate incinerator technology fed by up to four (4) 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 stacks and associated emissions monitoring systems and steam turbines and generator housed within a turbine hall powered by two auxiliary diesel generators each of up to 2.4MWe output.

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 capacity of the Facility cannot be treated in a single stream combustion system as single stream facilities of the required size cannot be supplied. Rather, the Facility will be configured as a four (4) stream system. That will be implemented over two (2) primary phases outlined in Table 10 and Figure 23.

An overview of the EfW process is shown in Figure 21and Figure 22 below. Figure 22 below depicts a basic schematic diagram of the operational process (single stream) of the proposed EfW Facility.

Figure 21 – Overview of EfW process (source: HZI; 2016)

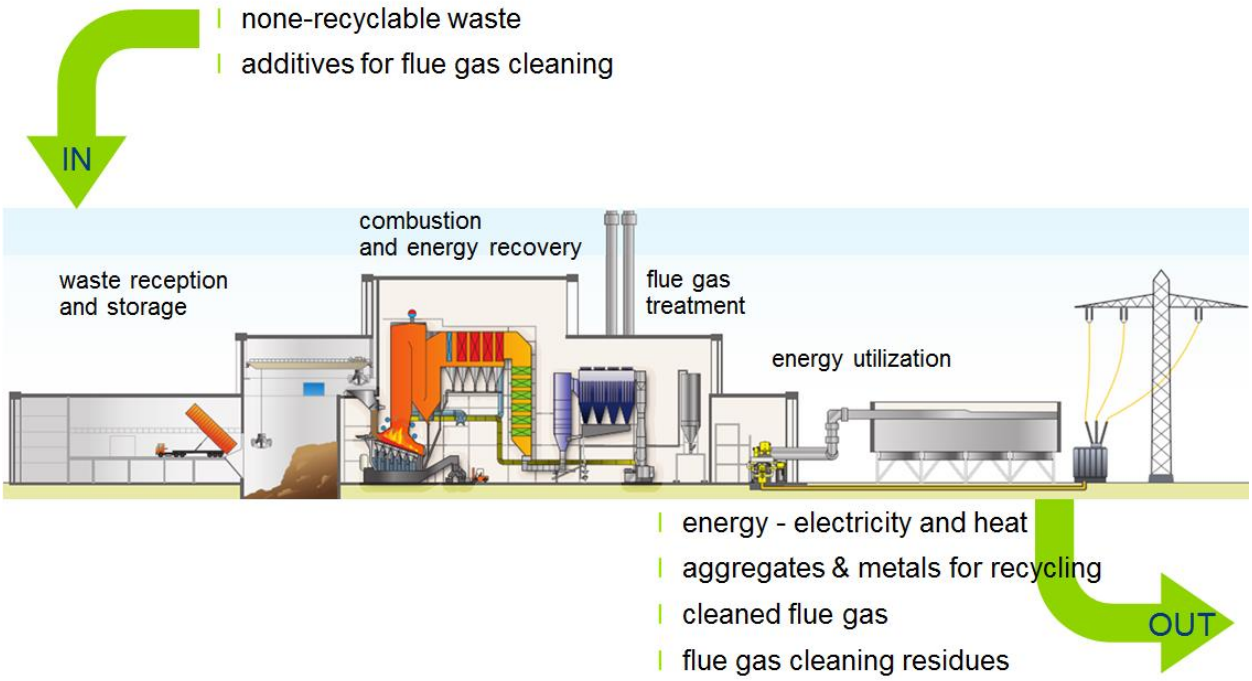
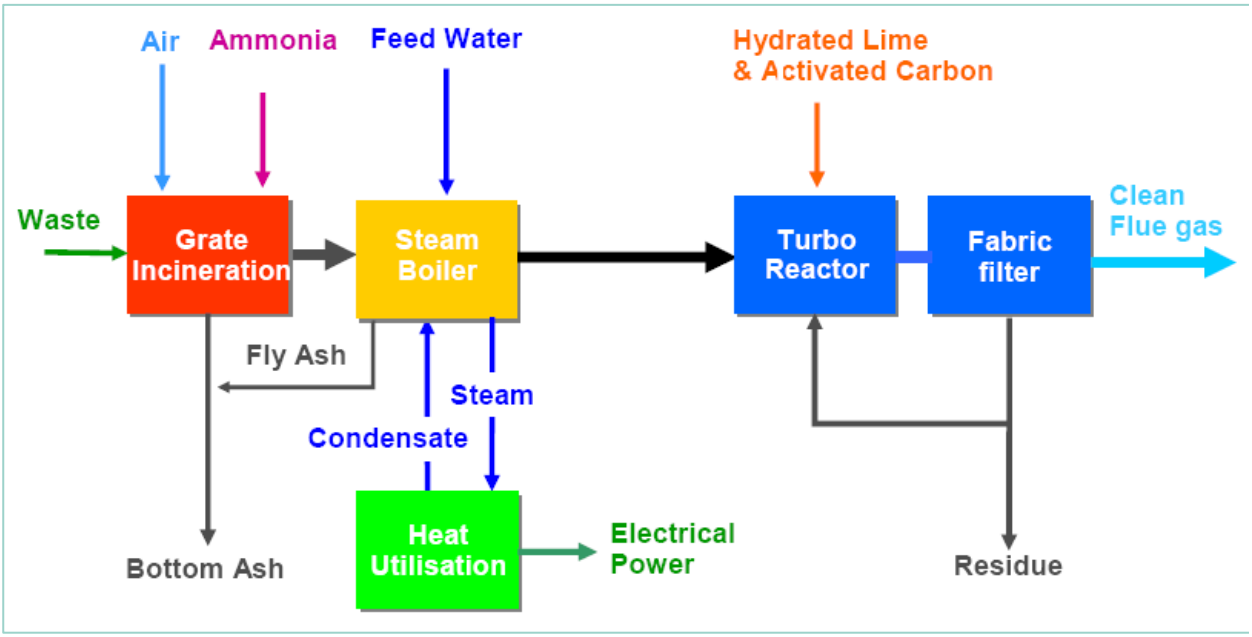


Figure 22 – Schematic Process Diagram for a single stream of processing



More detail on the various components of the technology is summarised in **section 4.3** with a detailed explanation of the technology and operations of the plant and facility is provided in the Project Definition Brief prepared by Ramboll and provided at **Appendix CC.**

4.2. TECHNOLOGICAL CAPACITY AND RESIDUAL WASTE VOLUME FOR TREATMENT

The Facility has a design capacity to treat up to 1.35 million tonnes of residual waste fuels. The design capacity forms the basis of all environmental and technical assessment as the “worst case scenario”. Notwithstanding this, the maximum volume of residual waste fuels proposed to be treated is 1,105,000 tonnes per annum.

Through the exhibition and assessment of the original EIS concern was raised by the NSW EPA about the availability of waste to achieve the maximum treatment volume (i.e. 1,105,000 tpa). Accordingly, the proponent has amended the proposal to implement the project in phases as set out in **section 4.2.1.**

The amended application is not a staged application pursuant to Division 2A, section 83B of the *Environmental Planning and Assessment Act 1979*. The proponent is seeking approval for the development as a whole (i.e. both phases 1 and 2) with the commencement of phase 2 subject to the proponent being able to satisfy the NSW EPA that there is sufficient availability of eligible and/or suitable waste streams and types to allow full implementation of the project and the thermal treatment of a total of 1,105,000 tonnes/pa of residual waste fuels.

In the interim only phase 1, involving the operation of Lines 1 and 2 treating a maximum of 552,5000 tonnes per annum of residual waste fuels will be implemented.

4.2.1. Phased Implementation

TNG has been designed and laid out as a four (4) stream waste processing facility that will be built and delivered in two (2) phases summarised in Table 10 and shown in Figure 23**.**

Table 10 – Summary of development phases

Phase	Construction	Waste Lines	Volume (t/pa)
Phase 1	Construction of the Tipping Hall and Waste Bunker and combustion Lines 1 and 2 comprising of two independent	Lines 1 & 2	552,500 tonnes/pa

Phase	Construction	Waste Lines	Volume (t/pa)
	Boilers, Flue Gas Treatment (FGT) systems, Stack as well as one Turbine and one Air Cooled Condenser (ACC) and all other auxiliary equipment		
Phase 2	Installation of combustion lines 3 and 4 with again two independent Boilers, Flue Gas Treatment (FGT) systems, Stack as well as one Turbine and one Air Cooled Condenser (ACC) and all other auxiliary equipment.	Lines 3 & 4	552,500 tonnes/pa
Total		**4 lines**	**1,105,000 tonnes/pa**

Figure 23 – Implementation of building elements (Source; Ramboll, PDB; 2016)

As outlined above, until the proponent can satisfy the EPA that there is sufficient eligible waste fuel to operate phase 2 only phase 1 will be implemented.

In Phase 1 the entire Tipping Hall, Waste bunker Administration and workshop will be constructed as well as full sized underground infrastructure, substation, detention basins and back-up systems, to ensures no synergies or efficiencies of the facility are lost with the two (2) phase approach and the external appearance is not altered between the construction of the two phases.

The main buildings of the Facility will comprise:

- tipping hall and fuel storage (common to both phases);

- two (2) boiler halls;
- two (2) turbine hall;
- substation;
- ash collection bay;
- workshop Common to both Phases;
- stacks; and
- control room, offices and amenities (common to both phases).

4.3. WASTE FUEL DELIVERY, STORAGE AND PRE-TREATMENT PROCESSING

The EfW plant (i.e. machinery) will operate continuously, 24 hours a day and 7 days a week. Fuel will only be delivered to the site at the operators specified times, where it will be unloaded and stored inside the bunker which has sufficient storage for 5 - 7 days at full load.

4.3.1. Waste Fuel: Sourced from MPC

All incoming Residual Waste Fuel from the Genesis MPC will be pre-weighed and its details recorded on EPA approved weighing systems at Genesis Xero Waste Facility before being transported to the proposed Facility. Two underpasses are proposed to cross the estate road to provide connectivity between the proposed Facility and the existing Genesis MPC. These underpasses are described below:

- Humes Precast Arch will be constructed to allow for unimpeded vehicle access between the proposed Facility and Genesis MPC. The arch proposed will be approx. 18m wide with 6m overhead clearance. The arch will be precast in nature with precast wing walls to suit the estate road over.

- Conveyor Culvert will be constructed to allow for a conveyor to connect the Genesis MPC to the proposed Facility waste bunker. The culvert is proposed to be approx. 4.2m wide and 2.4m high and precast in nature. The final size, location and depth is subject to detailed design. Initial discussions have been had with Blacktown City Council regarding the ownership of the underpasses and the licenses and or deeds that will be required to operate the underpasses under a public roadway. TNG and BCC have agreed to prepare draft Voluntary Planning Agreement (VPA). A draft VPA will be prepared and issued to the Department of Planning and Environment during the assessment of this amended EIS.

4.3.2. Waste Fuel: Sourced from Authorised Third Parties

Residual Waste Fuels from external transfer stations and recycling facilities will be delivered via road vehicle.

Vehicles will enter the Site through the main entrance off Precinct Road which is being constructed as part of this proposal in line with local area road network plans. Vehicles will proceed to the weighbridge where the quantity of incoming residual waste fuel will be checked and recorded. Following checking, vehicles will proceed to the tipping hall where they will be directed to a vacant tipping bay to discharge into the bunker.

On completion of the tipping operation, the vehicles will leave the tipping hall via a separate exit. The fuel reception area will incorporate a minimum of 10 tipping bays to allow multiple vehicles to discharge at the same time. The entry and exit doors to the tipping hall will be equipped with vertical folding or roller doors, which will be kept closed when delivery of waste is not taking place.

Pre-screening of Waste Materials

Checking and auditing the various fuels 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.

There will be a one (1) bunker with two (2) compartments, each compartment serving two (2) incineration lines. The waste bunker is located inside the tipping hall, which is kept at negative pressure.

4.3.3. Waste Mixing and Homogenisation

Mixing of waste is important to achieve homogenisation and to control “special fraction” materials including PVC waste, floc, wood and plastics. Mixing and homogenisation of waste in the bunker prior to thermal treatment ensures that wastes containing chemicals such as chlorine are below 1 per cent per load.

Mixing of waste will typically occur while stored in the bunker during times with low delivery. In these periods it will be 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 two (2) to three (3) times before being fed into the plan and therefore is well mixed.

4.4. WASTE CLASSES AND DESIGN FUEL

TNG will only treat residual waste fuels from either the adjacent MPC or authorised external operators.

4.4.1. Reference Facilities

Moving grate technology is tried and proven and has capacity to treat a wide range of residual waste materials. In selecting and designing the Facility a number of operating plants were reviewed for their performance in relation to feedstock, outputs (ash and residue) and emissions profiles (refer to Ramboll Technical Note, **Appendix DD**).

These reference facilities utilise a grate system and process Residual Waste Fuels from Construction and Demolition (C&D); Commercial and Industrial (C&I); some Municipal Waste/general wastes (MSW) and wood wastes. A summary of the reference facilities reviewed for the purpose of the project is provided in Table 11**.** TNG has been included in the list for comparison reasons.

As shown in Table 11, no two (2) plants are exactly the same in terms of the volumes of waste treated or typical profile. In particular, we note that there is no plant currently operating that processes C&D waste at the volume proposed by TNG (i.e. approximately 50 per cent). However, the European experience with EfW has been that pre-processed waste materials received from external sources has been sorted prior to arriving at the facility and information relating to its waste declaration/identification is “lost” and cannot be tracked back to its origin.

As such, it is not possible to declare the initial origin of the waste nor the exact composition concerning C&D, C&I, being processed by the European facilities. Nevertheless when taking in to account the relevant aspects for the design of an EfW plant (mainly the physical and chemical waste composition) it is possible to demonstrate that TNG operates well within the range of comparable facilities, namely the listed reference plants.

Table 11 – Reference Facilities and TNG (source: Ramboll; 2016)

Facility	**Commission Year**	**Waste Volumes Treated (tpa/combustion line)**	**Fuel Mix**	**Technology/ Supplier**	**APC**
TNG, Australia		4 x 276, 250 (i.e. total 1.105M)	C&I; C&D	Grate, HZI	Semi dry (lime)
Grossraschen, Denmark (DE)	2008	1 x 246,000	C&I; C&D	Grate, AEE	Semi dry (lime)< LAB
Heringen, DE	2009	2 x 148,500	C&I; C&D, some MSW	Grate, AEE	Semi dry (lime), LAB

Facility	Commission Year	Waste Volumes Treated (tpa/combustion line)	Fuel Mix	Technology/ Supplier	APC
Premnitz, DE	2008	1 x 150,000	C&I; C&D	Grate, AEE	Semi dry (lime), LUhr
Hannover, DE	2005	2 x 140,000	C&I; C&D, some MSW	Grate, AEE	Semi dry (lime), LAB
Knapsack, DE	2009	2 x 150,000	C&I; C&D	Grate, AEE	Semi dry (lime), Luhr
Ferrybridge, DE	2015	2 x 256,000	C&I; C&D, some MSW, wood waste	Grate, HZI	Semi dry (lime), HZI
Riverside, DE	2011	3 x 195,000	MSW; C&D	Grate, HZI	Semi dry (lime), HZI

What is evident from the reference plants reviewed in designing TNG is the substantial variation in the feedstock, which is demonstrative of the technological capacity to handle variation in waste fuel composition.

While there is no EfW plant operating elsewhere in the world that has an exact replica fuel profile as that proposed by TNG all relevant design parameters of TNG are well within comparable limits of plants which are successfully in operation. As a result it can be said that 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 feed stock.

Full details of comparative fuel profiles, design fuel chemical analysis, wood waste fractions and chloride ranges for all reference facilities is contained in the Ramboll Technical Memo provided at **Appendix DD.**

4.4.2. Classes of Waste to be Treated

TNG will receive the following classes of waste:

- Construction and Demolition Waste (C&D);
- Commercial and Industrial Waste (C&I);
- Floc Waste; and
- Source Separated waste.

The typical compositional profile of each of the above waste streams, together with the fractional volume of each phase of the development is summarised in Figure 24. Waste diverted to TNG from Genesis MPC following processing, referred to as the Chute Residual Waste (CRW) is made up of C&D and C&I waste stream residuals.

4.4.2.1. Detailed Compositional Profile of Waste Stream and Volumes

Chute Residual Waste

Chute Residual Waste is a termed applied to waste materials that are the residue of waste materials that have been pre-sorted and processed for the purposes of removing waste materials that can be recycled or reused. Accordingly, CRW is the waste that is left over from pre-processing that would typically be diverted to Landfill.

Chute Residual Waste (CRW) will arrive at TNG from the following sources:

- Genesis MPC (located to the north of the TNG site): and
- Other authorised facilities.

This material is approximately 450mm or less in size and is currently transported to the landfill base via chute and is the residual of both C&D and C&I waste streams.

Construction and Demolition

Construction and Demolition (C&D) waste is expected to represent almost 29% of Phase 1 feedstock, comprising C&D processing residual obtained from authorised C&D processing facilities.

Commercial and Industrial

C&I waste is expected to represent approximately 17% of Phase 1 feedstock, comprising C&I processing residual obtained from authorised C&I processing facilities.

Wood Waste

The majority of wood waste materials would be removed in pre-processing and sorting to ensure effective recycling and reuse. However, treated wood waste materials that cannot be recycled or reused represents a large proportion of the arising waste wood.

Several studies are available on the impact of processing TTW in an EfW plant. The most important results are summarized below:

- Thermal treatment is suitable for all types of TWW as there is in any case there is an effective control of the emissions.
- Co-incinerating of impregnated wood along with the basic waste brings an increase of the average arsenic content in the waste, whereas the concentrations of copper and chromium do not differ significantly from the basic waste. The increased arsenic content will primarily end up in the residues from the flue gas cleaning process, and to some extent the concentration in the bottom ash is also increased. It is, however, probable that the concentration of arsenic in leachate will not increase.
- Full-scale tests with co-incineration of impregnated wood, has not shown significant increase of arsenic emissions to air. Air emissions of arsenic (and trace metals in general) are mainly dependent on the APC technology and only to a small degree on the input concentration.

Floc waste

Floc waste (shredder floc) is the residue resulting from shredding and crushing items such as motor vehicles and white goods. It is typically generated by metal recyclers and brought to the landfill for disposal, as limited further resource recovery is possible from this shredded material. The metal industry has successfully secured landfill levy exemptions to assist with the costs of disposing of this difficult waste stream.

Floc waste contains primarily plastics, seat foam, rubber, glass, and carpet and is therefore suitable for thermal recovery. Floc waste is expected to represent approximately 14% of the Phase 1 feedstock. However, based on existing volumes available in the market the volume processed has the potential to be increased.

A detailed comparison on the compositional profile and treatment of floc waste is provided in section 2.3.3 of the project definition brief provided at **Appendix CC.** In general floc processing in Australia is comparable to that undertaken in Europe.

Paper Pulp

Paper pulp is not identified as an independent waste stream in the NSW EfW Policy, but can be classified as a mix of C&I and MSW residual from paper recycling operations. The composition of paper pulp has been obtained from a post-consumer paper recycling operation in Sydney. Paper pulp is expected to represent approximately 5% of the Phase 1 feedstock.

Glass Recovery

Glass residual is not identified as an independent waste stream in the NSW EfW Policy, but can be classified as municipal solid waste (MSW) residual from post-consumer glass recycling operations.

Garden Organics

GO residual is classified as the residual from domestic source separated GO waste. The composition of this residual waste was obtained from council audit data for GO bins prior to processing.

Alternative Waste Treatment Residuals

AWT residual is classified as the residual waste after processing domestic residual waste (red bin) from a two bin system. Processing thus removes dry recyclables, food, GO and other organic material via processing, leaving a high calorific residual waste stream. AWT residual is expected to represent approximately 7% of the Phase 1 feedstock.

Material Recovery Facility Waste

Material recovery facility waste (MRF waste) residual is the residual from domestic dry recycling operations. The composition of this residual waste was obtained from a material recovery facility operator in Sydney. ENVIRON has sourced the composition of this residual fuel from a material recovery facility operator in Sydney.

4.4.3. Design Fuel

The design of the facility allows for efficient operation between a net calorific value (NCV) of 10 and 16.5. At an NCV of 10, the plant would process a maximum of 1,350,000 tpa. At a NCV of 16.5, the Facility can operate with as little as 820,000 tpa.

Based on the maximum processing volume was residual waste fuels of 1,105,000 tonnes per annum across four (4) lines TNG will operate with an NCV of 12.34. Taking into the proposal to phase implementation, the initial two (2) lines in Phase 1 require a waste fuel stock of 552,500 tonnes per annum

Accordingly, the design fuel mix has been determined using the waste sources that would be available to TNG today, however the technology employed allows for significant flexibility in composition and quantity of material. The design fuel mix is summarised below.

As outlined above moving grate system offers TNG the greatest flexibility in the range of waste fuels that may be processed at the Facility. The following fuel types have been identified as the main sources of fuel for the Facility;

- Chute Residual Waste (CRW) from the Genesis MPC;
- Commercial and Industrial (C&I);
- Construction and Demolition(C&D);
- Floc waste from car and metal shredding;
- Paper pulp;
- Glass Recovery;
- Garden Organics (GO);
- Alternative Waste Treatment (AWT); and
- Material Recovery Facility waste (MRF waste) residual.

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

The design fuel is sourced from Genesis MPC (referred to as CRW: Chute Residual Waste) and external licensed facilities. Figure 24 includes the details of the design fuel mix for phase 1. Based on the design fuel compositions, NCV of the nominal design fuel mix is calculated to be 12.30 MJ/kg. However, as the NCV of waste fuels varies depending on type, the facility will operate within a range of NCVs to support operational flexibility.

Figure 24 – Design Fuel Mix: Phase 1 (Source: Ramboll, PDB; 2016)

	Units	CRW	C&D	C&I	Floc waste	Paper Pulp	Glass Recovery	GO Residual	AWT Residual	MRF Residual	Design Fuel Mix
Fuel Mix	%	**23.37%**	**28.69%**	**16.84%**	**14.43%**	**4.81%**	**1.72%**	**2.06%**	**6.87%**	**1.20%**	100
Compositional Analysis											
Paper/Card	%	4.30	14.05	22.44	3.93	78.40	62.00	30.00	21.05	38.54	16.75
Plastic Film	%	10.20	6.37	10.90	10.90	21.60	3.80	2.50	20.00	26.94	10.47
Dense Plastic	%	0.00	6.37	10.90	10.90	0.00	34.20	2.50	21.05	0.00	7.32
Textiles	%	5.30	0.00	12.89	0.18	0.00	0.00	0.00	10.53	0.00	4.16
Glass	%	0.00	0.00	1.81	0.00	0.00	0.00	4.00	0.00	8.50	0.49
Vegetation	%	8.30	0.00	1.70	0.00	0.00	0.00	35.00	3.16	0.00	3.16
Other combustibles	%	0.00	0.00	0.00	70.40	0.00	0.00	0.00	0.00	0.00	10.16
Metal	%	1.80	1.12	0.37	0.00	0.00	0.00	5.00	0.00	7.59	1.00
Fines	%	0.00	0.94	0.18	0.00	0.00	0.00	0.00	11.58	0.00	1.10
Wood	%	58.20	43.90	21.53	0.85	0.00	0.00	0.00	4.21	0.00	30.24
Combustibles	%	0.00	0.00	2.84	2.84	0.00	0.00	0.00	2.11	0.00	1.03
Non-Combustibles	%	4.50	0.00	0.00	0.00	0.00	0.00	21.00	1.05	0.03	1.56
Hazardous	%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Gyprock	%	2.40	6.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.42
Other	%	5.00	20.75	14.44	0.00	0.00	0.00	0.00	5.26	18.40	10.14
Total	%	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

4.4.4. Design Fuel: Typical Profile

Using the design fuel mix a typical profile has been developed. For phase 1, the typical profile is shown in Figure 25**.**

Figure 25 – Design Fuel Mix Typical Profile (source: Project Definition Brief, Ramboll, 2016)

	Units	CRW	C&D	C&I	Floc waste	Paper Pulp	Glass Recovery	GO Residual	AWT Residual	MRF Residual	Design Fuel Mix
Chemical Analysis											
Carbon (C)	%	31.34	27.02	35.00	29.65	42.90	41.01	16.98	38.96	32.63	31.44
Hydrogen (H)	%	4.21	3.51	4.29	3.80	5.84	4.63	2.12	4.98	4.84	4.07
Nitrogen (N)	%	0.34	0.06	0.59	0.18	0.00	0.00	0.12	0.47	0.00	0.26
Sulphur(S)	%	0.42	1.04	0.05	0.11	0.12	0.09	0.06	0.04	0.06	0.43
Chloride (Cl)	%	0.09	0.66	1.15	1.78	0.19	3.27	0.26	2.18	0.23	0.88
Oxygen (O)	%	21.11	21.50	17.50	7.04	24.64	26.69	12.58	13.77	12.11	18.06
Water (H2O)	%	28.47	21.51	21.68	22.62	22.58	20.81	36.20	18.40	15.20	23.38
Ash	%	14.03	24.70	19.74	34.82	3.73	3.50	31.68	21.20	34.93	21.49
Total	%	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
NCV	**MJ/kg**	11.95	9.97	13.84	12.59	17.22	15.24	5.67	16.33	14.23	**12.30**

4.5. TECHNOLOGY: MOVING GRATE INCINERATION

4.5.1. Overview

The design fuel is thoroughly mixed in the bunker and fed by crane. The cranes feed the independent lines, in semi-automatic or automatic operation mode. Once in the feed hopper, the fuel load is pushed onto the grate by a ram feeder.

The grate itself has a water-cooled zone to protect the grate against excessive heat when using high caloric Residual Waste Fuels. When the Residual Waste Fuel is completely burnt, the remaining ash falls into the bottom ash extractor, where the bottom ash is quenched by water and then transported to its dedicated hall with a storage capacity of 5 - 7 days.

The proposal has been considered against the 68 basic requirements in Chapter 5.1 and 5.2 documented in the “Reference Document on the Best Available Techniques for Waste Incineration (August 2006)” (in short BREF) to determine the suitability of the design, emissions and energy efficiency, that concludes the TNG facility fulfils the BREF requirements and therefore demonstrates BAT. A copy of this technical memo is provided at **Appendix KK.**

4.5.2. Incineration Design

The combustion grate is capable of treating a wide range of residual waste fuels including municipal household waste, industrial waste as well as solid recovered fuel (SRF) or biomass. The specific thermal and static surface loads are important design parameters of a combustion unit, which is expected to demonstrate low wear and long life expectancy.

The furnace is designed for continuous waste combustion in the range between 60 and 100% of the thermal design load. Short-time peaks caused by the non-homogeneity of the waste are absorbed by the system up to 110% of the design load. In case of very low power and heat requirements even sub-load operation at 60% of the thermal load may be conducted. The area of operation is defined in the Combustion Diagram (Figure 27).

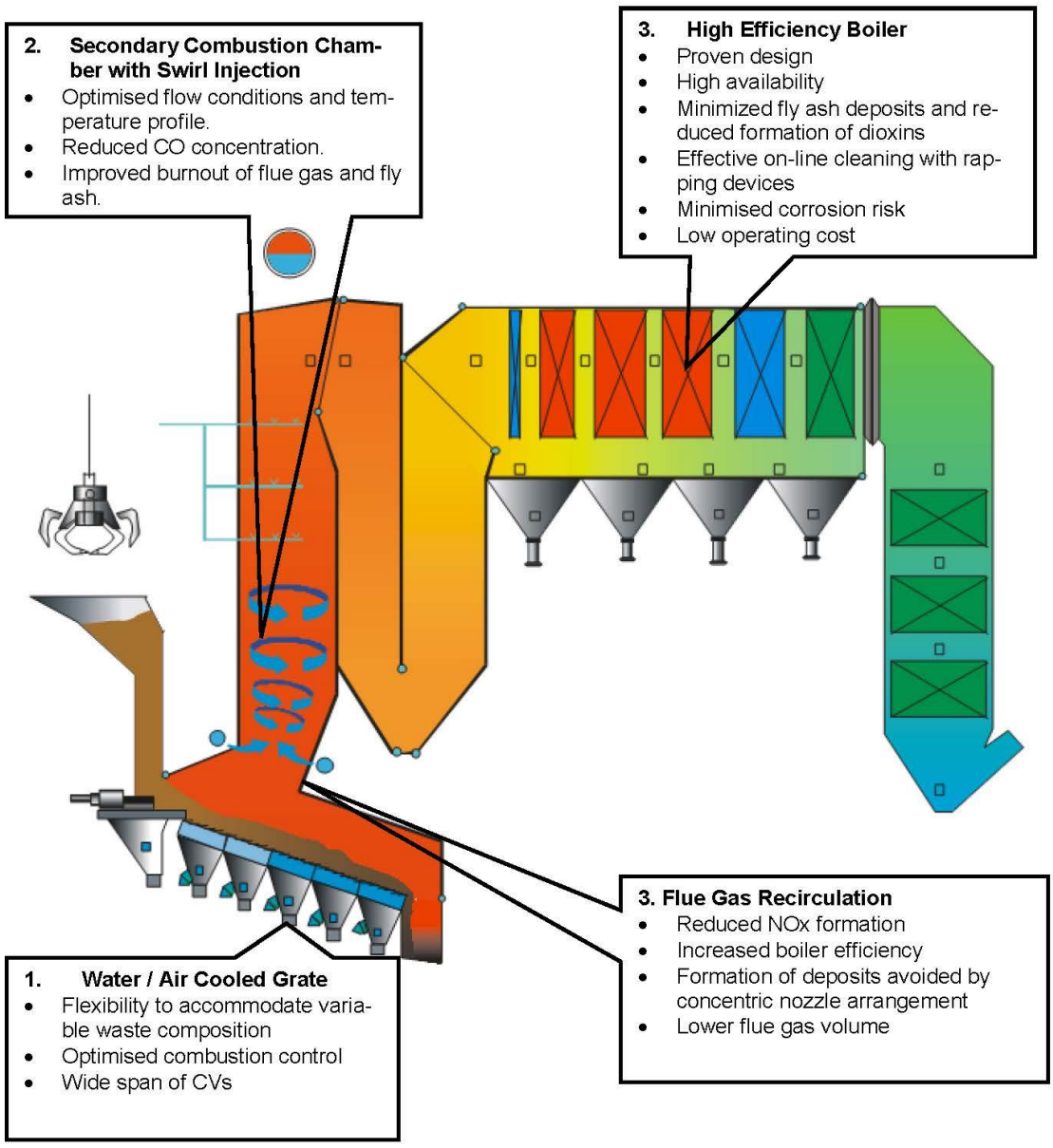
In case the temperature in the secondary combustion chamber drops below minimum temperature of 850°C, oil or gas fired support burners automatically start operation. Experience shows that such activation occurs very rarely depending on the fuel. Predominantly the burners remain in a stand-by position.

Should support burners be required, gas is preferred. Discussions with private gas supplier Jemena Gas Networks and state owned electrical distribution network Endeavour Energy have indicated that sufficient gas supply will be available to the Site in time for operational commencement.

4.5.2.1. Incineration and Boiler

The water-cooled grate, combined with the 5-pass heat recovery boiler form the basis of this Facility. The features of the technology are provided in the Figure 26**.**

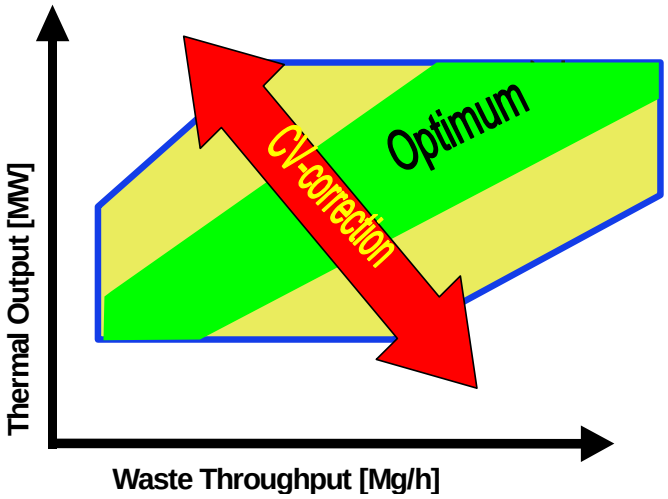
Figure 26 – Incineration and Boiler



4.5.3. Combustion Control System

Given the thermal output increases with greater waste throughout (Figure 27), a cooling system is used to condense the steam from the turbine exhaust for re-use. Large variations of the calorific value (CV) may require an adaptation of the parameters of the different control loops. The adaptation of all control parameters is executed manually by the adjustment of one single input value. This is the so called 'CV-correction'; a feature that is fully integrated in the control system. The CV-correction effects an automatic adjustment of up to ten parameters of the combustion control system.

Figure 27 – Combustion Control System

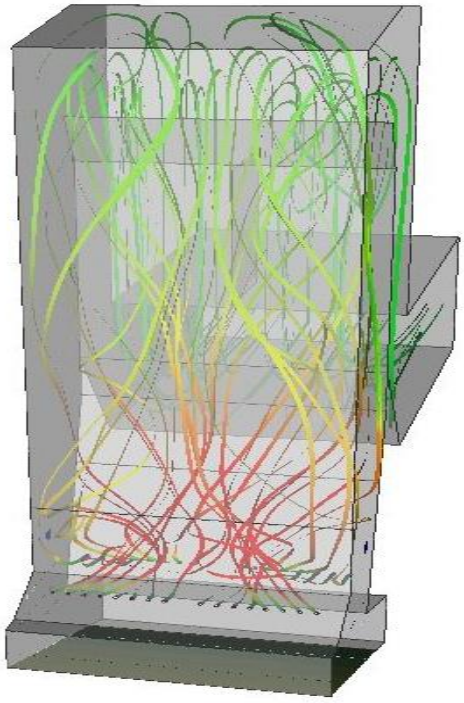


4.5.4. Flow Optimised Secondary Combustion Chamber

The geometry of the secondary combustion chamber (SCC) is designed for optimal flow conditions. The arrangement of the secondary air nozzles creates a swirl in the SCC which homogenises the temperature, velocity and concentrations of the flow (See Figure 28). Peaks in temperature, velocity and concentrations are minimised to:

- Improve burning-out of the flue gas;
- Provide a uniform temperature profile across the SSC;
- Reduce CO-concentrations;
- Minimise risk of corrosion of unprotected heating surfaces;
- Improve burn-out of fly ash;
- Reduce the amount of fly ash; and
- Reduce the formation of dioxins.

Figure 28 – Computational Fluid Dynamics of Swirl Flow in Secondary Combustion Chamber



4.5.5. Corrosion Prevention

Steam parameters have been fixed at 70 bar/430ºC, as this allows for high energy efficiency and at the same time keeping the risk of corrosion at an acceptable level.

Corrosion is a significant issue in waste fired boilers. Corrosion increases with higher temperatures. Steam parameters for boilers are therefore determined to achieve the optimal balance between boiler corrosion and plant efficiency.

In addition to the risk of high temperature corrosion in the superheaters, experience has shown that there is a risk of corrosion in the evaporator part of the boiler, particularly where the unprotected membrane tube walls in the first and second passes of the boiler are exposed.

Therefore, Inconel cladding will be used for some parts of membrane walls furnace, membrane walls top of pass 1 and 2 and some tubes of superheater 3.2.

4.5.6. Tube Protection Tiles for Secondary Combustion Chamber

The secondary combustion chamber (SCC) is lined with Silicon Carbide protection tiles of high heat conductivity. The small gap between the tiles and the heating surfaces is actively vented (rear-vented system) instead of filled with mortar as known from conventional refractory systems.

The design of the lining:

- High residence times of the flue gas at high temperature (> 2 sec. at 850°C at all conditions) and effective corrosion protection are guaranteed;
- Prevents a direct contact of the flue gas with steel surfaces (corrosion protection);
- Prevents large deposits on the surface due to relatively low surface temperatures and the avoidance of horizontal surfaces and steps in the lining (easier replacement);
- Remarkably increased life time of tiles; and
- On-load shower cleaning can be applied.

4.5.7. Boiler Design and Heat Utilisation

The design affords spacious heat exchange surfaces allowing long-lasting service. The alleys between the convective bundles provide adequate space for maintenance work.

The boiler running at the steam conditions 430°C/73 bara is optimised for best thermal efficiency and minimum heat loss. The flue gas outlet temperature is controlled by regulating the feed water temperature of the economiser (ECO). The multi-stage superheater allows for optimum adjustment of the steam temperature within the operational range.

The primary and secondary combustion air are preheated using low pressure steam and, if necessary, saturated steam (only for primary air) taken directly from the boiler drum. The condensate of the primary and secondary air preheater will be returned into the condensate system.

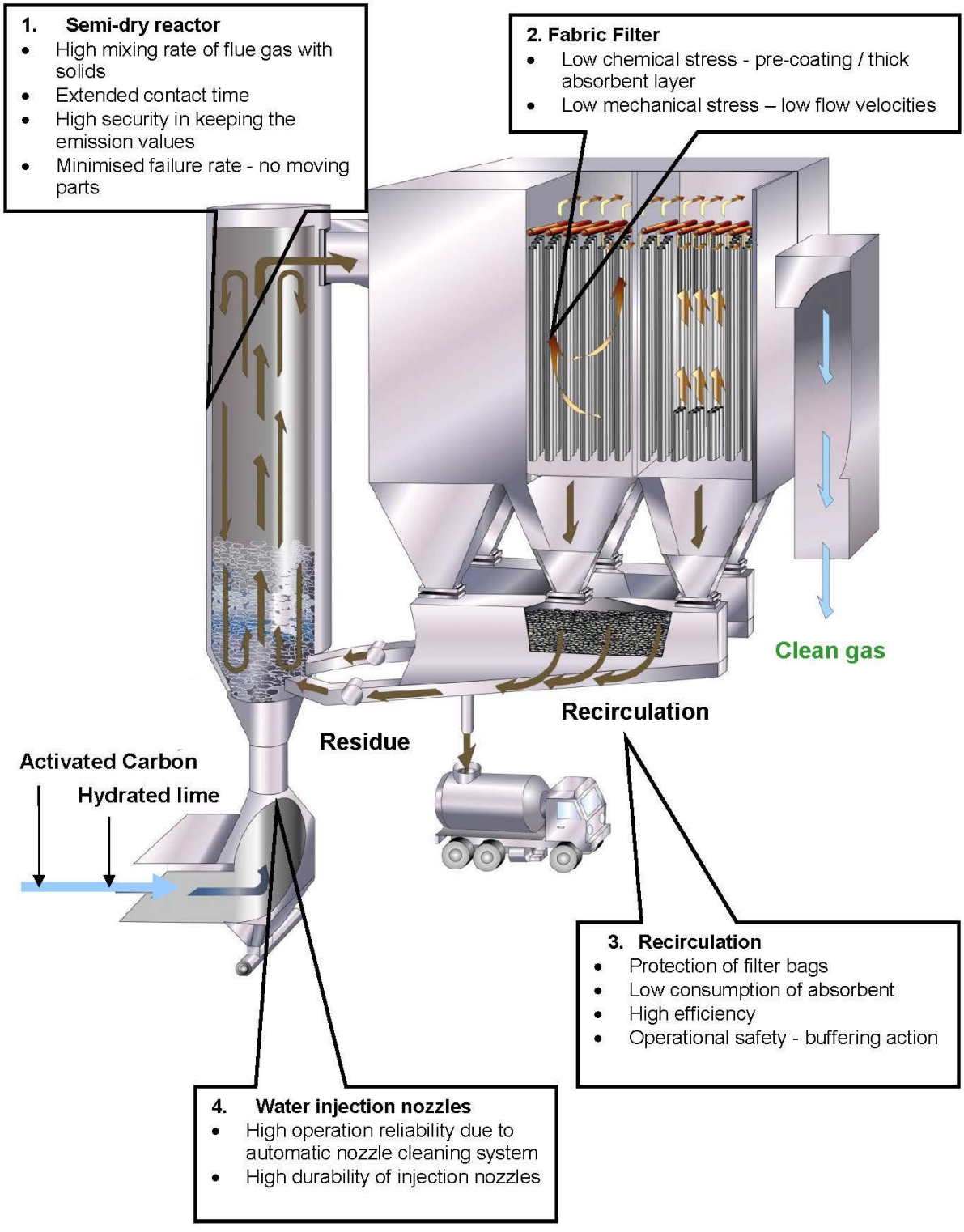
Most waste incineration boilers worldwide have a vertical economiser section. The Vertical economiser pass chosen combines more economical fabrication and erection of bundles with tube coils resulting in a reduced building size compared to a horizontal economiser section.

4.5.8. Flue Gas Cleaning

The flue gas will be cleaned in the Flue Gas Treatment plant to control emissions of acid gases, particulates, dioxins and furans and heavy metals.

The semi-dry flue gas cleaning process is designed to remove acidic gaseous contaminants by chemical absorption with hydrated lime. Heavy metals and organic contaminant compounds (i.e. dioxins and furans) are reduced by adsorption on activated carbon. Features of this system are shown in Figure 29**.**

Figure 29 – Semi Dry Flue Gas System



In this process the flue gas and solids move turbulently through the semi-dry reactor with partial inversion of the solid flow. The pollutants react with the injected hydrated lime and the activated carbon at a temperature of approximately 145 °C. The separation of solids from the flue gas takes place in the fabric filter downstream of the reactor. Precautions are considered for water contacted parts, generally water-proof insulation is applied. All maintenance and inspection areas are encased in order to protect against rain during maintenance work. The flue gas cleaning process is characterised by the following features:

- Flexible to load changes and changes in gas contaminant concentrations;
- Efficient use of adsorbent and minimised residue quantities;
- Designed for high Hydrogen Chloride (HCl) and Sulphur Dioxide(SO_2) inlet concentrations;
- Dry injection of Calcium Hydroxide ($CaOH_2$) and Powdered Activated Carbon (PAC);
- Separate injection of water for conditioning and reactivation of recycled lime particles;
- Compact design; and
- Low manpower requirement.

4.5.9. Nitrogen Oxide (NO_x) Removal System

The NO_x Removal system is a selective non-catalytic reduction, SNCR.

With an SNCR system, ammonia water is injected into the first pass of the boiler at a temperature level of approximately 900°C. Here the chemical reaction takes places, converting NO_X to harmless N_2 and water. The system requires 2-3 levels of injection nozzles in the first pass of the boiler and a system based on water or air to atomize ammonia water into the boiler. With a SNCR system the requirement of 200 mg/Nm^3 NO_x can be comfortably reached.

The SNCR technology can be optimised to reach 120 mg/Nm^3 for a sophisticated SNCR (as daily average). The increased efficiency comes with a modest increase of CAPEX and additional consumption of ammonia and reduce NOx emissions.

4.5.10. ID-fan

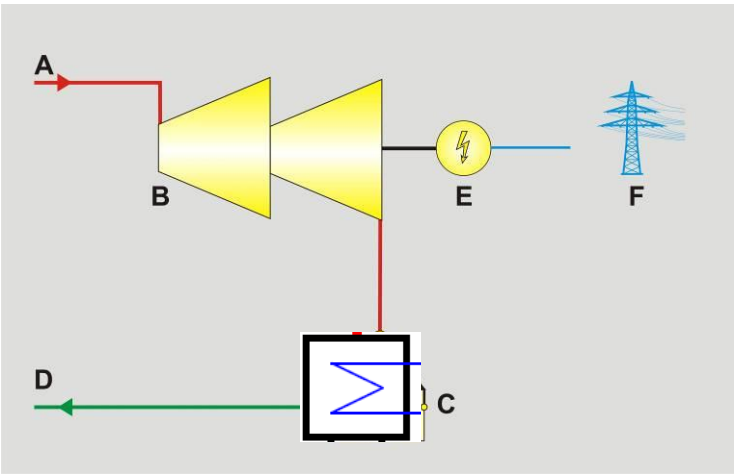
The ID-fan is designed for boiler operating at 110 % MCR in a fouled condition after 8,000 hours of operation. In order to keep the wear and noise level down the air fan speed shall be below 80% of the maximum speed for which the fan is designed for sustained operation. The ID-fan is electrically driven.

Spare capacity of air and flue gas systems with respect to flow rate is necessary for several reasons. The ID-fan shall always have sufficient capacity to ensure negative pressure in the furnace, also during short term variations. During the life time of the plant the waste composition, quality and quantity might change, leading to different requirements of air and flue gas flows.

4.5.11. Turbine and Waster Steam Cycle

For power production there will be one turbine set for two incineration lines. The produced steam is supplied to a multiple steam turbine turbo set. The turbo set will generate electrical energy for the needs of the complete plant as well as for the external electrical grid. The steam turbine set features are illustrated below.

Figure 30 – Steam Turbine Set Generating Electricity



By means of a pressure controlled steam extraction, low pressure steam is taken for internal consumers in the plant. The expanded steam is then led to an air-cooled condenser to completely condensate the steam. Also part of this cycle are general steam and condensate systems, water treatment and feed water preparation systems as well as a closed-loop cooling system for all general cooling purposes of the plant.

4.5.12. Electrical Efficiency

The proposed Facility will have a net electrical efficiency of circa 30% (with a thermal input of 469.6 MW and a net thermal export to the grid of approximately 137.3 MWe).

High efficiency is assured by recovering the energy released by the combustion process in a 5-pass boiler, which then produces superheated steam. The chosen parameters of 73 bara/430°C for the superheated steam ensure high energy efficiency while still maintaining reliable boiler operation. The superheated steam is expanded in a condensation turbine. About 90% of the gross electricity production is fed to the national grid. High plant availability is supported by an effective boiler cleaning system.

4.5.13. Cooling System

The Proposed Facility **will require a cooling system to condense the steam from the turbine exhaust for re-use.** A Best Available Technology (BAT) assessment has been undertaken by HZI, and has concluded that the use of ACC represents BAT for this installation based on its geographical location.

ACCs condense steam from the turbine exhaust by transferring heat to the air. The steam travels down the inside of finned metal tubes whilst air is blown by fans across the outside of the tubes. As the steam loses heat it cools and then condenses. The condensate is collected in a condensate tank below the ACC unit and then pumped to a feed water tank ready for recirculation back to the boilers.

4.6. OPERATIONS

4.6.1. Hours

The EfW facility will operate 24 hours a day, seven (7) days a week once completed, for a total of 8,000 hours per year. The facility will only be offline to allow for scheduled and periodic maintenance.

However, the following deliveries and pickups from the site will are as follows:

- **Incoming fuel stock**: 24 hours, 7 days;
- **Incoming management materials**: 24 hours, 7 days;
- **Outgoing waste** (ash/residue): 12 hours, 6 days. (6am – 6pm core hours with the potential for a some to occur during 24/7 ops); and
- **Miscellaneous deliveries**: (hydrated lime, activated carbon and other materials): 24 hours, 5 days a week.

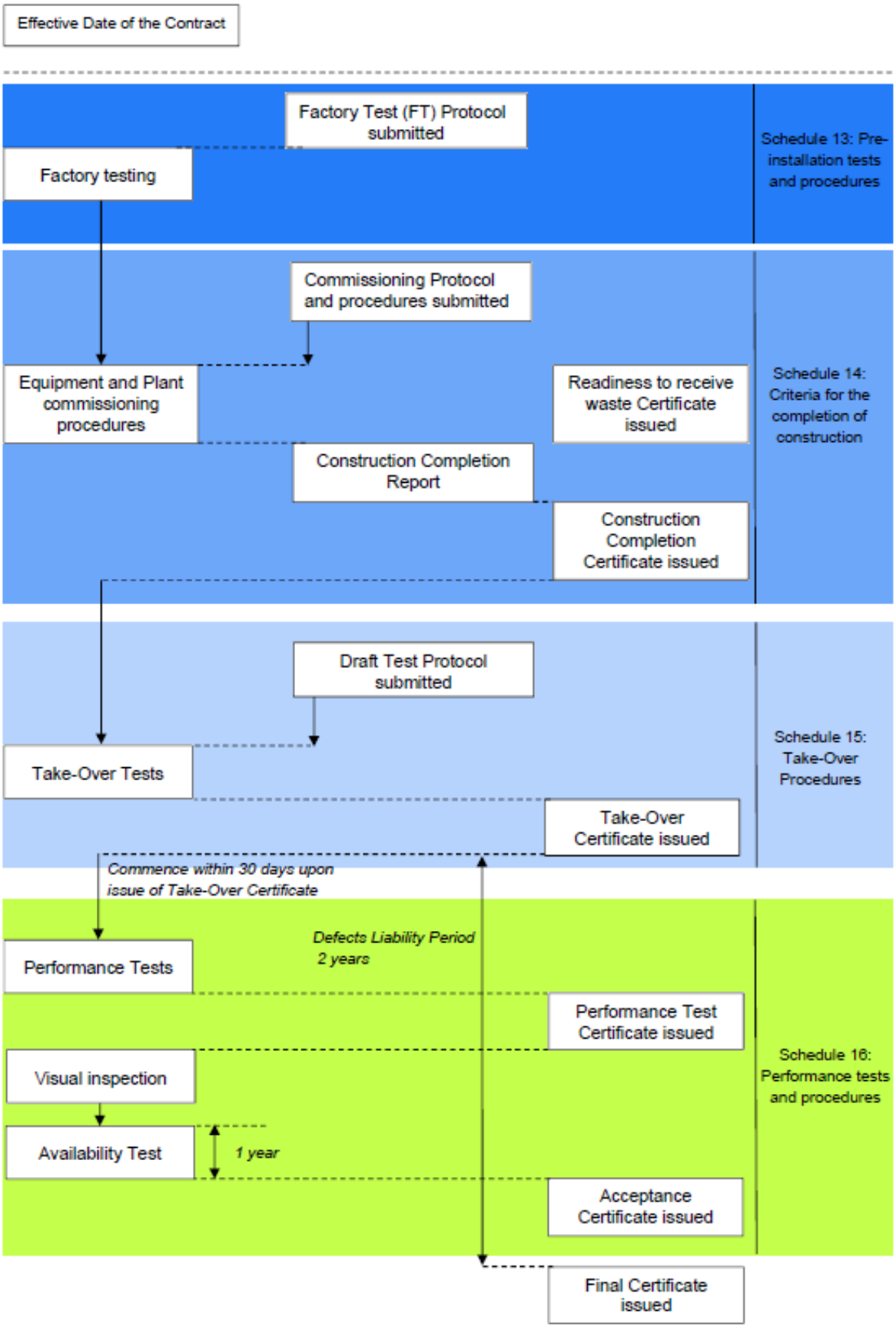
4.6.2. Employment

An experienced operator and maintainer will be contracted to oversee the implementation, operation and maintenance of the facility. TNG are currently in negotiations with experienced operators and maintainers. Once operational the EfW plant will provide a total 55 jobs.

4.6.3. Proof of Performance Trials

HZI, the technology producers and suppliers have provided the framework for performance test and sequencing to determine reliability of the technology prior to commencement of full operation. The testing sequence is shown in Figure 31 and details of tests and procedures are outlined in **Appendix LL**.

Figure 31 – Sequence of pre-operation testing (Source: HZI)



The performance trials are carried out at key stages in the implementation of the technology, these are broadly described as follows:

- Factory acceptance tests – to ensure the proper assemblage;
- Cold tests – to test the proper functioning of the facility without media (i.e. without processing) waste fuels);
- Warm test – test proper functioning with media (i.e. with design fuel); and
- Trial Operation Period – 300 hours commenced in 30 days of operations to demonstrate compliance with function al and environmental requirements.

Combined with the above, the applicant will undertake emissions testing in line with the EfW policy to ensure that throughout the first year of operation compliance with emissions targets are being met.

4.6.4. Start-up and Shutdown

The Facility will be started and stopped automatically, but under the supervision of trained operators. This means that the control system will start the Facility in a controlled and safe manner, but the operator will have various “hold” points where checks are made before proceeding to the next stage. The 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.

If the operator wishes to turn the Facility off, this is carried out in a controlled manner by reversing the start-up process. Solid fuel feeding is stopped, but the Facility continues to operate to ensure that all material is burnt and any flue gases are cleaned out of the system. Air flows are left on to allow the boiler to cool down before the Facility is fully shut off.

If any emergency condition is reached, or if a rapid facility shut down is required, 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 Facility is also protected in case of a complete loss of power, a “black plant” trip. In this case, the Facility will stop as under an emergency stop. The Facility will be provided with a secure electrical supply to provide power to essential consumers such as oil pumps, feedwater pumps, instrument air, fire pumps and emergency lighting. Control systems are supplied from a UPS system (Uninterruptable Power Supply) to ensure the operators are aware of what is happening.

4.6.5. Maintenance

The Facility will be operated and maintained by a dedicated Operations and Maintenance team. A maintenance plan will be established setting out-weekly, monthly, annual or longer interval inspections, tests and maintenance activities to be undertaken.

The Start-up and Shutdown process will start and stop automatically, under the supervision of trained operators. This means that the control system will start the process in a controlled and safe manner, but the operator will have various ‘hold’ points where checks are made before proceeding to the next stage. The process will be started using fuel oil or gas 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.

Process shut down will be carried out in a controlled manner by reversing the start-up process. Emergency controls will be in place for emergency shut downs.

The proposed Facility will be automatic and operator controlled from a stand-alone dedicated control room.

The proposed main control and supervision system will consist of a Distributed Control System (DCS) organised on several levels. The proposed Facility will be fully instrumented including alerts and controls to allow safe and efficient operation.

4.6.6. Distributed Control System (DCS)

The DCS is an automated system used to operate the plant and ensure the safety of personnel and equipment. The DCS, provided by the technology provider HZI, operates the Facility processes, machinery,

and drives. It also covers information management, quality control, and mechanical and field device condition monitoring.

The DCS replaces the following equipment:

- Operator Level;
- Server stations;
- Process stations;
- System network (redundant Ethernet network);
- Bus systems to Remote I/O stations;
- Communication to HV system; and
- Link to Turbine package unit.

The DCS consists of the following levels:

- Plant level: Process equipment, sensors, actuators, probes and analysis devices.
- Automation level: Process control, automated devices and autonomous systems, safety systems (SIL = Safety Integrated Level).
- Process control level: Monitoring and controlling of process, data acquisition, programming tools.
- Plant control level: Management, maintenance and supervision.
- Interface to management systems and the office network.
- Interface for remote access.

– CEMS (Continuous Emission Measuring System);

– Remote maintenance; and

– Data and trends.

A more detailed description of the DCS is available at Appendix E of the Waste Management Report at **Appendix J**.

4.6.7. Diesel Generators

Two (2) diesel generators are proposed to be implemented on site use, one for safe shutdown, one for black, start. Each of the generators will have a 2.4MW capacity; 3,000 kVA for the four (4) incineration lines.

4.6.7.1. Use of Diesel Generators

Diesel generators are for emergency use only and will not be used for shutting down or starting up the facility in the case of scheduled maintenance shutdowns or planned outages shutdown.

It is anticipated that the use of diesel generators would not exceed 200 hours per year. Typical use of the generators would be to supply power to the facility, in the case of a fire, to ensure emergency lighting, fire-fighting pumps, and similar. They would also be used, to ensure safe shutdown of the plant and a black start of one line enabling a turbine-powered black start of the other line. As well as in the event that a simultaneous occurrence of adverse conditions including:

- 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; and
- An extremely hot day with ambient air temperatures above 37°C causing an excessively high back pressure in the ACC, in turn initiating a turbine trip and necessitating a shutdown of the whole EfW plant.

Once a black start of one line is successful and the ambient air temperature cools down sufficiently to enable island mode operation again e.g. during the following night, the diesel generators can be turned off.

The probability of the first adverse scenario is low, as such the probability of the simultaneous occurrence of both conditions is very low. A grid blackout (= island mode operation of the turbine), extremely high temperatures and full load operation (100%) of the EfW plant would need to occur simultaneously to initiate a turbine trip and shutdown of the whole EfW plant.

Conversely, the potential of a turbine trip, grid blackout and very high ambient temperatures can be significantly decreased by a reduction of the waste load to approximately 80%.

4.6.7.2. Duration of Use

The diesel emergency generators would only be used in emergencies and will not be used on a continuous basis / during normal operation of the plant. Typical use durations associated with scheduled and planned shutdowns would be 2 hours (the time is takes to safely shutdown and black start when the HV grid is straight away available again).

As the shutdown time and black start time are closely related, so if the shutdown time lasts longer, the plant will be cooled down further and the black start will take longer, in max. 6 hours.

4.6.7.3. Appearance

Each of the diesel generators will be located in a closed e-house with an exhaust pipe on the top.

4.6.7.4. Emissions

Specifications and emissions information is provided in **Appendix K** as part of the Air Quality Assessment detail**.**

4.6.8. Storage and Use of Chemical Substances

The Facility will use various raw materials during operation. Primarily, these include hydrated lime, ammonium hydroxide, activated carbon, Low Sulphur gas oil and water. An overview their use and quantities stored on site is provided in Table 12.

Table 12 – Chemicals use in treatment system and stored on site

Raw Material	Process	Typical Usage (tpa)
Hydrated Lim	Flue gas treatment – acid gas scrubbing	19,800
Ammonium hydroxide (24.9% solution)	Flue gas treatment - NO_x reduction	2,200
Low sulphur gas oil	Flue gas treatment – dioxins and heavy metals	420

4.6.9. Water Demand

For the construction phase, the average monthly water use is estimated to be 546 m^3, with a maximum of 1836 m^3 and minimum of 12 m^3. Construction and implementation of the proposed facility is anticipated to extend over 36 months. The total water demand for the construction phase is 23,464 m^3 or 23.4 ML. A construction water programme has been prepared by HZI and is appended to the Soil and Water Report.

Predicted water demand for the operation of the proposed Facility has three (3) main components:

- EfW plant process water;
- General use for staff facilities, including potable supply; and
- Water kept on site for firefighting purposes.

A summary of all water use, storage and collection is provided in Table 13.

Table 13 – Summary of water demand and re-use potential

Element	Project Water Demand/Need		Water Captured (runoff from roof)
	Required (per year)	Maintain on site	
Construction	7,821m^3	-	-
EfW plant total	186,000m^3	-	-
Water/steam cycle	11.6M/yr	-	-
FGT	117.2M/yr	-	-
Bottom Ash	40.6 ML/yr	-	-
Fire Management		546,000 Litres	-
Use in Staff Amenities	1.43 ML/yr	-	-
Landscaping	160.8ML/yr	-	-
Water Re-Use	-	-	17,570m^2

4.7. EMISSION STACKS

Treated flue gases will be emitted to the atmosphere via two (2) separate twin-flue standalone stacks, located to the south of the Flue Gas Treatment Areas. The proposed stacks are 100 metres high.

4.7.1. Stack Height

The stack height was identified based on a combination of compliance of pollutant ground level concentrations (influenced by dispersion of particulates and contaminants) and reference to the US EPA document "Guideline for Determination of Good Engineering Practice Stack Height (Technical Support Document for the Stack Height Regulations)" (US EPA Good Engineering Guideline).

The potential effect of the stacks on visual amenity is considered to be negligible for most locations and generally low to moderate where views are possible from sensitive viewpoints (i.e. adjacent residential land) due to vegetative screening, the slender form of the stacks, low reflectivity materials, compatibility with surrounding industrial development and the effects of topographic variation and distance.

4.7.2. Plume Visibility

A stack exit temperature of around 120°C and moisture of the flue gas of 15-18% is expected. Calculations show that that plume formation will not occur at ambient temperatures above 12 °C and a relative humidity of 75%.

Based on the exit temperature plume will not be visible the vast 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 early morning hours in the coldest 6 months of the year and have very limited height.

4.8. RESIDUE CLASSIFICATIONS AND DISPOSAL

4.8.1. By Products (Waste Arising)

The facility will generate the following wastes streams:

- Bottom Ash;
- APC Residue (Boiler Ash and Flue Gas Treatment Residues);
- Ferrous material residue;
- Gaseous emissions (pyrolysis gas);

- Staff waste; and
- Other waste (i.e. liquid effluent).

Bottom ash

Bottom ash is 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.

Boiler ash

The characterisation of boiler ash is dependent upon in which boiler pass it is accumulated in. Boiler ash of the horizontal pass will be conservatively disposed of with the APC residues. The composition of the ash from the first vertical pass is similar as the bottom ash and can be disposed of with the latter.

Air Pollution Control (APC) ash

Flue Gas Treatment (FGT) residue, 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 hazardous waste. FGT is required to be treated before disposal to landfill. 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 treatment facility, in line with relevant hazardous waste legislation.

Ferrous material residue

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

Liquid effluent

Liquid effluents will be produced from the boiler water treatment system and from the boiler blow-down. All boiler blow-down and liquid effluent produced will be fed to the ash discharger via the process water system. Under normal operating conditions effluents are returned to the proposed Facility for re-use. As such, the majority of liquid effluent produced on site will either be evaporated or absorbed into the ash for transport off site.

Liquid effluent will be collected in a storage tank to balance the amounts generated and disposed of to the ash quench. Asa consequence of this reuse there will be no need to dispose of liquid effluent generated through the thermal treatment process.

4.8.2. Volumes of Waste

The 1.35 million tonnes per annum technological capacity of the facility represents the “worst case” scenario for operation of TNG. Table 14 provides a summary of the waste by products associated with the operation of TNG using the design fuel input to achieve an NCV of 12.30 MJ/kg based on 8,000 hours of operation a year.

Table 14 – Estimated waste generation associated with worst case scenario

Waste Stream	Volume (worst case)	Destination
Bottom Ash	400,000 t/pa (wet)	Landfill
Residues (incl. APC and Boiler Ash)	51,700 t/pa	Authorised Landfill only
Ferrous Material	Variable dependant on fuel stock	Reuse/recycling
Liquid Effluent	N/A achieves balanced reuse	Water balance achieved

Estimated quantities of bottom ash may vary within a range of +/- 3.5%. The variation arises because of variation in waste amount, composition and calorific value (CV) of the waste.

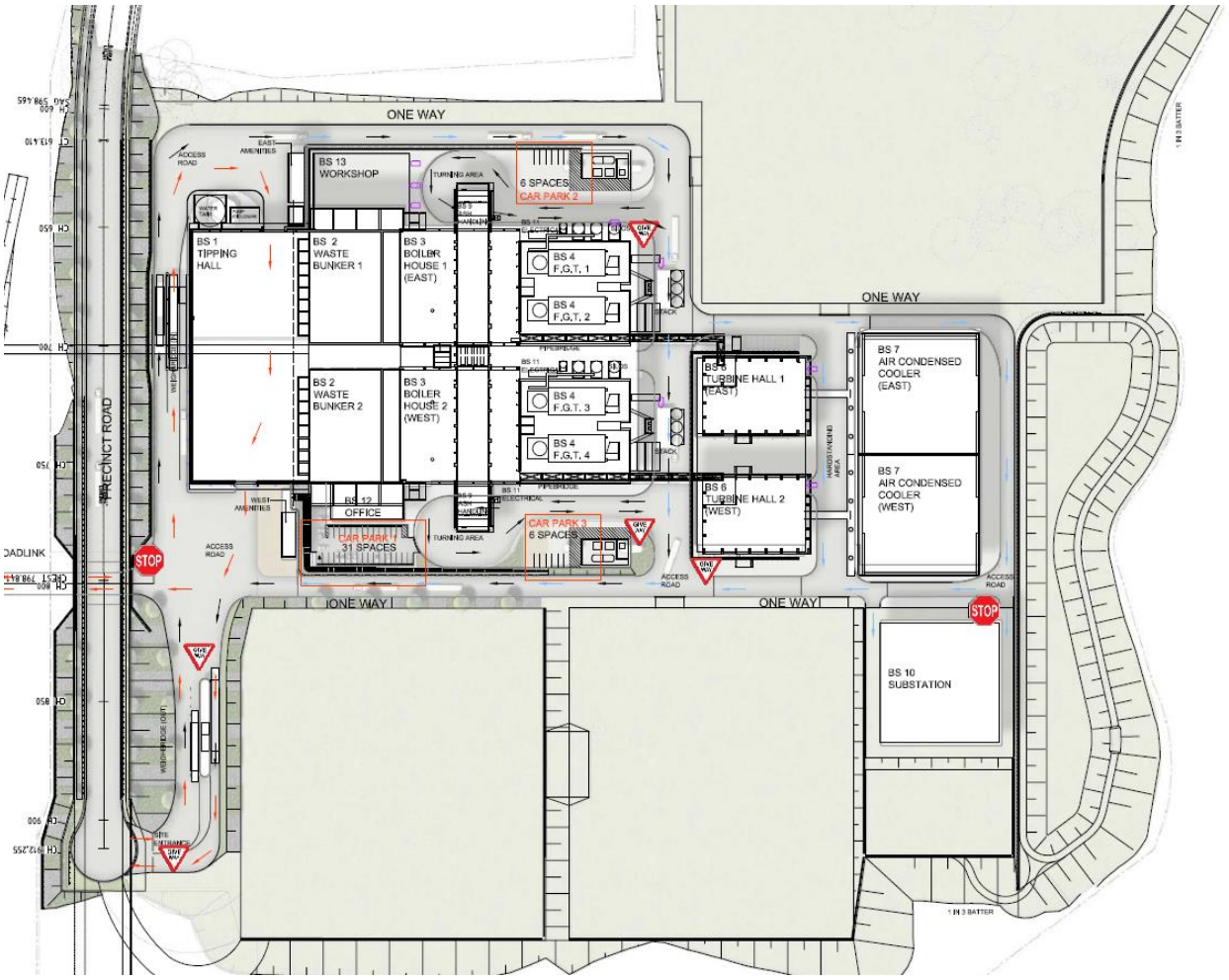
Even different waste streams with identical CV can have a variation of the ash content. The CV is mainly influenced by the relationship between combustible, water and inert elements. A waste with high water but low ash content can have the same CV as a waste with high ash and low water content (Ramboll Technical Memo; 2016 **Appendix DD**).

4.9. SITE ACCESS AND PARKING

4.9.1. Access and Vehicle Movement

The primary point of access for vehicles accessing TNG will be via the Precinct Road to the north of the facility proposed to be constructed as part of the project. The vehicle movement path through the site is shown in Figure 32**.**

Figure 32 – Vehicle Access and Movement (source: Krikis Taylor Architects)



4.9.2. Parking

The development accommodates 42 car spaces at grade car spaces located within the site; One (1) disabled space and three (3) visitor spaces located in the western car park. A traffic impact assessment has been prepared by Traffix and is provided at **Appendix Q.**

4.10. SUBDIVISION

The amended proposal and EIS has reduced the proposed subdivision from a proposed 11 lots to three (3) lots as shown in Figure 34**.**

The proposed amendment responds to matters raised in submissions as part of exhibition and in the discussions with the DPE in relation to the preparation of the VPA. The amendment is aimed at achieving the following:

- Ensuring that those areas of both the broader site and the development site that support vegetation classed as being a part of an endangered ecological community is retained within the existing title boundaries to ensure its ongoing management and protection.
- A clear identification of the land that is being developed and improved for the purpose of identifying “net developable area”.

In respect of the above the, the amended proposal seeks consent for the lot reconfiguration to subdivision of existing Lots 1, 2 and 3 in DP 1145805. No changes are proposed to the existing Lot 8 in DP1200048.

An outline of the TNG site over the existing subdivision pattern and Deposited Plan is shown in

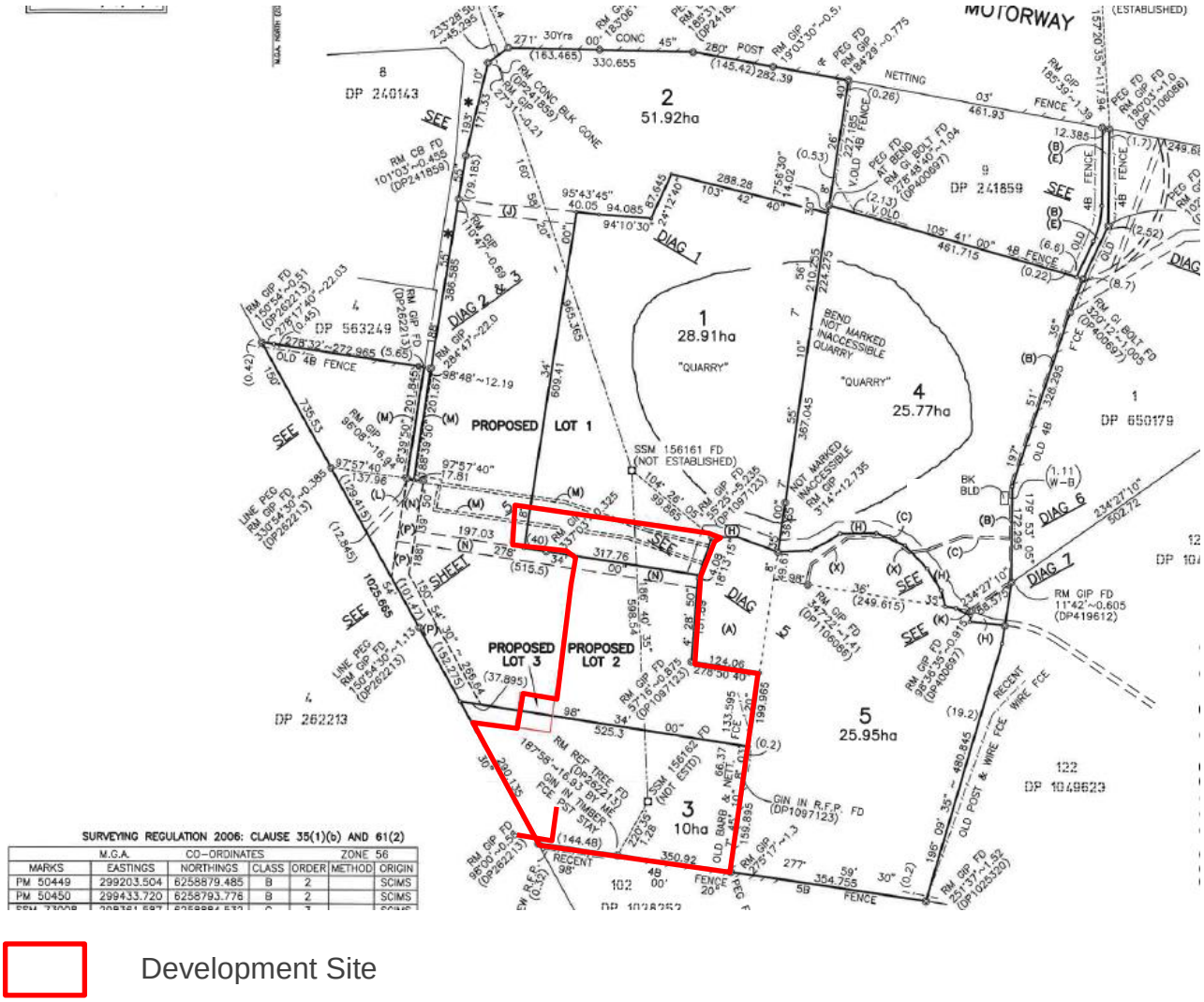
Figure 33. A summary of the proposed subdivision lots to be created is provided in Table 15.

An enlarged copy of the proposed plan of subdivision is provided at **Appendix F.**

Table 15 – Summary of proposed subdivision

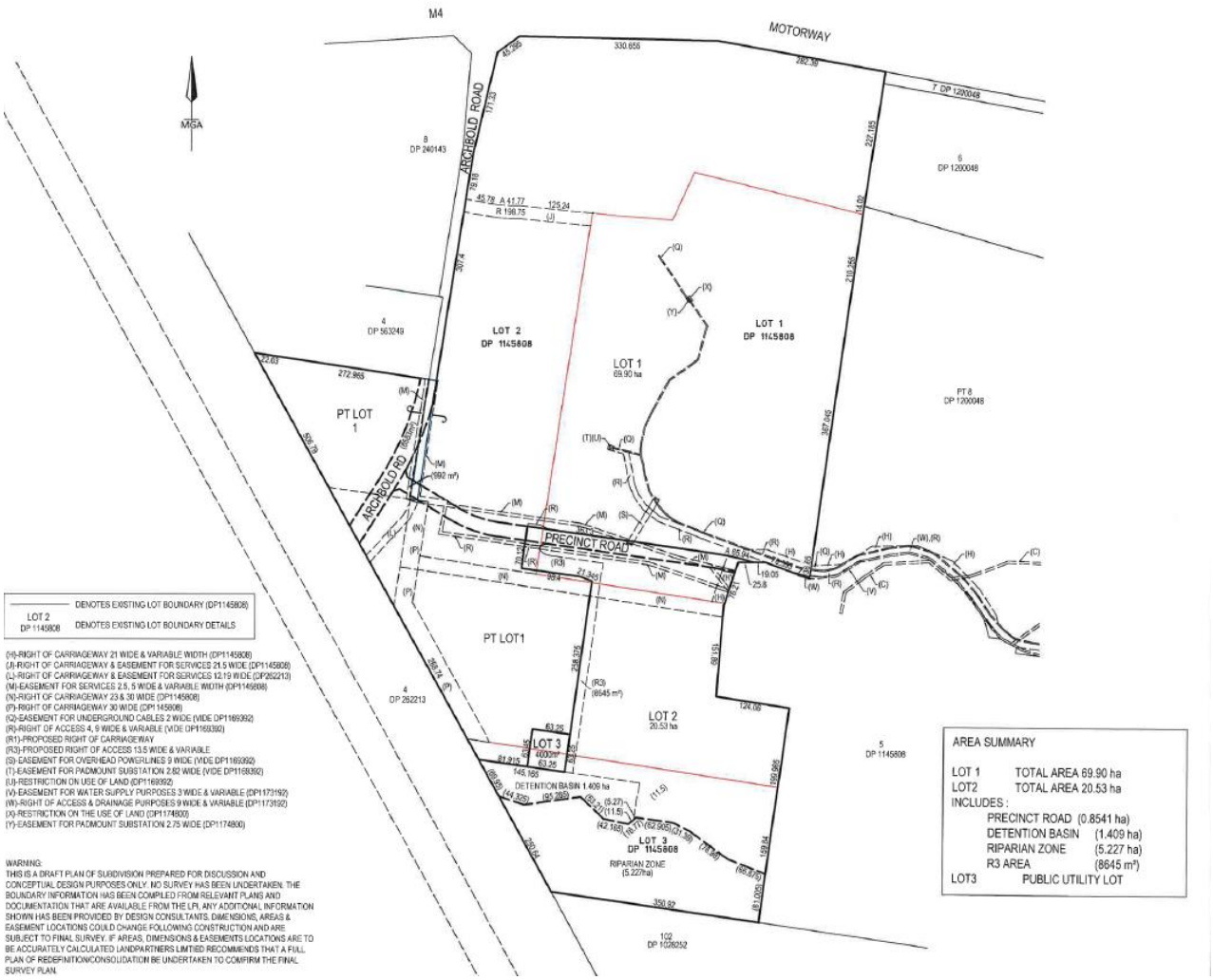
Lot No.	Area	Purpose
Lot 1	64.9 hectares	Existing landfill operation, Genesis MPC and ECC/land zoned E2 Environmental Conservation
Lot 2	20.55 hectares	Energy from Waste Facility (including portion of the Ropes Creek Tributary and riparian land as well as proposed stormwater management device)
Lot 3	4,000m²	Future substation site

Figure 33 – Existing Deposited Plan with proposed lots 2 and 3 shown red.



Development Site

Figure 34 – Proposed plan of subdivision (source: Land Partners, 216)



5. JUSTIFICATION & ANALYSIS OF FEASIBLE ALTERNATIVES

This section of the amended EIS outlines the alternatives considered in relation to the development of the site and design.

5.1. PROJECT JUSTIFICATION

5.1.1. Justification & Benefits of the Proposed Development

The proposed SSDA represents a positive development outcome for the Site and surrounding area and is an appropriate and suitable land use for the Site. The SSDA is considered justified in that:

- The Proposed Facility will use safe, reliable, tried and proven technology to create green energy from Residual Waste Fuel that would otherwise go straight to landfill.
- The Proposed Facility is proven technology in the proposed configuration of the plant. This technology currently operates reliably in the United Kingdom and continental Europe and has a successful track record in treating the same waste streams proposed as fuel as part of this application.
- It will deliver a net positive Greenhouse Gas effect, eliminating approximately 3 million tonnes of CO^2 per annum.
- The Proposed Facility will complement the existing waste disposal and recycling facility adjacent to the proposed Facility.
- The Proposed Development is permissible within the zone and complies with the development standards and objectives of state and local policies.
- The Proposed Facility represents best practice to minimise the discharge of emissions. Best practice accountable, real time emissions monitoring technology is proposed to be installed to constantly demonstrate that there are no harmful emissions to the environment, air, soil or water.
- The waste sourced as input is genuine Residual Waste Fuel that cannot feasibly be reused or recycled. The proposed fuel will not be putrescible waste. The proposed fuel directly meets the eligible fuels criteria of the *NSW Energy from Waste Policy Statement 2014* (as detailed within the Waste Management Assessment at **Appendix J**).
- The specific effects on human health of the Proposed Facility have been considered (further detailed in **Section 17** of this amended EIS) and it was found 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.

The SSDA will also result in the following net benefits by contributing towards:

- 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 (discussed further in the Local Air Quality and Greenhouse Gas Assessment Report prepared by Pacific Environment at **Appendix K**)

- 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 Proposed 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. Further detail on employment generation is provided in the section below.

- Overall, the works subject to the SSDA are considered to represent orderly and economic development of the precinct in line with established project objectives.

5.1.2. Employment Generation

In addition to 55 operational jobs, it is expected the proposed Development will generate up to 500 jobs during the construction phase. Estimated employment numbers are based on the published information for the following three Major Projects from Wellington Council, NSW:

- ERM Power (construction of a gas fired power station in Wellington);

- Infigen Energy Development Pty Ltd (construction of a 33 tower wind farm at Bodangora); and

- Wind Prospect (construction of a 330 tower wind farm east of Wellington).

The labour demand for the proposed Development includes, but is not limited to, those roles outlined in Table 16. Further details on construction related jobs are provided in the Capital Investment Value Report at **Appendix I.**

Table 16 – Summary of Jobs to be created

Role/Job Created	Role/Job Created
• Architects	• Painters and decorators
• Bricklayers	• Plant mechanics/fitters
• Building envelope/façade specialists	• Plant operatives
• Civil engineers	• Plasterers
• Civil engineers operatives not elsewhere classified	• Plumbing and heating, ventilation and air conditioning trades
• Construction managers	• Roofer

Role/Job Created	Role/Job Created
• Electrical trades and installation	• Scaffolders
• Floorers • Glaziers	• Senior, executive and business process managers
• Labourers	• Specialist building operatives not elsewhere classified
• Logistics	• Steel erectors
• Non construction professional, technical, IT, and other office based staff (excl. managers)	• Surveyors
• Other Construction professional and technical staff	• Wood trades and interior fit-out

5.1.3. Demand for Waste Infrastructure

Currently, there is a large infrastructure gap in resource recovery infrastructure and waste generation rates (for both material recovery facilities and EfW facilities). There are currently approximately 9 NSW EPA approved facilities in the Western Sydney region that can accept non-putrescible (Class 2) General Solid Waste, the waste type to be accepted at the proposed Facility. These are as follows:

- Kimbriki Resource Recovery Centre, Terrey Hills;
- DADI, Eastern Creek;
- Kurnell Landfill, Kurnell;
- Blacktown Waste Services, Marsden Park;
- NSW Investments (Previously called 'Wanless landfill'), Kemps Creek;
- Erskine Park Landfill, Enviroguard;
- SITA Elizabeth Drive Landfill, Kemps Creek;
- SITA Spring Farm Landfill, Spring Farm; and
- Veolia Horsley Park Landfill, Horsley Park.

Some other Class 2 facilities are nearing closure, have recently closed or accept negligible quantities of waste and only from specific sources (e.g. council operations). These include:

- Huntley Heritage Landfill, West Dapto (close to closure);
- Brandown Landfill, Kemps Creek;
- Penrith Waste Services;
- Belrose Landfill (closed November 2014);
- Bankstown City Council Kelso Landfill (closed mid 2014);
- Glenfield Landfill, Glenfield; and
- DADI Alexandria.

The NSW EPA has recently committed to conducting an infrastructure needs assessment, which builds upon the work conducted in 2011 by NSW EPA and will include landfills and C&D processing facilities in addition to the original analysis of MSW and C&I facilities. In the meantime, the most recent studies examining Class 2 capacity are:

- The 2009 Hyder *Australian landfill capacities into the future* report commissioned by the Department of the Environment, Heritage, Water and the Arts;
- The Wright Corporate Strategy report *Strategic Review – Putrescible Landfill Demand and Capacity for the Sydney Region* which was prepared by and released by the NSW Government in 2010; and
- A 2010 independent assessment by MRA.

The Hyder report assumed 3.38 million tonnes of C&I and C&D waste deposited in Class 2 landfills for 2006-07. At less than 19 million tonnes capacity Sydney's contingency landfill space would suffice for just over 5.5 years. This calculation incorporates the Light Horse facility (or MPC) which was granted project approval by the NSW Planning Assessment Commission in 2009 and since it commenced operation, it has partly alleviated the sharp decline in landfill availability in the Sydney Metropolitan area.

The Wright Corporate Strategy assumed landfilling of 2.5 million tonnes annually. However the source of this estimate was not referenced. Nonetheless, at less than 46.5 million tonnes of landfill space (including the Light Horse facility), Sydney was calculated to have 18.5 years of contingency landfill space remaining in 2009.

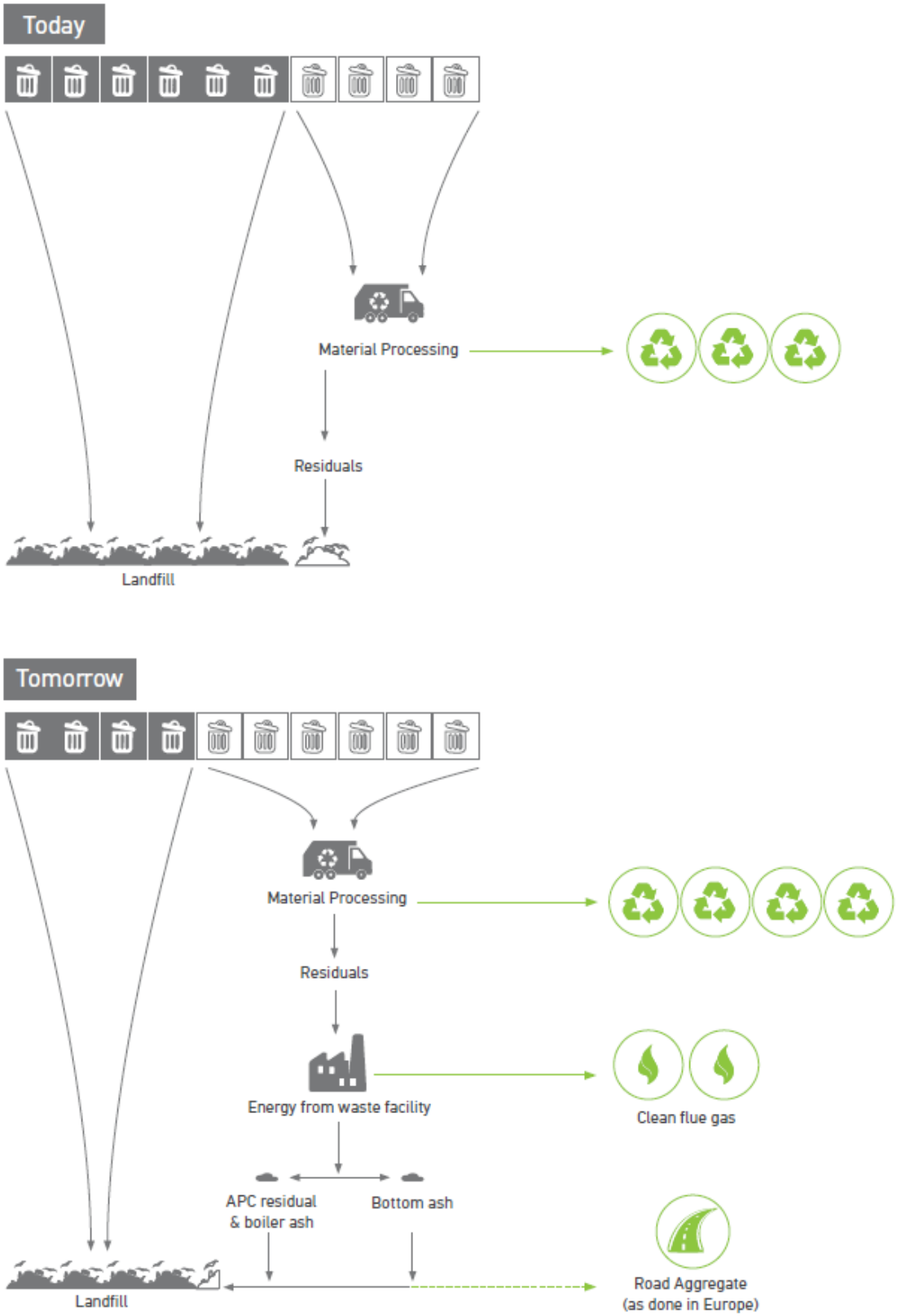
MRA 2010 independent assessment evaluated whether a capacity of 34.3 to 36.3 million tonnes of landfill void space for Sydney Metropolitan Area was justified, information on Sydney C&I and C&D waste was extracted from the NSW DECCW Waste Avoidance and Resource Recovery Progress Report 2010. This information suggested Sydney's 2010 remaining capacity was calculated to be between 10.1 and 10.7 years. To verify this estimate, the 2009 Hyder report on *Waste and Recycling in Australia*[i], and the *National Waste Report 2010*[ii] based on Hyder data additional data sources were used and 4.98 million tonnes of NSW annual landfill waste was agreed. With Sydney's population comprising 65% of the state total, it was assumed Sydney contributes 65% of the state landfilled waste. At this rate of disposal the 34.3 to 36.3 million tonnes of remaining capacity would last for between 10.6 and 11.2 years.

Given landfill capacity has been significantly depleted since 2010, 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, to large extent, from landfill further preserving valuable landfill void.

Figure 35 diagrammatically illustrates how the energy from waste process will ease the pressure on landfills by diverting waste and utilising it to produce electricity. As such, the facility reduces the need for primary resources and consumption of fossil fuels. The energy from waste process is overall a cleaner form of energy production compared to burning coal.

It is noted that in terms of the final products of EfW with landfill being the final destination, there are three residue wastes. Bottom ash is a non-hazardous waste and will be sent to the adjoining MPC for disposal or to other licensed facilities for aggregate and road-base production. APC residue ash will be collected into sealed storage tanks and transported off-site for further treatment or disposal via sealed tanker vehicle. Boiler ash is either mixed with the bottom ash and forms a non-toxic mix or disposed with the APC residues.

Figure 35 – Illustrative Demonstration of benefits of EfW in reducing landfill volumes



5.2. ECONOMIC VIABILITY OF THE PROJECT

While renewable energy projects and carbon markets are positive steps towards creating a cleaner energy market, the economic reality of the matter is that landfill void space and landfill levies make EfW viable in Sydney and other areas of Australia.

Other renewable energy systems, such as wind, solar and hydro, do not provide continuous and steady supplies of energy as they are vulnerable to environmental conditions. As such, these systems are not as suitable for assisting with peak load time requirements at the grid compared the energy from waste facilities. Hydropower resources are geographically limited, and have substantial environmental costs. Ecological impacts down and upstream include creation of migration barriers and sediment flow disruption. Biomass that decomposes in reservoirs releases methane and carbon dioxide. Additionally, the expected increase in unpredictability of rainfall and run-off may limit the capacity of this technology. Given the maturity of this technology, there is little room for improvement in its efficiency.

While the cost of setting up and maintaining wind power infrastructure has reduced significantly in the last 30 years, the main disadvantage of this power is its intermittency. The proportion of electricity wind can contribute electricity to the grid is limited because of this. Further, the windiest places are rarely the most populous. As such, infrastructure development and transport of the energy is necessary. In terms of density, wind power is low density, and generates few watts per square metre. According to research by David Keith, head of the Energy and Environmental Systems Group at the University of Calgary in Canada, a truly large-scale deployment of wind power schemes could affect local, and potentially global, climate by altering wind patterns (Keith et al., 2004).

Solar cells do not generate electricity at night, and in places with frequent cloud cover, and at times of prolonged overcast conditions, generation fluctuates unpredictably during the day. Large installations will usually be far from populous areas, therefore distribution of the electricity generated will pose problems. Some advanced photovoltaic cells use rare elements that may be subject to cost and supply constraints.

In terms of cost comparison and efficiency of energy production between energy from waste facilities and other renewable energy systems, energy from waste is the more cost effective source based on 1 MWh of energy produced. According to ‘Energie aus Abfall’ (Band 6) written by Karl J. Thomé-Kozmiensky and Michael Beckmann (2009), it was found that while the initial investment cost (in Euros at the time of publication) of energy from waste is higher than wind and comparable to solar, the cost per MWh is much lower. Further, this publication also provided a comparison of number of hours per annum which the energy from waste (‘full load hours’), wind and photovoltaic technology are able to operate and produce energy. It was concluded that EfW technology can produce energy for 470%-1,000% more hours in a year than the alternative technologies. This publication was used to create the below summary table, which demonstrates that cost per hour of operation for energy from waste is lower than other alternative energy sources.

Table 17 – Full load hours p/a and Cost comparison of energy technologies per MWh of energy produced

Energy technology	Full load hours p/a	Investment cost (Euros)/MWh
Energy from waste	8,000	~30
Wind	1,700	~40
Photovoltaic	800	~300

While landfilling and renewable energy markets are influenced and supported by government incentives and benefits such as carbon credits, the facility will operate independent of these and as such will not be vulnerable to legislative changes to these benefits.

Although there is a lot of interest in EfW, particularly spurred on by the release of the EfW Policy Statement, TNG is by far the furthest advanced in terms of planning, licensing and procurement. No other large scale EfW facilities are currently in operation in NSW. As such, there are currently no other EfW facilities that would be drawing on the same waste feedstock as the proposal.

TNG is also uniquely placed in the market as a parent company. DADI owns multiple waste assets including collections, landfill sites and state-of-the-art material processing facilities.

5.3. CONSIDERATION OF PROJECT ALTERNATIVES

5.3.1. Alternative 1: Do Nothing

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 Government as making an important contribution to the targets for dealing with waste.

It is therefore considered that the 'Do Nothing' scenario is not appropriate given the established need for new energy generation, including a need for low carbon generation. The alternative to the proposed Development proceeding would be continued operation of traditional landfill waste management operations which have been found to be inefficient as a long term sustainable solution to Sydney's expanding population and waste generation.

The selection of the Site for the Proposed Development is directly related to its proximity to the M4 and M7 motorways and the direct synergies between the proposed Development and the adjoining Genesis Xero Waste Facility currently in operation which will provide a percentage of the waste fuels.

The reasons for the selection of Site included:

- 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 in close proximity less than 1.5kms;

– availability of water; and

– availability of natural gas supply directly to Site;

- Excellent road links and possible future availability of rail links;
- Access to a pool of skilled labour for operations and maintenance;
- Solid record of environmental compliance at Genesis Xero Waste Facility; and
- Separation from sensitive residential receivers.

The residual waste fuel availability and waste hierarchy analysis undertaken as part of the Waste Management Assessment (**Appendix J**) reviewed residual waste fuel availability in regard to eligible waste that can be used as a residual waste fuel in the Proposed Development.

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 the New South Wales by utilise waste that is currently going to landfill and causing diversion of the same.

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.

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

5.3.2. Alternative 2: Plant Location and Layout

When considering possible locations for the Facility, it was clear a location within the broader site was most logical and would bring more benefits both to the local area and the operation than any alternatives. A location within the broader site has the following benefits:

- Proximity to Genesis MPC to maximise efficiencies with this facility;
- Ideal location within Eastern Creek Industrial Precinct;
- Opportunity for shared infrastructure with the Genesis Xero Waste Facility, including roads;
- The broader site is an appropriate distance from sensitive receivers including residential areas;

- The broader site is buffered by other industrial land uses and roads, and does not adjoin sensitive land uses; and
- Proximity to a major road network.

The ability of the broader site to deliver the above benefits put this location above other potential options which may not have been able to deliver the same range of benefits. Specifically, another location would lack the opportunity for synergies with the Genesis MPC, and thus greater traffic impacts would result on public roads to deliver the Residual Waste Fuel to the Facility.

Whilst there were a range of options available for the specific location of the proposed Facility within the broader site, close consideration and evaluation during the feasibility and design development stage was given to the preferred location and adopted layout.

Consideration included:

- Known site constraints including the site topography, location of the landfill, and the land zoned E2 Environmental Conservation and riparian corridor;
- Environmental appraisal which informed the concept layout;
- Proximity to Genesis MPC (for the use of shared roads and proposed culvert between the two facilities);
- Maximum possible distance to residential properties; and
- Connection to the Grid.

The proposed location utilises the topography to reduce the visual impact of the proposed Facility by locating the stacks at the lowest point of the Site. The north western portion of the broader site was deemed inappropriate due to the prevalence of site vegetation required to be removed to facilitate construction.

Initial air quality, noise, transport, ecological and archaeological constraints appraisals were undertaken to inform the selection of the location of various plant items within the Site. This included identification of key receptors and key site constraints (both physical and environmental) and initial modelling to inform whether the specific location of the plant would affect the levels of noise or emissions that may be experienced by specific receptors.

The capacity of the location to share infrastructure with the Genesis Xero Waste Facility was an important consideration. The selected location allows use of the existing estate road from Honeycomb Drive and potentially other shared facilities and services over the lifetime of the two developments. The distance between the Genesis MPC and the proposed Facility was also an important consideration for the proposed underground conveyor culvert.

Close proximity and access to the Transgrid substation and use of the Transgrid easement for service lines makes the location chosen ideal for generating electricity. This proximity saves on cable distances and electricity loss from transporting to the grid.

5.3.3. Alternative 3: Selection of Preferred Thermal Treatment Technology

There are a number of alternative technologies available for this type of proposed Facility (including external kilns, fluidised beds, gasification and pyrolysis, plasma gasification and moving grate technology).

Given the combined objective of the proposed Development primarily as an electricity generating station but also as a waste solution, moving grate technology is considered the most suitable for the proposed Development due to its reliability and performance in relation to energy generation and its robustness to manage a range of residual waste fuels with varying calorific value (CV) while experiencing minimal wear.

The appointed technology provider Hitachi Zosen Inova (HZI) has developed and operated numerous moving grate energy from waste plants around the world and is experienced in this technology. HZI is a leading global supplier for Energy-from-Waste plants with more than 500 reference projects worldwide and experience in different plant configurations, capacities, fuels, national standards, and high efficiency concepts.

Newly developed systems for improved combustion performance have been tested in reference plants prior to being offered to the market.

- The water cooled grate has been in operation on various plants since 1994.
- The flow optimised swirl injection of secondary air has been in operation since 1996. Today this system has become a standard in all new plants.
- Flue gas recirculation was introduced in 1985 and is now in use in more than 40 thermal waste treatment plants.
- The semi-dry flue gas treatment system was first installed in 1998. It has since been installed in various thermal waste treatment plants.
- The additive dosing (activated carbon, hydrated lime) was first applied in 1988 for adsorption of organic compounds and mercury in flue gas. This system has been continuously optimised and is now in operation in various thermal waste treatment plants throughout the world.

Whilst there are various forms of energy from waste, moving grate technology is a tried and tested. Alternative combustion techniques are available but do not have the same number of reference facilities and in some cases technology has been withdrawn from the commercial application market.

Other technologies that have achieved a degree of commercial development are gasification technologies, but these tend to rely on a modular form and so are not suited to large scale commercial facilities and are less efficient in converting the waste feedstock into electricity than moving grate technology over a range of different fuel types; an important consideration both in relation to achieving compliance with the waste hierarchy and commercially given the proposed Development is a commercial facility.

For the reasons set out above, and to ensure fuel mix has been carefully considered for the proposed Facility, the selected technology is a reciprocating grate system (a type of moving grate system).

Throughout the design process consideration has been given to a range of design options. These decisions have, where relevant and possible, been informed by environmental appraisal and assessment work and consultation with stakeholders, and the design has evolved through a continuous process of environmental assessment, consultation and development.

The proposed Facility, as presented in this amended EIS, is the result of a consideration of alternatives and design evolution process in accordance with the hierarchy avoid, reduce and, if possible, remediate. This has included identifying best available technology BAT and avoiding or reducing environmental impacts by design.

6. CONSULTATION

The following section provides an overview of consultation undertaken to date including pre-lodgement engagement as well as the outcome of formal exhibition of the original EIS documentation.

6.1. PRE-LODGEMENT

The DGRs required consultation to be undertaken during the preparation of the amended EIS with a range of authorities and key stakeholders.

Each of the specified groups were consulted by TNG and the consultant team during the preparation of the amended EIS. A Communication and Community Consultation Summary Report has been prepared by KJA which documents the consultation process to date (submitted at **Appendix W**).

6.1.1. Community Engagement Method and Approach

A comprehensive and coordinated program of communication and engagement has been rolled out since November 2013 to support the application process. This involved providing a range of consultation opportunities to enable feedback and input into the different stakeholders, community groups and individuals.

The consultation was designed to inform and build awareness of the proposed Facility, as well as identify key issues and opportunities and establish a framework for ongoing dialogue. Programs for communication have included:

- **Project website**- A dedicated website (www.tngnsw.com.au) 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 question.

- **1800 community line and project email-** A dedicated, toll-free 1800 community information line (180 252 040) and email address (info@tngnsw.com.au) was established from the inception of the consultation to provide an immediately available and central point of contact for stakeholder and community enquiries.

- **Key stakeholder correspondence-** Correspondence has been sent via post and/or email to identified key stakeholders and community groups. 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.

- **Letter notification-** Two letter box drops were undertaken to inform the nearby residential areas in the suburbs of Minchinbury and Erskine Park about the project. A total of 4,000 residences received the project flyers.

- **Briefings-** In addition to the statutory consultation with relevant agencies, personal briefings were offered to key stakeholders.

- **Door knock-** In an attempt to further connect with TNG NSW's industrial neighbours after a letter was sent to each business, a door knock was conducted to a number of businesses along the neighbouring street of Wonderland Drive, Eastern Creek.

- **Community information day and site tour-** On the 22nd of February 2014 a community information afternoon was hosted by TNG NSW. Approximately 32 people were in attendance.

- **Media-** The local newspapers of the Blacktown Advocate, Blacktown Sun and Mt Druitt - St Mary's Standard were briefed on the proposed Development and given direct contact numbers for further questions. Various articles on the proposed Energy from Waste Facility were published including the front page of the Blacktown Sun on December 17, 2013.

6.1.1.1. Community Consultation: Outcomes

Table 18 provides a summary of the matters noted at the Community Information day held 22 February 2014, meetings held with Blacktown City Council Mayor and Policy and Strategy team, Penrith Council, the

MP of Mount Druitt, Total Environment Care, and from correspondence via the 1800 number and email register. A more detailed outcomes report is provided at **Appendix W.**

Table 18 – Summary of outcomes of community consultation

Topic - General	
Comment/Issue	**Response**
Some residents that would have liked to attend the information day could not make it.	The 1800 number, project email, project specific website, and brochures will provide adequate information on the project and provide a means for making enquiries if further information is sought.
Will the electricity generated lower our power bills?	No, this is not under the control of TNG.
What happens if the recycling market diminishes?	Recyclable items will continue to be used and recycled to a point where the next step is landfilling or energy from waste. This topic is addressed in further detail in **Section 10 and Appendix J.**
Query on where the remaining tonnes will come from in only a portion of the Residual Waste Fuel comes from the Genesis Xero Waste Facility.	Details on the source and composition of the incoming waste streams are provided in **section 4.3** and **Appendix J.**
Query on fire safeguards to be in place.	A Preliminary Hazard Analysis and Fire Risk Assessment Report has been prepared as part of the application. In addition to the preliminary hazard analysis a fire risk assessment was conducted to ensure adequate fire services would be available to combat the identified scenarios. Fire protection recommendations have been made and will be adopted in the facility including fixing of fire extinguishers, hose reels, hydrants, and installation of monitors. Ignition sources within the hazardous area will be controlled subject to AS60079.14.
Design excellence is important.	In response to feedback received by Blacktown City Council on the design of the proposed Facility, the proposed built form, design and external treatments have been developed further to present a high quality modern industrial development. Additional landscaping has also been proposed. Project architects Krikis Tayler have prepared a Design Statement further detailing this (**Appendix C**).
Topic: Operational questions	
Comment/issue	**Response**
Concern as to whether 24-hour monitoring will be adhered to.	A Continuous Emissions Monitoring System (CEMs) will be used with live feed and 24-hour access given to the NSW EPA.

Topic - General	
Issues with the concept of incineration	Mass burning without Flue Gas Treatment (FGT) is what people most commonly associate with 'incineration'. This kind of incineration does not involve emission control of dust filters, and is therefore not considered 'clean' or safe. Facilities that have operated using this technique have since been closed down. Burning with a Flue Gas cleaning system is cleaner, safer and more technologically advanced. The proposed Facility will incorporate BAT, the FGT will utilise SNCR.
Concerns about radioactive issues in Penrith	No radioactive materials received or used at the EFW facility.
Penrith Council suggested ash should be put in sealed tankers for disposal.	APC residual ash will be stored in Silos and transported via sealed tankers.

Topic: Operational questions	
Comment/issue	**Response**
Query why the stacks are 100m.	The final stack height was selected based on a combination of compliance of pollutant ground level concentrations and reference to the US EPA document *'Guideline for Determination of Good Engineering Stack Height'*.
Comment on potential visual bulk and scale of the proposal, including 100m stacks	The stacks will be approximately the same visual height as the nearby electrical towers on the hill. An aesthetic redesign has been carried out since initial concepts were developed. Additional landscaping is proposed to help soften the appearance of the facility. Visual impact assessments have been carried out and have deemed them as having negligible visual impact.

Topic: Traffic	
Comment/issue	**Response**
General concerns around traffic impacts of proposed and increase in traffic movements.	All predicted traffic movements throughout construction and operation can be readily accommodated by the surrounding road network with no improvements considered necessary.
Comment that movement of Residual Waste Fuel from Genesis to the proposed EFW plant will be across a proposed future precinct plan road via an automated enclosed conveyor belt system.	Access between Genesis MPC and the Proposed Facility will be via an under road culvert for the conveyor and via separate under road archway bridge for vehicles when required so there will be no traffic interference with the public road system.

Topic - General	
Topic: Air, Dust Emissions	
Comment/issue	**Response**
General concerns about emissions	Several dozen of these generation plants are in operation across Europe and the United Kingdom and have been for a number of years. The technology is both advanced and well-studied. A number of these plants operate close to residential communities. European Union standards require close and constant monitoring to demonstrate safe outcomes for those communities. Similar standards will apply to this facility. The manufacturer of this particular type of plant has never had a forced shut down caused by a breach of its operating standards. Energy from Waste is a cleaner form of energy production than coal. Real time reporting on emissions will be taking place. EPA will have direct access to view emissions 24 hours a day to ensure compliance with relevant standards.
With regards to the stack, when in use there will be a build-up of contaminates. What will happen when the stack is to be demolished (included reference to stack recently demolished in Wollongong)?	The emissions are filtered prior to entering the stack at the FGT so contaminants do not reach the stack at unacceptable limits; ash from the facility is collected throughout the operational process and disposed of for recycling or to landfill as is appropriate. The stack is made of steel and can be dismantled as opposed to demolition (like the Wollongong stack).
Potential for hazardous and offensive odours and emissions	Under the NSW Environment Protection Authority's Energy from Waste Policy Statement, any facility proposing to recover energy from waste will need to meet current international best practice. The policy also requires that emissions from EfW facilities must satisfy, as a minimum, current emission limits prescribed by the POEO (Clean Air) Regulations.
Will there be plastics in the emissions?	There will plastics including some percentages of PVC in the residual waste fuel which is then eliminated and transformed into energy at the combustion stage the gasses are cleaned at the FGT. All emissions are treated prior to release.
What reassurance is there that dioxins will not get through?	The technology is tried and proven in particular in the UK and Europe and the emissions meet all the necessary standards, including The NSW Energy from Waste Policy Guidelines. The Flue Gas Treatment (FGT) is specifically designed to clean the emissions and it has

Topic - General	
	inbuilt redundancy to ensure its continued and safe operation. The DCS (Distributed Control) is also a very sophisticated control system to ensure the plant is always running at it optimum and is implemented to anticipate the needs of the plant ahead of them being required. There are also several safeguards in the operation of the plant and if an emissions breach was to occur and not be rectified the plant will automatically go into shut mode and safely shut down. All Waste Residual Fuel is fired at no less than 850^{o}C for no less than two seconds. 24-hour real time monitoring is available to the EPA.
Topic: Odour	
Comment/issue	**Comment/issue**
General concerns around odour	Investigations into the odour impact of the proposed indicate when the Facility is considered both in isolation and combined with odour emissions from the MPC, the predicted 99th percentile odour concentrations would be below the 2 ou impact assessment criterion all of the sensitive receptors (including surrounding schools, and day cares). The odour concentrations are predicted to be below the impact assessment criterion of 2 ou throughout the suburb of Minchinbury. It is anticipated the operation of the Facility would not result in an adverse impact on the local air environment in reference to odour.
Topic: Noise	
Comment/issue	**Comment/issue**
Concerns about noise generation from the facility, particularly trucks beeping.	A noise impact assessment for the proposed Facility was conducted for expected noise associated with operations, construction and road traffic in relation to the relevant guidelines, standards and policies. The assessment has concluded the anticipated noise impacts are acceptable. However, management measures will also be put in place to further reduce risk of noise impacts throughout construction.

6.1.2. Consultation with Government and Agencies

In preparing the original EIS, TNG and the project team consulted with the following agencies and local stakeholders:

Table 19 – Government and Local Stakeholders consulted

Authority	Consultation Format	Issues/Key Considerations
Environmental Protection Authority	Meeting and Phone Discussions	• TNG consulted with the EPA in production of its Energy from Waste Policy Statement. • The EPA were consulted during the design development stage to determine the relevant standards for measuring air quality, human health, greenhouse gas, ozone impacts and waste streams. • As a result, these relevant policies and standards have been addressed in the assessment of impacts of the proposed.
Blacktown City Council	A pre-lodgement meeting was held with Blacktown City Council in November 2013. TNG and the consultant team have subsequently met with Council on numerous occasions to discuss a range of technical issues.	• Council agreed that CIV of $557 million will constitute a SSD. • Overview of planning, key master plan issues, project aspirations. • Discussion of proposed underpass. • Council advised the VPA will need to be prepared in consultation with the Department of Planning and Environment. • Application to demonstrate stormwater management meets Council's requirements. • As a result a VPA has being prepared in consultation with the Department of Planning and Environment and Blacktown City Council. The Civil Infrastructure Report demonstrates compliance with Council's stormwater management requirements. The stormwater basin is proposed to be retained in private ownership.
Penrith City Council	Meeting with Councillors; Briefing Session with Councillors (TNG representatives).	• Preliminary discussions with Penrith City Council representatives.
Work Cover NSW	Phone Discussion	• Consultation with Work Cover will commence during construction management planning.

Authority	Consultation Format	Issues/Key Considerations
Department of Primary Industries including the NSW Office of Water;	Phone Discussion	• Site servicing requirements were discussed with Sydney Water. Servicing requirements have been incorporated into proposal. • The NSW Office of Water was contacted via email and phone to address mapped but not physically evident watercourses and placement of a pump out pit. Informal approval for the removal of a 1st order watercourse has been granted.
NSW Roads and Maritime Service	Meeting and Phone Discussion	• TNG met with the RMS to discuss the proposed Development and the implication on the Archbold Road upgrade. • No action required.
Office of Environment and Heritage	Phone Discussion	• GML, in preparing a Heritage Impact Statement, have consulted with OEH and detailed their proposed methodology to address Aboriginal and Non-Aboriginal Cultural Heritage.
Heritage Branch	Phone Discussion	• GML, in preparing a Heritage Impact Statement, have consulted with OEH and detailed their proposed methodology to address Aboriginal and Non-Aboriginal Cultural Heritage.
NSW Fire Brigade	Phone Discussion	• Abel Ecology, in preparing a Bushfire Assessment, consulted with the NSW Fire Brigade and Rural Fire Service to determine if there was a need for Asset Protection Zones. No APZ is required.
Rural Fire Service	Phone Discussion	• Abel Ecology, in preparing a Bushfire Assessment, consulted with the NSW Fire Brigade and Rural Fire Service to determine if there was a need for Asset Protection Zones. No APZ is required.
Transgrid	Meeting and Correspondence	• Transgrid has provided a Letter of Feasibility relating to the connection of the proposed Facility to Transgrid's 132kV Sydney West Substation on the 7th April 2015. • Transgrid has confirmed discussions TNG and have identified a target date for the connection in operation by June 2018. It has been acknowledged by Transgrid that the

Authority	Consultation Format	Issues/Key Considerations
		delivery program is feasible however relies upon SSDA approval.
Civil Aviation Safety Authority	Phone Discussions, email correspondence	• TNG have contacted Sydney Airport Corporation Limited by phone in relation to the query and they stated it is outside their Kingsford Smith operations and so they are not concerned with the development. • Telephone discussions and a formal comment on the final building design was sought from CASA. • CASA noted that they have not been able to get information from the Department of Infrastructure and Regional Development regarding the specific detail of the second Sydney Airport and thus could not provide a response about any potential impact of the facility in relation to the second airport. • The Federal Department of Infrastructure and Regional Development was contacted regarding timing around the release of this information.
NSW Health	Email correspondence	• Helen Ptolemy at NSW Health was sent relevant reports and plans for comment. • NSW Health did not make specific comment during initial consultation This correspondence is provided at **Appendix X**.
Department of Infrastructure and Regional Development	Phone discussions and email correspondence (February and March 2015)	Initial consultation with the DIRD concluded that due to the early stage of the airport planning specific advice regarding the potential flight paths could not be provided. The DIRD requested that the regard be given to the National Airports Safeguarding Framework. An assessment against this framework is provided in **section 21.4.2**. Subsequently the application was formally exhibited during which time the DIRD were further consulted. Advice received leading to the preparation of an Airspace Operations and Plume Rise Assessments (**Appendices EE and FF**) each of which were referred direct to the DIRD

6.2. EXHIBITION OF ORIGINAL EIS (MAY – JULY 2016)

Following submission to the Department of Planning and Environment in April 2015, the SSD, DA was placed on public exhibition commencing 27 May 2015 and ceasing 27 July 2015.

During this period of public exhibition, several submissions were lodged; some in support, some neutral with comments and questions, and some in objection. A detailed response to submission was formally submitted to the DPE in November 2015.

6.2.1. Summary of Submissions and Key Matters

A total of 46 submissions were made to the Department of Planning and Environment in response to the exhibition of the EIS. Including the submissions formally lodged and made available on the DPEs website, the proponent is aware of any online petition prepared by the *"concerned residents group of western Sydney"* that was signed by 200 members of the public. As a petition the issues raised are considered as a single submission.

A summary of origin of the submissions and the nature of the response is provided in Table 20.

Table 20 – Summary of submissions

Position	Community	Government & Agency	Organisation	Total
Support	Nil	1	Nil	1 (2.17%)
Object	25^	3	5	32 (71.7%)
Comment	1	9	2	12 (26.0%)
Total	**26**	**20***		**46**

* Both Penrith City Council and the Boomerang Alliance made two (2) submissions. ^ includes online petition as one (1) submission of objection.

6.2.2. Summary of Community Submissions & Responses

A total of 26 community submissions including one petition organised by change.org.

With the exception of the petition all submissions made by community members were assigned an individual identified number by the DPE. These numbers have replaced community member's names; the individual submissions have been summarised in the response table provided at **Appendix HH**. Submitters may contact the DPE to obtain their individual submission number or access DPE's website.

The content of each community submission was reviewed and categorised according to key issues (e.g. traffic, noise, air quality). While the exact wording of the issues raised by community members may not have been used, the intent and issues raised have been identified.

As at 23 November 2016, 200 people from the 'Concerned Residents Group of Western Sydney' signed a change.org online petition objecting to the EfW facility in Eastern Creek. Not all who signed the petition wrote a submission. While each individual submission from the change.org petition has not been separately listed, all comments under 'reasons for signing' the petition have been considered and included in this response document.

A total of 9 key issues were identified, within these key areas sub-issues have been identified and outlined in the table below. Responses have been provided to each of the main issues in this document. A summary of

these key issues is provided in Table 21 below, with a detailed response document provided at **Appendix HH.**

Table 21 – Summary of Key Community Issues

Number	Area of Issue	Summary of Main Issues	EIS/Appendix Reference
1	Air quality	• Impacts on existing air quality • Existing air quality issues have not been considered • Pollution and toxic compounds from emissions • Technology choices have contributed to pollution and smog	An amended Air Quality Assessment has been undertaken using data collected from exiting operational EfW plants, this assessment report is provided at **Appendix 11** and discussed in detail in **section 11** of this amended EIS.
	Ozone	• Technology choices have contributed to pollution and smog • Photochemical smog already exists in Western Sydney	An amended ozone report supports this amended EIS at **Appendix M.** The outcomes of this assessment are considered in **section 13.**
	Odour	• Prior existence of offensive odours • Cumulative impacts on odours and air quality	The operation of the established MPC and Landfill adjacent to the site has not been subject of a valid odour objection since being operated by DADI. An assessment of potential cumulative odour impacts is provided in the Odour Impact Assessment provided at **Appendix L** and considered in the amended EIS at **Section 14.**
2	Health and safety	• Cumulative impact on human health • Evidence shows that emissions associated with waste facilities are harmful to human health • Correlation with cancer • Time-lag and delayed onset of symptoms • Risk assessment and problems with predicting health risks • Children's health	Since exhibition further research has been undertaken into the emissions profile of operating EfW facilities. This emissions profile has been used to inform the amended air quality and Human Health Risk Assessments. These reports are provided at **Appendices K** and **N** respectively. Each is discussed in the amended EIS at sections 11 and 17. The risk based assessment model used AECOM in the

Number	Area of Issue	Summary of Main Issues	EIS/Appendix Reference
		• Pollution control and monitoring concerns • There is no safe level of exposure to dioxins	identification and assessment of potential human health issues associated with the operation of the facility, is the accepted assessment framework and demonstrates that risk associated with the facility is low and acceptable. As outlined in the amended EIS a Continuous Emissions Monitoring System will be used to monitor emissions and in the event of detecting an exceedance of the defined limits the facility a safe shutdown will be triggered.
3	Location of facility	• Close proximity to residential area • The location of EfW facility in Western Sydney is questionable • Suggested an alternative location	he land is industrially zoned and is adjacent to an operating landfill and materials processing centre. Accordingly, the proximity of the site to residual waste sources. The environmental assessment has concluded that the site is suitable for the proposed development. Details of alternative locations is set out in **Section 5.3.2.**
4	Visual impacts and amenity	• The facility will be visible from residential properties • The size, height and scale are inappropriate for the proposed location • Impacts on the amenity of surrounding neighbourhoods	The plant will be visible from various locations beyond the site boundary. This is considered in detail in the Visual Impact Assessment provided at **Appendix H** and **section 20.**
5	Consultation processes	• The exhibition period was not long enough • Community consultation processes were inadequate • Lack of understanding by the general public	The exhibition period was determined by the DPE and was in line with requirements of the Act. All matters raised by the community have been

Number	Area of Issue	Summary of Main Issues	EIS/Appendix Reference
		• Transparency and risk of non-compliance • Community concerns have not been heard • The terminology is misleading	considered – these are provided in **Appendix HH.**
6	General environmental impacts	• Impacts on flora and fauna • The approach to ecologically sustainable development is irrational • General concerns about environmental impacts • Soil and land impacts • Disposing of incinerator residues and waste • Contribution to climate change	The initial EIS was supported by detail assessment addressing the following: • Flora and fauna; • Soil and water; • Greenhouse gas emissions (contribute to the process of climate change); a • Waste management report addressing wastes arising from the EfW process. Comments received in relation to these assessment reports were considered by each of the technical specialists and these responses are provided at **Appendix HH**. In preparing the amended EIS, due consideration has been given to initial assessment reports, the addenda report and the submissions made in response to exhibition. The amended EIS has incorporated details of investigation and consideration of alternatives to the siting and location of the plant. Refer to **Section 19.1**.
7	Economic and social impacts	• Impact on property values and place of residence • Criticism of job creation and generation of employment as a justification	A project justification is set out in section 5 of this EIS. The concerns of the community are acknowledged; however, the following is noted in response: • Property values are not a matter for consideration

Number	Area of Issue	Summary of Main Issues	EIS/Appendix Reference
		• EfW facilities are inefficient and unsustainable over a long period of time • Is there a need for an EfW facility • Community welfare and human rights are important	under the legal framework that guides the assessment of impacts in NSW. • Job creation is a core factor given the location of the site within the Western Sydney Employment Area and therefore is a robust and valid factor in support of the project. • EfW offers a viable and constructive alternative to landfill allowing for optimisation of an otherwise uneconomic product. The recovery of energy from residual waste is part of the waste management hierarchy and is in fact an alternative that should be considered prior to landfill. • Detailed human health risk assessment concludes that the potential for harm to humans is low and acceptable.
8	Traffic impacts	• Increased volume and cumulative traffic impacts • The road network is heavily congested	The development will result in an increase in traffic. However an assessment of the network capacity including the operation of key intersections was undertaken by **Traffix** this assessment concludes there is sufficient capacity within the network to adsorb the increase and there will be no impact on the current level of service at key intersections. Refer to **Appendix Q** and **section 18.**
9	Noise impacts	• Inadequate noise mitigation measures • Noise and vibrations from construction and operation • Traffic noise • Cumulative impact of traffic noise	An assessment of noise impacts associated with construction and operation, including cumulative assessment of noise has been undertaken by Pacific Environment and is provided at **Appendix O.** The outcome of this assessment is considered

Number	Area of Issue	Summary of Main Issues	EIS/Appendix Reference
		• General concerns about noise	in **Section 15** of this amended EIS.

6.2.3. Government Agency and Company Submissions

Source of Submissions

A total of 20 submissions were made by Government, Agencies and Organisations. Table 22 provides a list of all government, agencies and private companies who lodged a submission:

Table 22 – Summary of Government and Agency Submitters

Agency/Organisation	Agency/Organisation
• Air Services Australia	• Hanson
• Australand	• Jacfin
• Blacktown City Council	• National Toxics Network
• Blacktown District Environmental Group	• NSW Health
• Boomerang Alliance	• Office of Environment and heritage
• Department of Infrastructure and Regional Development	• Penrith Council (and addendum)
• Department of Primary Industries	• Roads and Maritime Services
• Endeavour Energy	• Sydney Airport
• Environmental Protection Authority	• Western Sydney Regional Organisation of Councils.

Summary of Matters Raised

As identified in the summary table a total of 20 submission were received from Government, Agencies and Organisations. Of the 20 submissions made within this category, the following is noted:

- 55 per cent were making comment;
- 5 per cent were made in support of the application; and
- 40 per cent were objections.

16 key areas were raised across all submissions. These include:

1) Aboriginal Heritage
2) Civil Engineering
3) Construction
4) Consultation
5) Contamination
6) Flora and Fauna
7) Human Health and Risk
8) Noise
9) Obstacles to Airspace
10) Odour and Air Quality
11) Soil and Water
12) Town Planning
13) Technology

14) Traffic and Transport
15) Visual Impact
16) Waste Management, Waste and Recycling

Each key area and issue has been reviewed and considered by the relevant technical consultant. Actions have been taken to address or respond to the issue, where relevant and considered necessary. The responses to each issue has been summarised in Table provided at **Appendix HH.** Where relevant a document reference has been provided in the Table 23, and documents have been appended to this response.

Table 23 – Summary of Matters Raised

Number	Issue	Raised by	Response
1	**Aboriginal Heritage:** • Insufficient consultation with Aboriginal groups; • Potential for harm has not been adequately addressed • Clarification of extent of conservation measures to the site referred to as Archbold Road 2	Blacktown City Council; Office of Environment and Heritage	The proposal including likely disturbances were part of direct consultation and liaison with 12 registered local Aboriginal groups who have raised no objection. **Section 22** of the amended EIS addressing Aboriginal Heritage and Archaeology has been amended to clarify the location of the works and extent and nature of potential impacts. Refer to **Section 22.3.**
2	**Civil Infrastructure:** • Stormwater design to meet SEPP 59 precinct requirements; • Request for DRAINS and MUSIC models; • Matters relating to the construction of the precinct road • Use of proposed laydown pads; • Potential flood impacts on the Ropes Creek Tributary; • Road and parking design to meet AS 2890.1-2004, AS2890.6-2009 and AS2890.2-2002 for heavy vehicles usage	Blacktown City Council; Hanson; Australand	A range of technical matters were raised in relation to the civil works. The matters raised have contributed to clarification of the assessment and design prepared by AT&L. A detailed response to these matters is provided in **Appendix HH**. The stormwater basin was designed to meet the BCC requirement applied at the time of lodgement in 2015. Notably this has altered in the intervening period. However recent discussions with BCC confirm that if the basin is retained in private ownership it does not require design amendment.

Number	Issue	Raised by	Response
3	**Construction:** • Details of construction schedule, employment and vehicle movements not provided; • Assessment of traffic impacts during construction no assessed; • Power Supply – TransGrid service availability	Australand; and EPA (EnRisk and ARUP).	Details of construction program and the assessment of impacts are included in the amended EIS at: • **Sections 3**: construction description • Sections **15.4.1 - 15.4.3**: assessment of construction noise and vibration; and • **Section 18.5.4** construction traffic impacts.
4	**Consultation:** • Lacked facts about the project; • Depth of consultation was questioned; • Disclosure of DADI regulatory record; • Questions the veracity of the community consultation report and work undertaken to engage with the community prior to lodgement and exhibition; • Reports and information too technical and limits the potential for a lay person interpretation of the project and potential impacts; • Requests the submission of an ongoing community engagement strategy.	Boomerang Alliance; Hanson and EPA	The concerns are noted. An ongoing community consultation strategy has been prepared and is provided at **Appendix II.**
5	**Contamination:** • Request for previous site investigations to be submitted. • Concern regarding process of assessment used by ADE;	Blacktown City Council (Jacobs) and EPA (EnRisk and ARUP)	Historical site investigations from 1994 and 1998 are submitted under **Appendix V.** No additional testing has been undertaken. The amended EIS and response

Number	Issue	Raised by	Response
	• No groundwater testing undertaken.		to submissions (Appendix HH) provide a reasoned response in relation to the investigation and assessment approach adopted by ADE. In the circumstance as the potential for groundwater is considered low, testing was not undertaken. In the event that this is deemed necessary the proponent can undertake the same prior to the issue of a CC. Refer to section 16.
6	Flora and Fauna • Details of the proposal has applied the principles of "avoid, mitigate, offset" have been used to minimise the impacts of the proposal on biodiversity', • Reporting data – quadrats numbers required in assessment report; • OEH considers there to be a net loss of biodiversity from the site; • Revegetation in riparian corridor requires greater density of replanting. • Preparation of a vegetation management plan requested • OEH supports the recommendations of the Flora and Fauna assessment report; • Attraction of birds due to the nature of the us.	OEH; Blacktown Council; DPI; DIRD; Jacfins.	The proposed scheme in relation to the Flora and Fauna, in particular removal of trees including EECs remains the unchanged. Addenda assessment was obtained from Abel Ecology and the Client group and incorporated into amended **section 19** of the amended EIS. Detailed response to these matters is provided **appendix HH.** Where relevant recommendations from the OEH have been incorporated into the mitigation and management measures. Matters relating to bird attraction and potential bird strike have been addressed in **section 21.4.3.**
7	Human Health and Risk:	National Toxics Network	A detailed response to NTN issues, in particular matters of the Tredi, France site is

Number	Issue	Raised by	Response
	• Management plan for fire risk and need for evacuation; • Raises concern in relation to the conclusions of the hazard and risk assessment; • Draws on an example of an operating site in Tredi, France.		provided in **Appendix HH**. Refer to pages 55 and 56. .
7a	**Human Health.**	EPA (EnRisk).	The HHRA has been substantially revised since the previous exhibition. Refer to amended discussion of human health assessment provided in **section 17** and **Appendix N**.
8	**Noise:** • Low frequency assessment standards questioned; • EIS does not include assessment precinct plan noise requirements • Cumulative assessment of noise impacts required; • Request for detailed construction noise monitoring program; and • Traffic noise impacts.	Blacktown City Council; Jacfin.	Refer to amended noise impact assessment report (**Appendix O**) and amended EIS, **section 15.**
9	**Obstacle Limitation Surface:** • Potential to impact on future Badgerys Creek airport • Need for a plume rise assessment; • Potential to impact on operation of prescribed airspace for Bankstown Airport;	DIRD; Airservices Australia; Sydney Airport; Blacktown City Council.	Following consultation, the following investigations and reports were commissioned: • Airspace Operations report, to determine potential future OLS – refer to **Appendix EE.** • Plume rise assessment – Appendix **FF.** The outcome of these reports combined with

Number	Issue	Raised by	Response
	• Concern that stack height may conflict with CASA requirements.		comments received from agencies regarding bird strike have been assessed in detail in **section 21** of the amended EIS. Furthermore, the reports have been referred to the DIRD, CASA, AirServices Australia, Bankstown Airport all of whom have responded with no objections to the proposal refer to **Appendix GG.** Mitigation and management measures have been recommended as part of the amended EIS.
10	**Odour and Air Quality:** At total of 37 sub-issues were raised in relation to the submitted AQA and GHG report. The majority have been addressed through the substantial revision and amendment of the AQA/GHG report. Many of these matters were raised by the EPA and have been superseded by further assessment advice provided in August 2016 (refer to **section 6.2.3.1**): • Dioxin/Furan control • EIS does not mentioned the Stockholm Convention in relation to PoP; • PM_{10} and $PM_{2.5}$ have not been evaluated; • Lack of detail outlining meteorological data; • Odour impacts is not supported by sufficient detail of existing odour sources; • Fugitive odour control and ventilation within the tipping hall;	Australand (via GHD); Blacktown City Council (via Jacobs); Blacktown District Environmental Group; Boomerang Alliance; Department of Infrastructure and Regional Development (DIRD); Environment Protection Authority; Hanson; Jacfin (via Allens); Jacfin (via JBA Urban); National Toxics Network.	The Air Quality assessment has been refined using • **Appendix C** of the AQA (**Appendix K**) provides specific guidance on dioxin/furan; • The NEPM calls up the Stockholm Convention and by virtue of assessment under the NEPM the SC is considered; • PM_{10} and $PM_{2.5}$ have been evaluated in the revised AQA; • Greater detail of the meteorological data now included in the revised AQA; • Proponent does not agree in relation to comments of existing odour information. Information used to establish the baseline environment and cumulative assessment has previously satisfied the EPA of the performance of the site.

Number	Issue	Raised by	Response
	• Inconsistency between modelling provided in 2014 and 2015; • Similarities in the profile for C&D and C&I questioned; • GHG assessment should consider diminishing offsets overtime; • Details of flue gas treatment technology sought; • No discussion of fugitive dust • emissions or mitigation provided; • Insufficient information on diesel generators; • plant has been assumed to be designed to meet Industrial Emissions Directive 2010, rather than the Waste Incineration Directive 2000; • Temperature in the secondary chamber – 850 degrees based on the waste profile; • PoEO Act does not provide for upset conditions; • BAT not demonstrated • Details of upset condition is required.		• Detail of the diesel generators is provided in amended AQA and EIS. Refer to Appendix K and **section 11.4.6**; • The odour assessment has been updated with no change in the outcome of the assessment. Odour will be above the detection limit of 1 odour unit and below the impact criteria of 2 odour units. Refer to **section 14** and **Appendix L.** • Fugitive dust emissions are discussed in the amended AQA at **Appendix K** and the amended EIS at **section 11.4.7.** • Details of the waste profile including fractional components of waste such as Floc and TTW is provided in Project Definition brief at **Appendix CC** • Upset conditions have been described in the amended AQA including likely emissions and duration. Refer to **Appendix K** and **section 11** • BAT assessment provided at **Appendix KK.**
11	**Soil and Water:** • Request for copies of previous contamination reports prepared by ADI be provided; • Water Quality – including reuse of water on site and quality being discharged to the creek;	Hanson; Blacktown Council; EPA, EnRisk, ARUP.	Refer to **section 16** of the amended EIS that has been reviewed in the context of submissions. In general, the following responses are noted:

Number	Issue	Raised by	Response
	• Location of sampling points identified in the Soil and water assessment not clear; • Details of analytes tested should be clearly stated; • Breakdown of total water usage required (i.e. details of water balance & inconsistencies between EIS and Fichtner report); • Recommendations on design changes to technology; • Assessment of groundwater dependant ecosystems is required; • Salinity Management; • Erosion and sediment controls are required to be provided.		• Runoff will not be reused in the thermal treatment; • Stormwater will be treated by way of WSUD elements incorporated into the basin design to remove sediment and nutrient prior to discharge into the creek; • Water demands are outlined in **section 16.4.7**; • Recommendations in relation to the technology are noted; • Salinity is addressed in **section 16.4.4**; and • Erosion and sediment control management is discussed in **section 16.4** with mitigation measures provided in **section 16.5.**
12	**Town Planning:** • Site specific DCP not required • Proposed subdivision not suitable; • EIS silent on whether the proposal is integrated • Proposal is inconsistent with the draft WSEA; • Requirement for a VPA; • EIS does not consider alternative locations • Proposal should not be seeking consent for the total development size	OEH; Blacktown City Council; Hanson; Jacfin; National Toxics Network	Refer to the following sections of the amended EIS: • **Section 5:** Justification and consideration of alternatives; • **Section 7:** strategic planning framework; • **Section 8:** statutory planning framework.

Number	Issue	Raised by	Response
	• Jacfin of the view a site specific DCP is required; • Impact on worker amenity as a result of the development; • The facility will forego higher employment generating uses for the land.		
13	**Technology:** • Use of cooling towers not included; • Identification of a heat balance; • Only 1 turbine is required, 2 are proposed; • No basis for plant availability; • Export of heat is misleading; • Mass combustion incinerators are dirty forms of energy production; and • MRF recycling performance not demonstrated to meet state targets		Refer to **section 4.5** that details the technology. Further information can be found in the Project Definition brief at **Appendix CC**. • ACC are used for cooling; • Heat balance is detailed in the PDR; • 2 turbines are used to improve efficiency; • Plant availability is based on industry standards; • There is no export of heat proposed; • EfW is frequently considered “green technology” involving the reuse of otherwise uneconomic wastes that are sent to landfill • MRF recycling – refer to **section 10** and **Appendix J.**
14	**Traffic and Transport:** • RMS no objection; • No construction traffic assessment has been provided;	Australand	An amended traffic impact statement has been prepared and is provided at **Appendix Q**. This information has been included in the amended EIS in **section 18.**

Number	Issue	Raised by	Response
	• Traffix report does not meet DGRs; • No cumulative traffic impact assessment has been provided; • Need to account for vehicle movements associated with ash residue removal from the site.		The amended traffic report addresses the matters raised and concludes that there is no anticipated impact through construction or operation on the local road network or the operation key intersections.
15	**Visual Impact:** • Impact on Jacfin land; • Stacks are out of character; • Visual impact not undertaken from Erskine Park,	Jacfin; Penrith Council and Black District Environmental Group.	Refer to **Section 20** of the amended EIS. • Jacfin land is located southwest of the site is utilised for an industrial purpose. The proposal is consistent with the industrial character of the immediate location and is sufficiently separated from Jacfin land so as to not cause an unreasonable visual impact. • The stacks while a new feature of the local landscape are not considered to be out of character with the industrial character of the area that will continue to evolve as the WSEA expands and develops in the future; • Erskine Park was considered to have a similar view outlook as Peppertree Park.
16	Waste Management • Inconsistency in the volumes stated to be processed by TNG.	Blacktown City Council; Boomerang Alliance; EPA (EnRisk and ARUP); National Toxics	The application has been amended to reduce the processing volume from 1.35M tonnes/pa to no more than 1.105 million tonnes/pa.

Number	Issue	Raised by	Response
	• Availability of technology questioned; • Source of stated waste volumes questioned; • Application inconsistent with State waste targets; • Application does not consider the wider implications of long term recycling increases; • Concern regarding presence of hazardous materials; • Proposed waste streams are not covered by EfW policy; • Better recycling in the future is not considered as an alternative; • Concern raised regarding reuse of waste materials; • WMR contains conflicting information; • No information on proof performance trials provided; • Information required of waste availability data of waste streams to be used)	Network; & NSW Health.	Implementation will be phased as set out in section 4.2 of the amended EIS. Refer to **Appendix HH –** pages 130 – 144. Amended Waste Report and updated sections within the EIS to address waste management and receipt processes.

6.2.3.1. Consultation with the Environmental Protection Authority

A formal response to submission of the issues raised by agencies, organisations and the community as part of the exhibition of the original EIS between May and July 2015 was submitted by the proponent in November 2015. This response was reviewed by the DPE and referred for further comment to the following agencies:

- The NSW Environmental Protection Authority, including technical advisors on their behalf ARUP and EnRisk; and
- The Department of Infrastructure and Regional Development (DIRD).

The outcome of further consultation with the DIRD is summarised in section 5.3.2 above. A summary of the issues raised by the EPA during this period are provided in Table 24. As these matters, have been considered in the revised technical reports for Air Quality and GHG, Ozone, Odour, Noise, Traffic and Human Health as well as the amended EIS, references have been provided as to the location of the responses.

Table 24 – Assessment Outcomes and Response: June 2016

Matter	Response
ARUP: Review of Air Quality & GHG Assessment, Traffic Report and Original EIS.	
Material (waste fuel) Availability • Consider future availability of waste • Details of floc waste composition	A review of the waste availability in SMA has been undertaken by Ramboll, Environ and is addressed in **section 7** of the updated waste management report provided at **Appendix J.** The report concludes that based on existing and publicly available information there is sufficient waste available to support the proposed development, in particular the implementation of phase 1. A compositional survey of floc waste has been undertaken combined with extensive research into the treatment of floc in Australia and Europe. The outcome of this is provided in the Project Definition Brief at **Appendix CC** and the Technical Memos produced by Ramboll and **Appendix DD.**
Proof of Performance	Refer to **Section 4.7.3** of amended EIS and **Appendix LL.**
Fuel Mix: • confirmation of waste stream percentages; and • explanation of changes in fuel mix from concept to present.	Refer to Section 10 and **Appendix J** for waste management report; Refer to Ramboll Technical Memo at **Appendix DD.3**
Capacity of Facility: • Requests the proponent to consider whether the facility size is appropriate. • Raises concern regarding TNG markets dominance based on the size of the facility.	TNG are confident that there are sufficient residual waste fuels available in the market today and that, despite increasing and improving recycling and reuse that the market is sustainable in the long term. A confidential waste report has been submitted detailing current volumes and sources of waste combined with a waste management report that looks at the broader industry availability of waste and the consistency of the proposal with the EPA EfW policy, refer to **Appendix J.** Matters of market competition are not a consideration under the EP&A Act 1979.
Ash and Residue: Volumes to be considered in all calculations	All technical information relying on or requiring assessment of matters related to volumes of Ash have been updated. Refer to Ramboll Technical Note provided at **Appendix CC.**
Traffic:	The TIA has been updated to include outbound traffic movements. These are considered in the environmental assessment provided in the amended EIS in **section 18.**

Matter	Response
• needs to consider the revised ash residue volumes; • Clarification of hours required. • Review cumulative impacts of EIS.	• Refer to **Sections 3 and 18** of the amended EIS and updated traffic impact assessment provided at **Appendix Q**. • Details of hours (construction and operation) are provided in **sections, 3.5 and 4.7.** • An assessment of cumulative impact per key issue taking into account the project and existing conditions is provided in **Section 18.7**. A cumulative assessment of all key issue areas and the identified impacts is provided in **section 27**.
Noise: • Clarification of whether additional traffic was considered in the noise assessment.	The noise impact assessment has been updated, refer to **Appendix O** The nominal increase in truck movements does not affect the noise environment or outcome of assessment.
AQA and Stack Parameters: • Differences between March and Oct 2015 submissions. Clarification sought.	In stack emissions were provided by the owner's engineer Ramboll. The updated information was result of stack testing data sourced from the reference facilities that was used to refine previous assumptions. The outcome of this Air Quality Assessment in provided in **section**
Greenhouse Gas: • Design fuel mix referenced in GHG was based on superseded information.	The Air Quality and Greenhouse report has been amended. The GHG assessment reflects the current design fuel mix (refer to Appendix D of GHG report). Updated AQA/GHG report is provided at **Appendix K.**
Wood Waste:	Refer to Ramboll Technical Memo Appendix DD
Floc Waste:	In general the process of pre-treatment and profile of floc waste in Australia is comparable to that of Europe. Refer to Ramboll Technical Memo **Appendix DD.**
EnRisk: Review of Human Health Risk Assessment	
Sought HHRA modelling based on licence limits as opposed to "more realistic" stack concentrations.	A detailed review and amendment of the HHRA has been undertaken by AECOM. These matters are addressed in the revised report provided at **Appendix N.**
Lack of assessment of grid maximums	
Lack of supporting information regarding speciation of VOCs (chemicals included and contribution).	

Matter	Response
Some persistent and bio accumulative chemical s missing from the multi-pathway exposure.	
Incorrect toxicity reference values for some chemicals.	
Insufficient justification for modelling approach and use of incorrect screening guidelines.	

7. STRATEGIC PLANNING FRAMEWORK

The proposed Facility has been considered against relevant policies and guidelines consistent with the SSD, DA DGRs. Relevant policies are addressed below.

7.1. NSW 2021 (STATE PLAN)

NSW 2021 is a 10 year strategic plan to guide policy and other decisions for the state. The Plan is based on five strategies to rebuild the economy, provide quality services, renovate infrastructure, strengthen local environments and communities, and restore government accountability.

The State Plan contains a number of the strategies and goals that are relevant to the Western Sydney Employment Lands. This includes goals to strengthen local environments and communities, protect the natural environment and enhance cultural, creative, sporting and recreation opportunities. The relevant goals are identified below.

- **P1 increased business investment**

The proposed Development involves over $557 million of investment to bring the site 'on-line' for employment land uses. The development increases the supply of land serviced and ready for development with the proposed subdivision, triggering market activity in the employment area.

- **P2 Maintain and invest in infrastructure**

The development will contribute to regional road works through contributions, and will provide a vital piece of infrastructure for managing waste generation within Greater Metropolitan Sydney.

- **E2 A reliable electricity supply with increased use of renewable energy**

The proposed Development directly aligns with this priority through the contribution of technology that produces renewable energy as detailed within **Section 24** of this amended EIS.

7.2. A PLAN FOR GROWING SYDNEY

In December 2014 'A Plan for Growing Sydney' replaced 'The Metropolitan Plan for Sydney 2036'. The Plan states the WSEA will be the single largest new employment space in the Sydney Metropolitan Area. Located on the intersection of the M7 and M4 Motorways near Eastern Creek, it will significantly expand the employment potential in this part of Sydney. The Plan identifies the Western Sydney Employment Lands as an area of strategic industrial importance due to its location close to Badgerys Creek Airport and proposed new transport infrastructure.

These industrially zoned lands are identified as vital in providing increased employment opportunities within Western Sydney and integrating new and existing employment precincts with transport infrastructure that will attract business investment and activity.

Given the proposed Facility is located within Eastern Creek and offers a new employment generating use on industrially zoned land, it is considered consistent with the vision of the Plan.

7.3. BROADER WESTERN SYDNEY EMPLOYMENT AREA – DRAFT STRUCTURE PLAN 2013

The Broader WSEA draft Structure Plan has been developed in line with the goals and priorities identified in NSW 2021 and the now superseded draft Metropolitan Strategy for Sydney to 2031.

The purpose of the draft Structure Plan is to provide a framework for land use, transport and infrastructure planning at a strategic level. It incorporates the findings of a series of technical studies into Transport, Economics, and Utilities and Services.

The draft Structure Plan will provide some 6,300 hectares of additional employment lands. About 57,000 new jobs are expected to be located at the employment area over the next 30 years, with a total of 212,000 new jobs when the area is fully developed beyond 2046, including both office based jobs and those in the industrial sector.

The proposed Facility has been reviewed in the context of this policy with a view to aligning the project with the intent of the Broader WSEA draft Structure Plan.

7.3.1. Land Use and Existing Site Characteristics

The broader site (including the development site) is located in the north-west corner of land identified as being within the broader WSEA. The following existing characteristics of the site are recognised in the draft structure plan:

- That the broader landholding reflects a "large landholding" (i.e. > 50 hectares); and
- The existing land uses, outlined in Table 3 (p. 22) of the draft structure plan, identify the site under "brickwork and quarry sites" as being a "significant land use" requiring earthworks or filling to make the site *suitable for development.*

The amended EIS is supported by a range of detailed technical reports that respond to the unique environmental characteristics of the site. Site planning, layout and operations have been developed to respond to these characteristics and where necessary mitigation measures have been recommended to ensure the management of environmental matters.

7.3.2. Consistency with Vision, Themes and Principles

The core themes of the draft Structure Plan include:

Table 25 – Consistency of proposal with draft themes and principles of the broader WSEA

Theme/Principle	Consistency
Economy and Employment	The proposal is considered consistent with the vision for the economy and employment vision outcomes as follows: • The project will contribute: – 55 full time operational jobs; and – 500 construction jobs. • The WSEA contemplates that some land uses will have a lower employment density than others and in this respect. In this regard it is noted that the land is zoned General Industrial, that supports traditional industrial activities with lower employment densities than modern, high technology uses that may be elsewhere delivered in the broader WSEA such as land to the south identified on Figure 36 as "employment lands". • The Facility will form part of an integrated waste management operation with the adjacent MPC and landfill operations. In this regard it is noted that Genesis Xero Waste facility currently employs 70 direct Staff. Several hundred staff are also indirectly employed through this operation (transport companies, subcontractors, trades). • The Facility is considered to provide for a range of job types including skilled technical work in relation to the management of the plant and maintenance through the semi-skilled and unskilled employment opportunities in relation to waste spotting.

Theme/Principle	Consistency
Land use activities	The project is considered to demonstrate consistency with the vision for land use activity management due to the following: • Detailed assessment of the environmental and ecological constraints of the site have been assessed and suitable mitigation measures implemented or recommend to ensure the appropriate management of potential issues. No works are proposed on land zoned E2 Environmental Conservation. • Current flood planning levels have been accounted for in the design of the development; • TNG will complement the existing waste management services provided within the broader site. The character of the development is generally in keeping with the industrial character of the immediate adjoining properties. • The project is an extension to the existing waste management operations elsewhere on the broader site. In this regard the use is considered to be consistent with existing land uses.
Transport, Movement and Access	The draft Structure Plan recognises Archbold Road as a *Future Primary Road.* The proponent has been in discussion with the DPE to ensure the proposed land use will not impact the future delivery of this key transport route. Internal road design allows for a future connection to this road network.
Waster and Servicing	The draft Structure Plan recognises gas, telecommunications, water and sewer services exist and supply the Existing WSEA. A servicing and infrastructure report has been prepared by AT&L to support the proposal this resolves that services can be made available to the site.
Community and Urban Form	The proposal is supported by a range of technical reports that have assessed the suitability of the site and its compatibility with adjacent land uses. In particular a Human Health Risk Assessment has been completed that concludes that the potential for adverse impacts is low and acceptable.
Environment	A range of environmental investigations have been completed to consider the impact of the project. In general these resolve there is no likely adverse impacts or where potential impacts are likely they may be managed through suitable mitigation measures.

The proposed Facility has been considered against the relevant aspects of the Broader WSEA draft Structure Plan and found to align with the strategic intent of the plan is that it:

- Will directly employ 55 staff;
- Significant indirect employment;
- Approximately 500 jobs during the construction phase;

- Will generate significant employment during the construction phase;
- Proposes to strategically re-subdivide the site to create lots of future employment lands;
- Is located adjacent to the Transgrid high voltage electricity transmission networks, will directly benefit the Broader WSEA employment lands through the provision of essential infrastructure to meet future energy needs;
- Will not impact any future Archbold Road development works; and
- Does not propose development on land zoned E2 Environmental Conservation zoned land.

The proposed Facility is seen to directly align the draft Structure Plan through the provision of well located, serviced employment lands.

8. STATUTORY PLANNING FRAMEWORK

8.1. OVERVIEW – PLANNING FRAMEWORK

The proposed Development has been assessed against applicable environmental planning instruments consistent with the SSD, DA DGRs. These instruments are set out in the Table 26 below.

Table 26 – Overview of Planning Framework

Framework Level	Planning Instrument
Legislative Acts and Regulations	• *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;* • *Threatened Species Act 2003;* • *Heritage Act 1977;* • *Water Management Act 2000;* • *Rural Fires Act 1997; and* • *Water Management Act 2000.*
Environmental Planning Instruments – State	• State Environmental Planning Policy (State and Regional Development) 2011; • State Environmental Planning Policy (Infrastructure) 2007; • State Environmental Planning Policy (Western Sydney Employment Area) 2009; • State Environmental Planning Policy No. 33 – Hazardous and Offensive Development; • State Environmental Planning Policy No. 55 – Remediation of Land; and • State Environmental Planning Policy No. 64 – Advertising & Signage.
State policies and guidelines	• EPA Energy from Waste Policy Statement; • NSW State Rivers and Estuary Policy (1993); • NSW State Groundwater Policy Framework Document (1997);

Framework Level	Planning Instrument
	• NSW State Groundwater Quality Protection Policy (1998); • NSW State Groundwater Dependent Ecosystems Policy (2002); • Aquifer Interference Policy (2012); • Department of Primary Industries Risk Assessment Guidelines for Groundwater Dependent Ecosystems (2012); and • Guidelines for Controlled Activities (2012).
Environmental Planning Instruments – Local	• Blacktown LEP 1988.
Local Planning Policies	• Blacktown DCP 2006.

8.2. COMMONWEALTH AND STATE ACTS

8.2.1. Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Act 1999* (EP&BC Act) is the primary Commonwealth legislation directed to protecting the environment in relation to Commonwealth land and controlling significant impacts on matters of national environmental significance. The EP&BC Act requires assessment and approval of actions that either will significantly affect matters of national environmental significance, or are undertaken by a Commonwealth agency or involve Commonwealth land and will have a significant effect on the environment.

The EP&BC Act requires the approval of the Commonwealth Minister for the Environment for actions on Commonwealth land or those that may have a significant impact on matters of national environmental significance, which are: World heritage areas, national heritage places, wetlands of international importance, threatened species and ecological communities listed in the EP&BC Act, migratory species listed in the EP&BC Act, nuclear actions, and actions affecting the Commonwealth Marine Environment. The matters of national environmental significance are addressed in the table below.

Table 27 – EPBC Matters of National Environmental Significance

Matters of National Environmental Significance	Comment
World Heritage Property	No World Heritage Properties in the vicinity of the Site.
National Heritage Places	No National Heritage Places in the vicinity of the Site.
Ramsar Wetlands of International Significance	No wetlands in the vicinity of the Site.
Listed Threatened species and ecological communities	The proposed Facility will involve an action affecting a listed threatened Ecological Community, being the Cumberland Plain Woodlands (CPW). This is addressed further in **Section 19**.
Listed Migratory species	No migratory species have been found to use the Site.

Matters of National Environmental Significance	Comment
Nuclear actions	No nuclear actions proposed.
Commonwealth Marine Area	No Commonwealth Marine Areas in the vicinity of the Site.

The proposed development is not considered to be a 'controlled action' (i.e. likely to be significant) pursuant to the *Environment Protection and Biodiversity Conservation Act 1999* as detailed within the Ecological Assessment at **Appendix G.**

8.2.2. Environmental Planning and Assessment Act 1979 and Regulations 2000

The *Environmental Planning and Assessment Act 1979 (*EPA Act) and accompanying Environmental Planning and Assessment Regulation 2000 (the Regulation) establish the legislative planning framework for NSW. The application is lodged under the State Significant Development provisions of the EP&A Act 1979.

Classification of Development

Under Schedule 3 of the Environmental Planning and Assessment Regulation 2000, 'Electricity generating stations' are listed as Designated Developments.

Requirements for Preparing an Environmental Impact Statement

This Statement is prepared in accordance with the relevant requirements of the EPA Act and the Regulation including Schedule 2 of the Regulation. The requirements of Schedule 2 and the section of report responding to this requirement are set out in Table 28**.**

Table 28 – Summary of response to Schedule 2 of the Act

Requirement	Section of Report
Form of the amended EIS (clause 6) Name and details of the author, address of the land and description of the development	Preface/Declaration.
Content of the amended EIS (Clause 7) Summary of the Environmental Impact Statement	Refer to Executive Summary and Section 1.0 Introduction.
Statement of the development's objectives	Refer to section 1.2
Analysis of feasible alternatives and consequences of not carrying out the development	Refer to section 5.
Full description of the development	Refer to sections 3 and 4.
Description of the environment with details of those aspects likely to be significantly affected.	Refer to sections 9 – 28.
The likely impact of the development	Refer to Section 9 – 28. An overview is provided in the Introduction.
Full description of the measures proposed to mitigate adverse effects of the development	Refer to section 27.2
List of approvals that must be obtained under other Acts or law before the development may be lawfully carrying out	Not Applicable.

Requirement	Section of Report
A compilation of mitigation measures	Refer to Section 27.
Principles of ecologically sustainable development	Refer to Section 24.

Section 79C Assessment

The proposed development has been assessed in accordance with the matters of consideration listed in Section 79C of the Act as outlined below:

Table 29 – Section 79C Assessment

Consideration	Comment
Environmental Planning Instruments	State and Local Environmental Planning Instruments have been assessed in **Section 8**.
Draft Environmental Planning Instruments	No draft Environmental Planning Instruments are applicable to the Site.
Development Control Plans	The proposed development has been assessed against the provisions of Blacktown DCP 2015 (see **Section 8.5.2**).
Any planning agreement that has been entered into under Section 93F, or any draft planning agreement that a developer has offered to enter into under section 93F	The proponent has previously submitted a letter of offer to into a VPA and is presently negotiating the terms of a draft VPA that will be exhibited by the DPE.
Any Matters Prescribed by the Regulations	This SSDA has been prepared in accordance with Part 14, Clause 228 of the Regulations outlining the factors that must be taken into account concerning the impact of an activity on the environment. In addition, this amended EIS is prepared in accordance with the relevant requirements of Schedule 2 of the Regulation.
Any coastal zone management plan	The site is not located within an area subject to a coastal zone management plan.
Likely Impacts of the Development	An impact assessment has been provided in **Sections 9 –20.** The identification and assessment of impacts concludes that facility can operate without significant impact to the environment and a consolidated list of mitigation measures has been provided to ensure that the facility is operated and maintained to ensure a high level of environmental performance.
Suitability of the Site	The location of the proposed Facility is: • Located in an industrial zone and under which the proposed use is permissible through the application is ISEPP.

Consideration	Comment
	• Adjacent to an existing waste transfer landfill facility that will provide approximately 23% of the phase 1 of the fuel source for the energy generation. • Located in the Eastern Creek Industrial Area and is suitably sited among similar compatible land uses with a direct synergy to the proposed Development and the Genesis Xero Waste Facility. • Located proximate to the regional motorway network. Additionally: • Has undergone extensive review and design refinement to ensure that the operation will not adversely affect local air quality and that human health impacts are low and acceptable when assessed using the risk based assessment model. • The proposed use is consistent with the future strategic use of the land in providing a significant employment generating development. • Adequate car parking is provided to cater for staff and visitors to the Site with all anticipated traffic able to be accommodate within the existing road network with no reduction in level of service at key intersections. • The proposed development will provide a benefit to the local and regional economy through provision of a key infrastructure for the sustainable treatment of waste within Metropolitan Sydney.
Any submission made in accordance with this Act or the Regulations	A total of 45 direct submissions and one (1) 200 signature petition were made in response to the exhibition period. Where relevant comments and the outcome of various assessment have informed the design development and amendment of key technical reports, leading the amendment of the proposal and the EIS. These primary changes relate to the core technical information that guides the function and operation of the technology, the revised processing volume, amended subdivision plant to ensure that all existing land comprising EECs are retained as part of the broader land holding. A detailed table of all matters considered and responded to as a result of the 60 day exhibition period is provided at **Appendix HH**. And where relevant technical reports updated and this amended EIS.
The Public Interest	The proposed Development is in the public interest in that it will generate in the order of approximately 500 direct construction

Consideration	Comment
	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.

8.2.3. Protection of the Environment Operations Act 1997

The *Protection of the Environment Operations Act 1997* (POEO Act) seeks to manage pollution impacts from various premises and non-premises based operations in NSW.

As detailed throughout this SSD, DA, and in greater detail in the Ecologically Sustainable Development Assessment (**Section 24** of this amended EIS) the proposed Facility wholly satisfies the objectives of this Act through the provision of state of the art technology for resource recovery and electricity generation.

Clauses 48 and 49 of this Act require certain premises-based and non-premises-based activities to obtain licences for their operation. These activities and their licencing thresholds are listed in Schedule 1 of the Act.

- Clause 17 of Schedule 1 – Electricity generation triggers the criteria for a scheduled activity under this Act for *general electricity works with a capacity to generate more than 30 megawatts of electrical power.*

- Clause 18 of Schedule 1 – Energy recovery triggers the criteria for a scheduled activity under this Act for *energy recovery from general waste involving processing more than 200 tonnes per year of waste (other than hazardous waste, restricted waste solid waste, liquid waste or special waste.*

Given the above, an Environment Protection Licence is required for the operation of the Proposed Facility as a premises-based scheduled activity.

8.2.3.1. Protection of the Environment Operation (Clean Air) Regulations 2010

The POEO (Clean Air) Regulations provides regulatory measures to control emissions from wood heaters, open burning, motor vehicles and fuels and industry.

The proposed development involves the thermal treatment of residual waste materials and is subject to the provisions of Division 4 Group 6 Treatment Plants and as a minimum must demonstrate capability to achieve the emissions targets set by the Regulation as well as those matters set out in clauses 49 -52.

A summary of the PoEO Regulation emissions targets relevant to the proposed development is provided Table 30. No emission limits are prescribed for NH_3 or PAHs under the Australian or European legislative framework. Notwithstanding, these are important emissions that have been addressed within this assessment.

In accordance with clauses 56 of the Clean Air Regulation, power station emissions during start-up and shut-down periods are exempt from the in-stack concentration limits. In addition, clause 57A of the Clean Air Regulation states that emergency generators are also exempt if the generators are used no more than 200 hours per year.

Table 30 – PoEO (Clean Air) Regulation Targets (Source: PE, AQA; 2016)

Pollutant	Standard (mg/Nm^3)	Source	Activity
Solid Particles (Total)	50	Electricity generation	Any activity of plant using liquid or solid standard fuel or non-standard fuel
HCl	100	General standards	Any activity or plant
HF	50	Electricity generation	Any activity of plant using liquid or solid standard fuel or non-standard fuel
SO_2	No applicable standard		
NO_2	500	Electricity generation	Any boiler operating on a fuel other than gas, including a boiler used in connection with an electricity generator that forms part of an electricity generating system with a capacity of 30 MW or more
Type 1 & 2 substances (in aggregate)	1	Electricity generation	Any activity of plant using non-standard fuel
Cd or Hg (individually)	0.2	Electricity generation	Any activity of plant using non-standard fuel
Dioxins or furans	$1x10^{-7}$ ($0.1\ ng/m^3$)	Electricity generation	Any activity of plant using non-standard fuel that contains precursors of dioxin or furan formation
VOC	40 (VOC) or 125 (CO)	Electricity generation	Any activity of plant using non-standard fuel
Cl_2	200	General standards	Any activity or plant
H_2S	5	General standards	Any activity or plant

Reference conditions defined as dry, 273.15 K, 101.3 kPa and 7% O_2 for all air impurities when burning a solid fuel, with the exception of dioxins and furans where the required O_2 concentration is 11% for waste incineration.

8.2.4. Threatened Species Act 1995

The objects of the Threatened Species Conservation 1995 (NSW) (TSC Act) include:

- To conserve biological diversity and promote ecologically sustainable development;
- Prevent the extinction and promote the recovery of threatened species, populations and ecological communities;
- To protect the critical habitat of those threatened species, populations and ecological communities that are endangered; and
- To ensure that the impact of any action affecting threatened species, populations and ecological preventing the extinction and promoting the recovery of threatened species, populations and ecological communities is properly assessed.

The TSC Act provides the procedure for the listing of threatened species, populations and ecological communities and key threatening processes in NSW and the preparation and implementation of recovery plans and threat abatement plans. As well as establishing a mechanism whereby a licence may be granted to impact on any matters listed for protection.

An assessment of potential impacts on the ecological values of the site in relation to the proposed development has been undertaken by the Abel Ecology, the outcome of this assessment is summarised and the potential for impact on matters identified is discussed in **Section 19.**

8.2.5. Heritage Act 1977

The *Heritage Act 1977* regulates development/activities in relation to non-indigenous heritage, including the Section 170 register a mandatory list of heritage items contained on Government-owned land.

A search of the NSW Heritage database was conducted. The database contains records of all heritage items listed under the Act and relevant Environmental Planning Instrument (where Council has provided the information to OEH). The search confirms that there are no items of environmental heritage on the site.

Notwithstanding this, non-aboriginal heritage and archaeology potential were assessed by GML. **Section 22.2** contains a summary of the outcome of the detailed assessment conducted by GML and considers the impacts of the proposal in the context of GMLs findings.

8.2.6. National Parks and Wildlife Act 1974

The *National Parks and Wildlife Act 1974* (NPW Act), administered by the OEH provides statutory protection for all Aboriginal 'objects' (consisting of any material evidence of the Aboriginal occupation of NSW) under Section 90 of the Act, and for 'Aboriginal Places' (areas of cultural significance to the Aboriginal community) under Section 84.

As this project is to be assessed in accordance with the EP&A Act, it is not subject to the requirements for an Aboriginal Heritage Impact Permit (AHIP) in accordance with Section 90 of the NSW Park and Wildlife Act 1974 (NPW Act).

A detailed assessment of Aboriginal Archaeological potential and significance was undertaken as part of the assessment of the application. Mitigation measures have been included to address potential impacts, including provisions for an unexpected finds protocol.

8.2.7. Rural Fires Act 1997

The subject site is not identified as bushfire prone land under the applicable planning instruments and as such is not subject to the statutory provisions of section 100B of the Rural Fires Act 1997, nor does it require referral to the Rural Fire Service for development of bushfire prone land.

Notwithstanding the above, to mitigate risk from bushfire due to the proximity of the site to land identified categorised as being within the bushfire "buffer" a bushfire assessment was undertaken and measures will be implemented to further mitigate any potential hazard arising from bushfires within the broader locality.

8.2.8. Water Management Act 2000

The *Water Management Act 2000* aims to manage the State's water sources in a sustainable and integrated manner.

The proposed development will require dewatering of the ground water table, requiring consent from the NSW Office of Water under Section 91 of the *Water Management Act 2000*, for *"Interference with an Aquifer".*

Notwithstanding the above, development declared to be SSD by a SEPP is not required by section 89J of the EP&A Act 1979 is not required to be seek consent.

8.3. ENVIRONMENTAL PLANNING INSTRUMENTS

8.3.1. State Environmental Planning Policy (State and Regional Development) 2011

State Environmental Planning Policy (State and Regional Development) 2011 identifies various types of development and particular sites upon which certain works are considered State Significant Development (SSD).

Schedule 1 of this SEPP identifies the proposed works as State Significant Development:

Clause 20 - Electricity generating works and heat or co-generation

Development for the purpose of electricity generating works or heat or their co-generation (using any energy source, including gas, coal, biofuel, distillate, waste, hydro, wave, solar or wind power) that:

has a capital investment value of more than $30 million, or

(b) has a capital investment value of more than $10 million and is located in an environmentally sensitive area of State significance.

The project is classified as SSD, proposing the construction and operation of electricity generating works with a Capital Investment Value of more than $557 million.

8.3.2. State Environmental Planning Policy (Western Sydney Employment Area) 2009

State Environmental Planning Policy (Western Sydney Employment Area) 2009 (SEPP WSEA) establishes the guiding principles to promote economic development and the creation of employment in Central Western Sydney.

8.3.2.1. Land use zone and permissibility

As shown in Figure 36 below the precinct the broader site is located within the Western Sydney Employment Area and is split zoned IN1 General Industrial and E2 Environmental Conservation. Notwithstanding this, 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

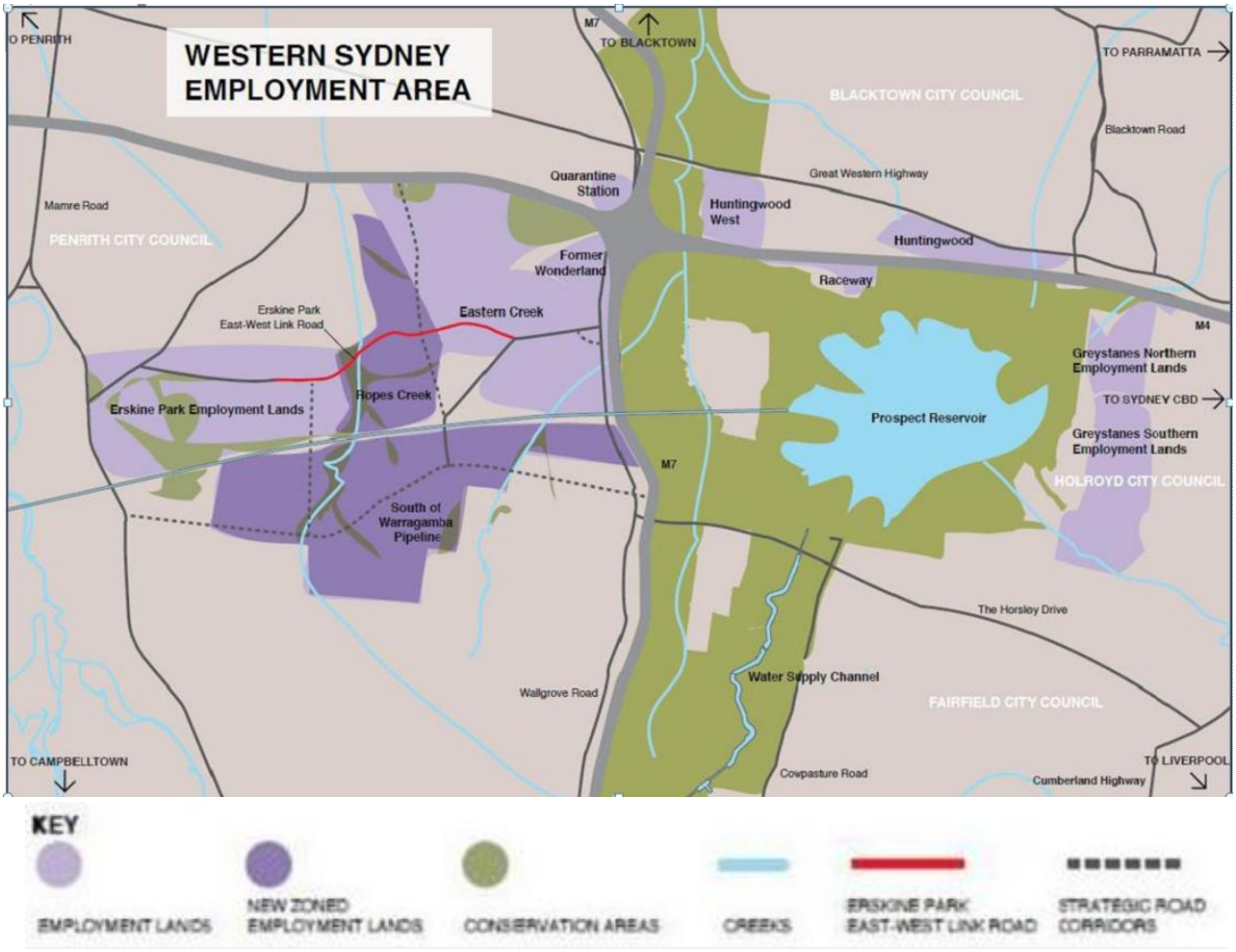
The identified use is not defined in the Dictionary under SEPP WSEA. Notwithstanding this, the use would be best characterised as “Industry” that is development permissible with consent under the provisions of the IN1 General Industrial Zone.

We further note, 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.

8.3.2.2. Zone Objectives

As outlined in **section 8.3.2.1** the site is zoned part IN1 General Industrial and part E2 Environmental Conservation. Notwithstanding, all construction and operations related to the facility are contained wholly on land zoned IN1 General Industrial the consistency of the project with the objectives of both zones has been taken into consideration.

Figure 36 – Western Sydney Employment Area Map (*Source NSW DP&E)*



Consistency with IN1 General Industrial Zone objectives:

The consistency of the project with the objectives of the zone is considered in Table 31.

Table 31 – Consideration of IN1 Zone Objectives

Zone Objective	Statement of Consistency
To facilitate a wide range of employment-generating development including industrial, manufacturing, warehousing, storage and research uses and ancillary office space.	The development will deliver a total of 55 full time jobs on operation and 500 construction jobs.
To encourage employment opportunities along motorway corridors, including the M7 and M4	The project will deliver jobs on land located within proximity to the M4 and M7 corridors consistent with the zoning of the land.
To minimise any adverse effect of industry on other land uses	Detailed environment assessment has been undertaken in relation to the potential effects of the project on surrounding land uses, including assessment of impacts on human health and traffic. All conclude that the facility will not contribute to adverse effects. Where necessary mitigation measures have been incorporated to minimise adverse environmental impacts on surrounding land.

Zone Objective	Statement of Consistency
facilitate road network links to the M7 and M4 Motorways	Includes key sections of the proposed Regional Road Network which facilitate links to the M4 and M7 motorways.
To encourage a high standard of development that does not prejudice the sustainability of other enterprises or the environment.	As stated above, the project has the focus of extensive assessment by technical experts in particular focusing on matters of air quality and human health. TNG will be delivering tried and proven technology developed by HZI, a premier supplier of EfW technology in the Europe. The project utilises residual waste fuels for which there is no alternate purpose and would otherwise be destined to land. The use of EfW to treat residual wastes to produce energy, will contribute to removing 3M/tonnes of CO^2 per annum. Making a positive contribution to environmental outcomes. As part of an integrated waste management response, that only utilise residual (i.e. left over) waste materials it does not prejudice the sustainability of other enterprises.
To provide for small-scale local services such as commercial, retail and community facilities (including child care facilities) that service or support the needs of employment-generating uses in the zone	Not relevant as the proposal does not seek consent for local services.

Consistency with E2 Environmental Conservation Zone objectives

The objectives of the E2 zone include:

Table 32 – Consideration of E2 Zone Objectives

Zone Objective	Statement of Consistency
To protect, manage and restore areas of high ecological, scientific, cultural or aesthetic values.	No works are proposed to be undertaken within the E2 Environmental Conservation zoned land.
To prevent development that could destroy, damage or otherwise have an adverse effect on those values.	

8.3.2.3. Consideration of Key Clauses

Table 33 provides an assessment of the project against the relevant clauses of SEPP WSEA.

Table 33 – WSEA Assessment

WSEA Clause	Development Response
Clause 14 Subdivision Consent Requirement	A draft plan of subdivision of the broader site has been submitted with this application. Details of proposed subdivision of Lots 1, 2 and 3, DP 1145808 are provided in **Section 4.5.12** of this amended EIS.
Clause 18 – Requirements for development control plans	Clause 19 provides that a site specific DCP is not required where there a consent authority is satisfied that an existing precinct plan applied to the land immediately prior to the repeal of SEPP 59. In this instance, a precinct plan applying to the land is listed as an "existing precinct plan under subclause 19 (b) known as the *Eastern Creek Precinct Plan.* On this basis, the proponent is not required to develop a site specific DCP. This view was confirmed in Section 4, of Appendix A of the Blacktown City Council submission in response to exhibition. The project has been considered against the relevant controls contained in the Eastern Creek Precinct Plan and found to be consistent. Where departures occur, these have been justified within the amended EIS.
Clause 19 – Existing Precinct Plans under SEPP 59	An assessment of the proposed works against the provisions of the Eastern Creek Precinct Plan has been undertaken in **Section 8.5.**
Clause 20 – Ecologically Sustainable Development	As detailed with the Ecologically Sustainable Development assessment within **Section 24** of this report, the development contains measures to minimise: • Use of potable water, and • Emission of greenhouse gases.
Clause 21 – Height of buildings	Clause 21 prohibits the granting of consent unless the following matters are satisfied: *building heights will not adversely impact the amenity of adjacent residential areas;* and *site topography has been taken into consideration.* The proposal includes 100 metre high stacks that will be visible from adjoining land. The stack height was selected to ensure appropriate dispersion of emissions to achieve ground level concentration of pollutants at the POEO Act level (or more stringent) as well as the US EPA document *'Guideline for Determination of Good Engineering Stack Height'.* A detailed Visual Assessment has been undertaken and is included in the Visual Assessment Report provided at **Appendix H** and considered in **Section 20** of this amended EIS.

WSEA Clause	Development Response
	The stacks will be visible from adjoining lands up to a regional scale. However, despite their height they are slender in form and will not appear visually dominant elements in the locality. Combined with the significant setbacks of the structures from boundaries and the almost non-existent plume the potential for adverse amenity impacts is considered low.
Clause 22 – Rainwater harvesting	The consent authority must not grant consent to development unless it is satisfied adequate arrangements will be made to connect the roof areas of buildings to a rainwater harvesting scheme. Rain harvesting water sensitive design approaches have been incorporated into the bio-retention basin as detailed with the infrastructure report prepared by AT&L and submitted at **Appendix E.**
Clause 27 – Exceptions to development standards	The proposed Development does not seek an exception to any development standards.
Clause 28 Relevant acquisition authority	The authority of the State is noted.
Clause 29 Industrial Release Area – satisfactory arrangement for the provision of regional transport infrastructure and services	The development will deliver a new estate road that has been designed to allow future extension and connection to the east and west. The proposal is not inconsistent with the envisaged future road layout nor does it limit the potential achievement of the same.
Clause 31 – Design principles	The design, materials, architectural treatments, landscaping, scale and character are discussed in detailed within **Section 20** of this amended EIS which identifies the key considerations of the proposed Development. Despite the scale and bulk of the proposed Facility, careful consideration to the design and choice of materials has been given to minimise its visual impact and ensure the scale and character are compatible with the precinct.
Clause 32 – Preservation of trees or vegetation	The key objective of Clause 32 is to preserve the amenity of the area through preservation of trees and other vegetation. Consent for the removal of the existing trees identified within the Flora and Fauna Report (prepared by Abel Ecology and submitted at **Appendix G**) is sought as part of this SSD, DA. The proposed development area is largely clear of vegetation. The removal of existing vegetation within the proposed building footprint will result in the removal of weeds including noxious and environmental weeds, to the benefit to the surrounding locality. The preservation of trees is further detailed within **Section 19** of this amended EIS.

8.3.3. State Environmental Planning Policy (Infrastructure) 2007

State Environmental Planning Policy (Infrastructure) 2007 (ISEPP) aims to streamline the delivery of necessary services and infrastructure to communities through establishing alternate planning mechanisms. The ISEPP prevails over the local planning instrument and SEPP (WSEA) in relation to land use and zoning to facilitate the delivery of essential infrastructure.

Division 4 of the ISEPP outlines provision for electricity generating works being *'a building or place used for the purpose of making or generating electricity'.*

8.3.3.1. Land Use Permissibility

Clause 34 facilitates development for the purpose of electricity generating works carried out by any person with consent on any land in a prescribed rural, industrial or special use zone.

The proposed Facility is located within a prescribed Industrial (IN1) zone and is therefore considered permissible with consent under the ISEPP.

8.3.3.2. Traffic Generating Development

The proposal involves the construction and operation of an industrial use with an area of 20,000m² or more. In accordance with column 2, schedule 3 and the clause 104 (2) (a) of the ISEPP the development is "traffic generating".

The application has been referred to Roads and Maritime Service for comment, who have provided no objection to the proposal and sought the imposition of requirements in relation to the design of internal roads and parking combined with the preparation of a construction road traffic plan. These matters have been included in the consolidated mitigation measures provided at **Section 27.2.**

Furthermore, a Traffic Impact Assessment has been prepared by Traffix and is provided at **Appendix Q**. The assessment concludes that key intersections will continue to operate at Level of Service B.

3.1.1 State Environmental Planning Policy No. 33 – Hazardous and Offensive Development

State Environmental Planning Policy No.33 – Hazardous and Offensive Development (SEPP 33) requires specific matters to be considered for proposals that are 'potentially hazardous' or 'potentially offensive' as defined in the policy.

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 the following has been undertaken:

- preliminary hazard assessment has been undertaken by RawRisk to consider the potential sources of risk and hazard and determine whether sufficient mitigating measures can or have been implemented to reduce risk and hazard in relation to the locality in terms of human health;
- An assessment of potential human health impacts associated with the proposed emissions has been undertaken by AECOM.

The outcome of these assessments including the potential for impact and the need for mitigation measures are detailed in following sections of this amended EIS:

- Section 17: Human Health; and
- Section 23: Hazard and Risk.

Overall the proposal poses a low and acceptable risk to human health and the preliminary hazard analysis concludes that none of the hazard scenarios identified would impact over the Site boundary and therefore a fatality would not occur at the Site boundary, the cumulative risk at the Site boundary would be less than 50 per million per year, which is considered an acceptable risk level.

Mitigation measures to ensure human health have been implemented into the design and operation of the facility, in particular the use of SNCR technology in the treatment of flue gas and the continuous emissions control system that will monitor the emissions of the plant and trigger a shutdown in the event of exceedance.

The storage of goods and materials considered to be hazardous is not uncommon in the operation of industrial premises, and the potential for impact and risk of hazard events will be managed through appropriate operational management.

8.3.4. State Environmental Planning Policy No. 55 – Remediation of Land

State Environmental Planning Policy No. 55 Remediation of Land (SEPP 55) applies to all land in NSW and aims to promote remediation of contaminated land for the purposes of reducing potential impacts on human health.

The proposed development involves a change of use of the land to permit the establishment and operation of an “electricity generating facility”. As the site had a known site history of use for agricultural purposes a preliminary site investigation (PSI) was undertaken in Clause (7) (4) and table 1 of the contaminated land planning guidelines.

The PSI recommended a Targeted Phase 2 Detailed Site Contamination Investigation to consider the potential for impacts arising from adjacent operations, in particular the potential for contaminants to have migrated soil, and or surface water and river sediment within the boundaries from the easterly adjoining Hanson operations.

This Targeted Phase 2 Detailed Site Contamination Investigation was undertaken and concluded that the site was suitable for the intended use without need for remediation.

As detailed in **Section 23** of this report, a Phase 1 Environmental Site Assessment was prepared for the Site by AD Envirotech Australia P/L (Error! Reference source not found.).

8.3.5. State Environmental Planning Policy 59 – Central Western Sydney Regional Open Space and Residential (repealed)

SEPP 59 was implemented in 1999 and was originally entitled State Environmental Planning Policy No. 59 – Central Western Sydney Economic and Employment Area.

The aim of SEPP 59 was rezone land for urban purposes and coordinate its release and development, while providing for optimal planning and environmental outcomes.

Under SEPP 59, Precinct Plans were required to be developed to guide and inform development of the land having regard to and planning for the protection of the environment, heritage, delivery of services and consideration of transport and access.

Under SEPP, the Eastern Creek Precinct Plan was developed and adopted to inform development. At the time of SEPP 59 being repealed, this precinct plan was recognised and given statutory recognition by SEPP – WSEA). The precinct plan is now a deemed DCP for the purposes of assessment.

8.3.6. State Environmental Planning Policy No. 64 – Advertising and Signage

SEPP 64 applies to the proposed Development, as the business identification signage on the northern, western and eastern facades is visible from the surrounding road network. It is noted the SEPP will apply in the event of any inconsistency with another Environmental Planning Instrument.

Part 3 of SEPP 64 does not apply to this application, as the proposed sign are defined as ‘business identification sign’ and ‘building identification sign’.

In accordance with Part 2 of the SEPP, the compliance of the proposed Development with the objectives of the policy and the assessment criteria in Schedule 1 needs to be assessed. A full assessment of the proposed signage against the SEPP 64 objectives and assessment criteria has been undertaken and is detailed in Table 34 below.

Table 34 – SEPP 64 Objectives and Assessment Criteria

Assessment of Criteria	Comment
Character of the Area • Is the proposal compatible with the existing or desired future character of the area or locality in which it is proposed to be located? • Is the proposal consistent with a particular theme for outdoor advertising in the area or locality?	• The proposed signage is minimal in terms of scale and number having regard to the size of the facility. • The proposed signage is compatible with the existing and future desired character of the area in that: – The signage is simple and modern design and compatible with the future development and use of the Site. – The signage is consistent in scale and appearance to other industrial signs nearby at the approved Genesis Xero Waste Facility.
Special Areas Does the proposal detract from the amenity or visual quality of any environmentally sensitive areas, heritage areas, natural or other conservation areas, open space areas, waterways, rural landscapes or residential areas?	• The Site is not located within a ‘special precinct’. • The signage is affixed to the building elevations and as such does not intrude on any natural or sensitive areas.
Views and Vistas • Does the proposal obscure or compromise important views? • Does the proposal dominate the skyline and reduce the quality of vistas? • Does the proposal respect the viewing rights of other advertisers?	• As the signage is affixed to the building elevations it does not obstruct views or vistas. • The proposed signage does not project beyond the building form. Accordingly, there is no impact on the skyline or viewing rights of other advertisers.
Streetscape, setting and landscape • Is the scale, proportion and form of the proposal appropriate for the streetscape, setting or landscape? • Does the proposal contribute to the visual interest of the streetscape, setting or landscape?	• A maximum of three (3) signs are proposed, all affixed to a different façade of the building. • No signage protrudes above the roof or beyond the façade of the building. • The signage presents a coherent and integrated colour theme based on the corporate colours of the operator.

Assessment of Criteria	Comment
• Does the proposal reduce clutter by rationalising and simplifying existing advertising? • Does the proposal screen unsightliness? • Does the proposal protrude above buildings, structures or tree canopies in the area or locality?	• Signage is limited to one per façade and does not project. The surface area of each sign is no more 22.72m², approximately 1% of the façade area.
Site and building • Is the proposal compatible with the scale, proportion and other characteristics of the site or building, or both, on which the proposed signage is to be located? • Does the proposal respect important features of the site or building, or both? • Does the proposal show innovation and imagination in its relationship to the site or building, or both?	Signage is limited to one per façade and does not project. The surface area of each sign is no more 22.72m², approximately 1% of the façade area. Accordingly, the signage does not overwhelm or dominant the building or the surrounds, but serves only to provide way-finding and identification of the business and the site.
Associated devices and logos with advertisements and advertising structures Have any safety devices, platforms, lighting devices or logos been designed as an integral part of the signage or structure on which it is to be displayed?	• Proposed sign is for business identification only, no associated devises and logos with advertising or advertising structures proposed. • Safety devices, platforms, lighting devices or logos have not been designed as an integral part of the signage.
Illumination • Would illumination result in unacceptable glare? • Would illumination affect safety for pedestrians, vehicles or aircraft? • Would illumination detract from the amenity of any residence or other form of accommodation? • Can the intensity of the illumination be adjusted, if necessary? • Is the illumination subject to a curfew?	• Illumination of the business identification signage is proposed. The lighting will comply with AS4282 ‘Control of the obtrusive effects of outdoor lighting’ to minimising impact on surrounding land uses, roads, aircrafts, and pedestrians. • Illumination is proposed via mounted stalk lighting. • Given the 24 hour nature of the Facility, the illumination will not be subject to a curfew.
Safety	• The proposed sign will not encroach on the roadway or interfere with pedestrian or vehicular sight-lines.

Assessment of Criteria	Comment
• Would the proposal reduce the safety for any public road? • Would the proposal reduce the safety for pedestrians or bicyclists? • Would the proposal reduce the safety for pedestrians, particularly children, by obscuring sightlines from public areas?	• The signage will not distract motorists as it will not resemble a traffic sign.

8.3.7. Blacktown Local Environmental Plan 1988

No planning controls in the *Bankstown Local Environmental Plan 1988* (BLEP) apply to the Site given the Site falls within the SEPP (WSEA). As SEPP (WSEA) applies, the BLEP is not a matter for consideration in the assessment of the application.

8.4. STATE PLANS & POLICIES

8.4.1. NSW Energy from Waste Policy Statement

The Environment Protection Authority (EPA) recognises that the recovery of energy and resources from 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.

TNG recognises the EPA facilitates a risk-based approach to the recovery of energy from waste. The EPA has applied the following overarching principles to waste avoidance and recovery:

- Higher value resource recovery outcomes are maximised;
- Air quality and human health are protected;
- 'Mass burn' disposal outcomes are avoided; and
- Scope is provided for industry innovation.

The proposed Facility has been designed to recover energy from waste or waste-derived materials that are not listed as eligible waste fuels. Additional information regarding the use of eligible and non-eligible waste fuels is summarised in the following sections.

8.4.1.1. Eligible and Non-Eligible Waste Fuels

TNG will utilise a mixture of eligible and non-eligible waste fuels as set out in the EPA EfW Policy Framework. Eligible waste fuels are limited to:

- uncontaminated wood waste; and
- source-separated green waste.

TNG proposes to thermally treat waste or waste-derived materials that are not listed as eligible waste fuels and that meet the requirements of an "*energy recovery facility"* by using residual waste fuel. TNG has performed detailed waste mapping to identify the sources and composition of allowable non-eligible waste fuels in the market.

The analysis was conducted at a state level, considering waste generated in the Sydney Metropolitan Area, Extended Regulated Area (ERA), Regional Regulated Area (RRA) and the Rest of NSW to map allowable waste streams at a state level.

8.4.1.2. Energy Recovery Facilities

Energy recovery facilities refer to facilities that thermally treat waste-derived materials that fall outside of the low-risk eligible waste fuels.

These facilities must therefore demonstrate that they will be using current international best practice techniques (according to International Organization for Standardization (ISO)), particularly with respect to:

- *process design and control;*
- *emission control equipment design and control;*
- *emission monitoring with real-time feedback to the controls of the process;*
- *arrangements for the receipt of waste; and*
- *management of residues from the energy recovery process.*

The proposed facility has been benchmarked against Best Available Technology (BAT), the outcome of this review is provided at **Appendix LL.** In particular, the design and operation of the facility has adopted SNCR technology for the treatment of flue gas that will manage emissions levels for key chemicals that will be monitored electronically by the CEMS with 24-hour live feed to the EPA. Full details of the plant operations, technology and management system are provided in the Project Definition Brief, prepared by Ramboll, provided at **Appendix CC**. The performance of the technology with respect to managing air quality and human health is documented in the respective reports provided at **Appendices K** and **N,** respectively.

Management of incoming waste fuels and outgoing waste by products is documented in the Waste Management report, refer to **Appendix J**.

The proposed development is considered to be consistent with the requirements of an “energy recovery facility”.

Technical Criteria

A summary of the technical criteria document in the EfW Policy Statement and TNG’s proposed design is summarised in the table below (taken from Environ Waste Report).

Table 35 – EPA Energy from Waste Policy Technical Criteria

Energy from Waste Policy Statement Technical Criteria	**Facility Characteristics**	**Reference Standard**
The gas resulting from the process should be raised, after the last injection of combustion air, in a controlled and homogenous fashion and even under the most unfavourable conditions to a minimum temperature of 850°C for at least 2 seconds (as measured near the inner wall or at another representative point of the combustion chamber).	The facility operations and technology are set out in detail in the Project Definition Brief prepared by Ramboll and provided at **Appendix CC.**	IED Article 50 (2)

Energy from Waste Policy Statement Technical Criteria	Facility Characteristics	Reference Standard
If a waste has a content of more than 1% of halogenated organic substances, expressed as chlorine, the temperature should be raised to 1,100°C for at least 2 seconds after the last injection of air.	Chlorine content of the design fuel will be mixed to ensure that the average content does not exceed 1%. Management of chlorine content is set out in detail in the Project Definition Brief prepared by Ramboll and provided at **Appendix CC** and this amended EIS.	IED Article 50 (2)
The process and air emissions from the facility must satisfy at a minimum the requirements of the Group 6 emission standards within the Protection of the Environment Operations (Clean Air) Regulation 2010.	The daily emission standards of the European Commission Directive on Industrial Emissions (IED) set out in Annex VI Part 3 are more stringent that the Group 6 emission standards set out in Schedule 2 of the Protection of the Environment Operations (Clean Air) Regulation 2010. This will be achieved through two primary elements: • Regulated combustion control system that will minimise the levels of pollutants and particulate in the flue gas before flue gas treatment; and • The use of a Selective Non-Catalytic Reduction (SNCR) of NO_x, activated carbon injection, dry lime scrubbing and fabric bag filters. Adoption of Best Available Technology (BAT) together with more stringent air quality emissions standards will ensure that the facility is consistent with the Group 6 Emissions standards either as a minimum or better. Emissions limits for the project have been recommended to be at the PoEO limit except with regards to Cd which will be emitted at the IED limit (which is more stringent that the PoEO limit) to ensure suitable protection for air quality and human health. Refer to the Pacific Environment Air Quality Assessment provided at **Appendix K**.	POEO Act 2010
Continuous measurements of NO_x, CO, particles (total), total organic compounds, HCl, HF and SO_2. The continuous measurement of HF may be omitted if treatment	The following parameters will be monitored and recorded continuously at each stack using a Continuous Emissions Monitoring System (CEMS): (1) Oxygen; (2) Carbon monoxide; (3) Hydrogen chloride; (4) Sulphur dioxide;	IED Annex VI Part 6 point 2.1 (a) and point 2.3

Energy from Waste Policy Statement Technical Criteria	Facility Characteristics	Reference Standard
stages for HCl are used which ensure that the emission limit value for HCl is not being exceeded.	(5) Nitrogen oxides; (6) Ammonia; (7) volatile organic compounds* (VOCs); and (8) Particulates. The following parameters will be monitored by means of spot sampling at frequencies agreed with the relevant regulator. (1) Nitrous oxide; (2) Heavy metals; and (3) Dioxins and furans. Emission concentrations will be verified by an independent testing company at frequencies agreed upon with the relevant regulator (Ramboll). *VOCs and total organic compounds (TOCs) in cleaned flue gas are used interchangeably in all technical reports prepared by HZI. Thus, TOCs and VOCs are continuously monitored. All particles and elementary, *un-burnt* carbon are completely removed from the flue gas by the installed bag filter.	
This data must be made available to the EPA in real-time graphical publication and a weekly summary of continuous monitoring data and compliance with emissions limits published on the internet.	Emissions from the stack will be monitored continuously by an automatic computerised system. All continuous monitoring records will be made available to NSW EPA in real-time using the preferred data access platform and reporting frequency for publication.	N/A
There must be continuous measurements of the following operational parameters: temperature at a representative point in the combustion chamber; concentration of oxygen; pressure and temperature in the stack;	During operation, the temperature in the combustion chamber will be continuously monitored and recorded to demonstrate compliance with the requirements of the IED. The combustion control system will be an automated system, including monitoring of: (1) Steam flow; (2) Oxygen content; (3) Temperature conditions of the grate; (4) Modification of the fuel feed rates; and	IED Annex VI Part 6 point 2.1 (b)

Energy from Waste Policy Statement Technical Criteria	Facility Characteristics	Reference Standard
and water vapour content of the exhaust gas. This must be conducted and held by the proponent for a period of **three years**.	(5) Control of primary and secondary air. Continuous temperature measurements will also be recorded in the roof of the first boiler pass to provide data at a representative point in the combustion chamber. Additional temperature measurements can be installed as required. In addition, the following parameters will be monitored so that emission concentrations can be reported in accordance with the IED: • Water vapour content of the flue gas; and • Temperature and pressure of the flue gases (assumed to be in the stack). • All data will be kept for a minimum of **five years** by TNG and will be available to the EPA at all times.	
Proof of performance (POP) trials to demonstrate compliance with air emissions standards. There must be at least two measurements per year of heavy metals, polycyclic aromatic hydrocarbons, and chlorinated dioxins and furans. One measurement at least every three months shall be carried out for the first 12 months of operation. If and when appropriate measurement techniques are available, continuous monitoring of these pollutants will be required.	TNG will fully comply with all EPA requirements, allowing independent personnel to conduct proof of performance trials at any time. A proof of performance framework and implementation trials has been provided at **Appendix LL.** The following parameters will be monitored by means of spot sampling at frequencies agreed with the relevant regulator. (1) Nitrous oxide; (2) Hydrogen fluoride; (3) Heavy metals; and (4) Dioxins and furans. A proof of performance framework has been developed by HZI outlining the implementation of the technology. Refer to **Appendix LL**.	IED Annex VI Part 6 point 2.1 (c)
The total organic carbon (TOC) or loss on ignition (LOI) content of the slag and bottom ashes must	This is addressed in the Project Definition Brief prepared by Ramboll and provided at **Appendix CC.** The PDB confirms that TOC and LOI content of bottom ash will not exceed 3 per	IED Article 50 (1)

Energy from Waste Policy Statement Technical Criteria	Facility Characteristics	Reference Standard
not be greater than 3% or 5%, respectively, of the dry weight of the material.	cent and 5 per cent respectively (measured on dry weight basis).	
Waste feed interlocks are required to prevent waste from being fed to the facility when the required temperature has not been reached either at start-up or during operation.	Control of emissions from the Facility is given highest priority. Carbon monoxide and oxygen levels are continuously monitored to ensure combustion is good and the Facility maintains a flue gas temperature of 850°C automatically. If this is not met, auxiliary burners will start up to raise temperatures and if problems continue, fuel feeding will be stopped automatically. The control process is fully automated with safety interlocks. If any parameter such as temperature, pressure or oxygen level reaches a set level, an alarm sounds and if the problem persists, the Facility will be stopped automatically. If any emergency condition is reached, or if a rapid facility shut down is required, the Facility will stop automatically in a rapid manner. Fuel flows and airflows are stopped instantly, which causes combustion to cease. 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 (Ramboll).	N/A
An air quality impact assessment must be undertaken in accordance with the Approved Methods for the Modelling and Assessment of Air Pollutants in NSW.	An AQA has been undertaken by Pacific Environment and is provided at **Appendix K**. Detailed consideration on the outcome of this assessment within the context of the site and locality with respect to potential effects and mitigation measures is contained in **section 27.2** of this amended EIS.	Approved Methods for the Modelling and Assessment of Air Pollutants in NSW (Pacific Environment 2014)

8.4.1.3. Thermal Efficiency Criteria

The Energy from Waste policy statement is restricted in its scope to facilities that are designed to thermally treat waste for the recovery of energy rather than as a means of disposal. The net energy produced from thermally treating waste, including the energy used in applying best practice techniques, must therefore be positive.

To meet the thermal efficiency criteria, facilities must demonstrate that at least 25% of the energy generated from the thermal treatment of the material will be captured as electricity (or an equivalent level of recovery for facilities generating heat alone).

Energy recovery facilities must also demonstrate that any heat generated by the thermal processing of waste is recovered as far as practicable, including use of waste heat for steam or electricity generation or for process heating of combined heat and power schemes.

TNG has been designed to have a thermal input of 469.6MWe (117.4MWe for each incineration line) at the design point. The Facility has an assumed net electrical efficiency of 30% which is above the 25% efficiency criteria rate. The Facility has been designed to export approximately 140MWe (30% x 469.6MW). High net electrical efficiency is a priority for TNG, and there are a number of options that could be incorporated into the design to increase the efficiency further including steam reheating and flue gas cooling.

The proposed facility meets the thermal efficiency requirements of the policy.

8.4.1.4. Resource Recovery Criteria

TNG proposed to use residual waste streams that are defined as “non-eligible” waste fuel under the EPA EfW policy statement.

Ramboll Environ have undertaken detailed assessment of the matters outlined in Table 1 of the EPA, EfW Policy Position. The assessment by Ramboll demonstrates that TNG will:

- Complement the existing waste recovery framework, including recycling programs and not compete with them. Under the established waste management framework recycling materials is more profitable than the utilisation as fuel stock.

- TNG will implement robust inspection and verification procedures for those wastes delivered from external sources. This will include independent auditing procedures, similar to those currently implemented at Genesis, such as Green Star, to ensure that facilities directing waste to TNG are meeting the necessary recovery targets.

Table 36 – Consistency with Resource Recovery Framework (source: Ramboll, WMR: 2016)

Criteria	Response
Promote the source separation of waste where technically and economically achievable	EfW complements recycling programs; it does not compete with them. The project compliments NSW’s target increasing waste diverted from landfill to 75% by 2021-22. Details of screening and acceptance procedures are outlined in this amended EIS in **sections 4.3 and 10.** Under the current NSW waste levy it is more profitable for Genesis MPC to recycle waste as oppose to using the waste for a fuel source in the TNG Facility. Therefore, it will be the preference to promote source separation as far as reasonable practicable and not divert any recycling opportunities in favour of use at the TNG Facility.
Drive the use of best practice material recovery processes	An overview of the process is as follows: 1) The Genesis Xero Waste Facility operates pursuant to Environmental Protection Licence (EPL 20121). Waste materials which are received by it previously would have been landfilled. 2) The incoming waste materials are accounted for by reference to an EPA mandated descriptive category. 3) Returns are forwarded monthly to the NSW EPA identifying the quantity by weight of each material in each specified category. 4) The site commenced commercial operation with a clean base level verified by

Criteria	Response
	independent survey which is provided to the NSW EPA. 5) Segregated materials such as brick, concrete sand and soil including (co-mingled brick and concrete) delivered to the site are readily identifiable by category and are managed in a specified part of the site by crushing, grinding, screening and separating. 6) These materials (when processed) are sold from site. Until they are sold they remain in stockpile either as raw material for processing or as processed material for sale. 7) All stockpiles of these materials are subject to a biannual aerial photograph and independently survey the results of which are reported to the NSW EPA. 8) The reporting enables the NSW EPA to ensure that the amount remaining in stockpiles matches to: a. the balance of stock on hand from the previous survey plus b. new additional materials received in the same period less c. the materials sold and transported off site during the same period. This leaves: d. the fraction landfilled 9) The same methodology applies also to mulch and to timber wastes. 10) Co-mingled wastes containing materials from both the C&D and the C&I waste streams are weighed as they enter the site as part of the overall obligation to weigh incoming materials. They are dealt with in a separate processing centre. 11) Fractions are able to be recovered by a range of manual and mechanical processes. These include ferrous and nonferrous metals, paper, cardboard , wood, plastic and concrete/ brick aggregates. 12) Of these, the concrete/ brick aggregates are removed to be processed with the 'hardfill' materials, wood is managed with the remaining wood waste and the balance of recoverable materials are removed from site (steel, plastic, cardboard , paper). These are transported from site for processing by others. 13) Following the removal of all of these fractions there is a residue left which is currently landfilled and that quantity is also weighed for compliance with the *Protection of the Environment Operations Act 1997*.
Ensure only the residual from bonafide Resource recovery operations are eligible for use as a feedstock for an energy recovery facility.	The Genesis MPC is transparent in its operation and performance to the regulator as required under State legislation. All incoming material is weighed upon arrival; all outgoing material is weighed upon departure; and the fraction committed to landfill is weighed. All weights are reported monthly to the

Criteria	Response
	NSW EPA and verified by twice yearly independent survey. The Genesis MRC does not release actual figures because they are commercial in confidence and confer upon Genesis a significant competitive advantage. The proportion of recycling is verifiable and EPA has the records. TNG will develop a rigorous procurement process, for the management of Fuels received from third party sources in addition to independent auditing procedures that will be implemented similar to the GreenStar verification currently utilised at MPC and the landfill site.
Energy recovery facilities may only receive feedstock from authorised waste facilities or collection systems that meet the criteria outlined in Table 1.	The Genesis MPC operates pursuant to Environmental Protection Licence (EPL) 20121. Waste materials which are received by it previously would have been landfilled. Of the waste loads received 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 is recovered by sorting, separating and processing, and made available for resale or reuse by other processors. This is a higher rate than the NSW averages and exceeds the WARR Strategy criteria. In addition, the proponent proposes to verify the recovery rates of the TNG by requiring that audits be conducted by Green Star accredited auditors as per the same reporting scheme required for the Genesis MPC. In relation to fuel originating from other sources, in accordance with the Resource Recovery Criteria of the EfW Policy and to meet resource recovery requirement of the WARR Strategy the following criteria has been set which apply to the TNG Facility: • **Only 25 per cent of C&D waste processed can be processed as a residual waste fuel source for the TNG.** According to the National Waste Report, 75 per cent of C&D was is currently being recovered in NSW which would leave a maximum 25 per cent C&D waste available for energy recovery at TNG Facility. • **Only 50% of the total C&I waste processed can be used as residual waste fuel source for the TNG.** According to the National Waste

Criteria	Response
	Report, 60 per cent of C&I was is currently being recovered in NSW which would leave a maximum 40 per cent C&I waste available for energy recovery at TNG Facility. • **Only 10 per cent of the total source separated recyclables from MSW (MRF) waste processed can be used as residual waste fuel source for the TNG.** Based on NSW averages, and that all waste to landfill can be used as a fuel source, TNG is confident that though robust contract procurement contacts requirements, TNG will be able to adequately ensure that fuel originating from other sources meet the conditions of Table 1 of the NSW EfW Policy and WARR Strategy. TNG will require that all waste streams sent to the Facility comply with the EfW policy Statement resource recovery criteria which includes ensuring appropriate inspection and auditing procedures are in place. This will apply to both CRW and fuel originating from other sources. The Genesis MPC is a licenced facility and fuel will be sourced from licenced facilities and contractors who are required by law to meet the recovery targets set in the WARR Strategy. Note that floc residual waste is not identified as an independent waste stream in the NSW EfW Policy, but classified as commercial waste. EPA indicated that floc is not excluded from the NSW EfW Policy and will likely be included in an amended version of the NSW EfW Policy and that the resource recovery threshold would be 25 per cent in accordance with current metal recycling operations.

A detailed response is provided in section 8.6, Table 11 in the Waste Management Report provided at **Appendix J.**

8.4.1.5. Public Consultation and Good Neighbour Test

TNG has committed to and is continuing an extensive community and stakeholder consultation process. TNG understands its obligation to provide information and public consultation regarding the energy from waste proposal, from concept to detailed development assessment and commissioning.

TNG engaged in genuine dialogue with the community in late October 2013, at the same time as the DGRs were requested from the Department. TNG has ensured that the planning consent and other approval authorities are provided with accurate and reliable information.

8.4.1.6. Stakeholder Consultation Strategy

TNG has developed a stakeholder consultation strategy to engage stakeholders over the life of the project in order to keep them informed and to respond to any concerns. TNG acknowledges that different aspects of the proposed project will concern different stakeholders. TNG is committed to:

1. Mitigating risks and stakeholder concerns during the planning stages of the project;

2. Providing information to all stakeholders and seeking feedback prior to implementation; and

3. Maintaining open and transparent communication channels with all stakeholders.

TNG has engaged KJA Pty Ltd to develop a Communications and Consultation Strategy to guide stakeholder and community engagement during the preparation and the public exhibition of the original EIS. The Communication and Consultation Summary Report for the Energy from Waste Facility produced by KJA Pty Ltd for TNG is provided at **Appendix W**.

The application was exhibited by the Department of Planning and Environment for a period of 60 days in 2015. All submissions received from the general community and public agencies have been considered and taken into consideration, where relevant. Refer to **Appendix HH** for issues based response tables.

TNG has and continues to maintain a dedicated website (www.tngnsw.com.au) where members of the public may go on line to view project information, make comment or ask questions.

8.4.2. NSW Water Quality Management Policies

The NSW Office of Water has developed and implemented a range of water quality management policies to support the implementation and attainment of the objectives of the *Water Management Act 2000*. Table 37 provides a summary of those relevant to the project combined with a statement of consistency.

Table 37 – Summary of relevant water quality policies

Plan/Policy Title	Objective/Controls	Statement of Consistency
NSW State Rivers and Estuary Policy 1993	To ensure that rivers and estuaries can continue to support responsible economic and social uses in the long term, through Slow, halt or reverse the overall rate of degradation in the systems Ensure the long-term sustainability of their essential biophysical functions; and Maintain the beneficial use of these resources.	The proposed Development is consistent with these objectives in that it acknowledges the natural water systems on the Site and ensures potential impacts on the natural system are minimised through soil and water management infrastructure.
NSW State Groundwater Policy Framework Document 1997	To manage the State's groundwater resources so that they can sustain environmental, social and economic uses for the people of NSW'. It is the policy of the NSW Government to encourage the ecologically sustainable management of the State's groundwater resources, so as to:	The proposed Facility and associated works are consistent with these principles in that the Facility is introducing a sustainable energy generating facility which appropriately manages surface and groundwater in an integrated fashion. While the development will result in a reduction in groundwater recharge, this will not affect the resource value of the local groundwater systems, and has potential

Plan/Policy Title	Objective/Controls	Statement of Consistency
	slow and halt, or reverse any degradation of groundwater resources; ensure long term sustainability of the systems ecological support characteristics; maintain the full range of beneficial uses of these resources; maximise economic benefit to the Region, State and Nation.	benefits in terms of salinity as discussed in the Soil and Water Assessment at **Appendix P.**
NSW State Groundwater Protection Policy 1998	This Policy adopts the principles outlined in the NSW State Groundwater Policy Framework Document.	Groundwater quality at the site is generally poor, with high salinity levels from connate salts within the formation or alternatively from leaching of accumulated salt from the lower soil profile and the limited flushing due to low groundwater flow rates. The proposed development does not include any activities that pose a particular risk to groundwater quality. The development will be sewered, and stormwater drainage will be directed to the local surface water system. Mitigation measures will be put in place to ensure groundwater health will be maintained in such a way that it will not be a risk to public health, ecosystems, or other users of water. The development therefore does not pose an unacceptable risk to groundwater quality, subject to standard pollution prevention measures for fuel storage etc.
NSW Groundwater Dependant Ecosystems Policy 2002	Protection of the state's valuable ecosystems which rely on groundwater for survival so that, wherever possible, the ecological processes and biodiversity of these dependant ecosystems are maintained or restored	The available groundwater storage in the shallow groundwater system on Site is low. This together with the low hydraulic conductivity of the lower soil profile and underlying strata greatly limit the potential for the shallow groundwater system to sustain terrestrial ecosystems or surface water baseflow during extended dry periods. The Site and the tributary of Ropes Creek have been substantially altered from the original natural state by historical clearing of native vegetation to allow establishment of pasture and by maintenance of a highly
Department of Primary Industry: Risk Assessment Guidelines for Groundwater	These Guidelines present an approach to groundwater dependant ecosystem identification, classification, ecological valuation, and ecological risk assessment for a	

Plan/Policy Title	Objective/Controls	Statement of Consistency
Dependent Ecosystems 2012	given activity or potential impact on a groundwater source. Guidelines for Controlled Activities (2012)	artificial surface water flow regime over a prolonged period due to discharge of water pumped from the quarry and by leakage from the settlement dams located immediately adjacent to the south-eastern boundary on Hanson's site. In view of these factors, no groundwater dependant ecosystems are considered to be present on the Site. As such, the management of groundwater dependant ecosystems is not considered to be a limiting environmental factor in this case.
Aquifer Interference Policy 2012	Activities such as construction dewatering currently continue to be regulated by NSW Office of Water through issuing of temporary licences under the Water Act 1912, where required. NSW Office of Water generally applies an informal exemption to dewatering from a water table aquifer where the pump rate is less than 10 L/s and the total quantity of groundwater pumped is less than 25,000 kilolitres. Construction dewatering requirements for the proposed development are expected to meet these criteria and a licence is not expected to be required.	The permanent bypass drainage system around the waste bunker is not expected to result in any net removal of groundwater and a water access licence is not expected to be required. The system will ensure that the development will meet the "minimal impact considerations" define in the Aquifer Interference Policy and an Aquifer Interference Approval is not expected to be required after full implementation of the policy.
Controlled Activity Guidelines	Outlet structures – This guideline is relevant to the outlets for the proposed bio-retention basins.	The applicant is aware of the requirements of the NSW Office of Water and the abovementioned guidelines should an application be required.
	Vegetation Management Plans.	
	Watercourse crossings	
	Riparian corridors – this guide states that 1st order watercourses require a 10 metre wide vegetation corridor on both sides of the watercourse.	Given the proposal involves the removal of part of a first order watercourse, informal approval via email correspondence has been obtained from the Office of Water prior to this submission.

8.5. LOCAL PLANS AND POLICIES

8.5.1. Eastern Creek Precinct Plan

The proposed development is located on land identified as being within the Eastern Creek Precinct Plan. The Precinct Plan came into force on 14 December 2005.

The *Eastern Creek Precinct Plan – Stage 3* outlined the provisions relating to development of the Stage 3 Release Area within the Eastern Creek Precinct under the now repealed *State Environmental Planning Policy No. 59 – Central Western Sydney Economic and Employment Area*.

Clause 19 (2) of the principal statutory planning instrument SEPP (WSEA) requires that proposed development within the precinct be assessed against the existing precinct plan prepared under the *State Environmental Planning Policy No. 59 – Central Western Sydney Economic and Employment Area.*

The Eastern Creek Precinct Plan is a "deemed" Development Control Plan for the purposes of assessment and determination of compliance and consistency with the existing and likely future character. The relevant provisions have been assessed in the table below.

Table 38 – Eastern Creek Precinct Plan Assessment

Control	Comment
1.0 Introduction	
The objectives of this Precinct Plan are to: • promote economic growth and employment opportunities within Central Western Sydney; and • ensure the orderly provision of infrastructure and services; and • provide a safe and efficient stormwater management system that minimises stormwater impacts on the environment; and • ensure ecologically sustainable development that takes an active approach to anticipating and preventing damage to the environment; and • minimise the impact of development on areas of high biodiversity, archaeological significance, and heritage; and • ensure the traffic and public transport needs for the Precinct are achieved; and • ensure the best possible urban design outcomes are achieved; and • ensure the community service needs of the working population are met; and	The proposed development has been designed to align with the relevant objectives of the Eastern Creek Precinct Plan and will result in a land use outcome the will directly promote economic growth and employment within Western Sydney. The provision of green technology as a long term sustainable option for waste management and production of clean energy is a vital piece of infrastructure within Metropolitan Sydney. A Stormwater Management Plan has been submitted in support of this application (**Appendix DE**) prepared by AT&L that demonstrates a design outcome that will minimise stormwater impacts on the locality and ties into the existing systems within the precinct. An assessment against the principles of Ecologically Sustainable Development Assessment is provided within **Section 24** of this amended EIS, this proven technology provides a clean source of renewable energy from waste fuels that cannot economically be reused or recycled. An Ecological Assessment has been prepared by Abel Ecology (**Appendix G**) outlining the potential impacts of the proposed Development in terms of high biodiversity and the proposed measures to mitigate any significant impacts. Both archaeological and heritage (indigenous and non-indigenous) cultural significance has been assessed by GML Heritage (**Appendix R** and **Appendix S**). The

Control	Comment
• allow for the provision of adequate open space for the use and enjoyment of the working population; and • ensure the provision of high quality landscaping throughout the Precinct.	proposed Development has been designed and sited to minimise any potential impact on indigenous and non-indigenous heritage significance. A Traffic Impact Assessment has been prepared by Traffix (**Appendix Q**) in support of this application and has found that the development will have no negative effect on the level of service or operation of key intersections. The design of the proposed Facility has largely been driven by the technology demands however the proposed siting has given close consideration the relevant precinct urban design outcomes to minimise visual impact and ensure an outcome that does not conflict with adjoining land uses (both industrial and non-industrial). A Visual Assessment has been prepared by Urbis and is submitted at **Appendix H**. The proposed development is considered to result in a positive outcome for the community of Western Sydney through the provision of an ecologically sustainable waste recovery technology that will provide long term clean energy whilst minimising landfill. As detailed within the Waste Management Report prepared by MCA Consulting **Appendix J**) the identified waste fuel aligns with those identified within the NSW EPA Energy from Waste Policy Statement. The proposed development has been designed and sited to minimise development area and maintain open space and vegetation where possible as demonstrated within the Architectural Drawings (**Appendix C**) and the Ecology Assessment (**Appendix G**) submitted with this application. A Landscape Concept Plan has been prepared by Site Image and is submitted with this SSDA at **Appendix D.** The proposed landscape concept has been designed in keeping with the precinct to ensure a high quality landscape treatment.
3.0 Economic Development and Employment	
Objectives • Establish a high quality industrial Precinct that provides diversity in employment opportunities and economic development	The proposed Development will help to achieve the Precinct Plan's objectives by preparing the land for its future development for employment generating activities. The Project will contribute to the economic development and employment opportunities within Western Sydney by providing diverse employment opportunities for roles including mechanics, weighbridge

Control	Comment
to benefit Blacktown and Central Western Sydney. • 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. • 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. • Enhance the skill of the local workforce through the provision of appropriate facilities for the training of apprentices, and ongoing training and development. • Contribute to the increased levels of skill matching with the local workforce. • Development should aim to achieve a minimum employment density target of 45 jobs per ha in order to achieve the overall projected on-site employment forecast of approximately 20,000 jobs for the whole Precinct.	operators, plant operators, foremen, sales personnel, labourers and managers. The Site's location close to the junction of the M4 and M7 provides convenient access for business from the wider regional road network. Community services including daily convenience needs are not proposed. The activities of the Facility will directly create jobs for 55 staff. While this quantum of jobs does not achieve the desired job per hectare rate for the precinct, the proposal is appropriate for the following reasons: It constitutes an intensification of employment on an underutilised part of the site A skilled workforce will be required for the Facility and staff can potentially be sourced from the local community. Staff employed at the proposed Facility will be skilled labour and ongoing training will be provided where appropriate. The presence of the proposed Facility represents ongoing economic benefits to the local and regional community via capital injection and value added spending. During Construction approximately 500 construction jobs will be created. Indirect employment will also be generated via support services such as maintenance workers and short term contractors. In contrast to the majority of Precinct lands, the nature of the area to be developed for this Facility i.e. the quarry pit, is ideally suited to the operation of the proposed Facility adjoining the existing landfill and MPC. The Facility will not prevent adjacent lands within the Precinct from achieving the desirable employment densities.
General Services	

Control	Comment
Site must be serviced by all required service and infrastructure including, sewer, water, gas, telecommunications.	As detailed within the Services Report prepared by AT&L and submitted with this application at **Appendix E**, the application has ensured that the development will ensure satisfactory arrangements for water, sewer, electricity and communications.
Stormwater Management	
• DA to be supported by site specific stormwater management plan to meet precinct management system and the latest water quality control required by BCC • Stormwater management to be in accordance with Council design criteria. • Demonstration that water sensitive urban design has been integrated into stormwater management for the site. • Implement suitable water quality mechanisms and ensure ongoing reporting to council following implementation.	Surface water management including stormwater management has been addressed as part of this SSD, DA and is detailed within **Section 16** of this amended EIS and within Stormwater Management Plan prepared by AT&:L Engineers (**Appendix E**). Confirmation was received from Blacktown City Council that the On Site Detention calculations for this area are consistent with the Blacktown City Council Stormwater Management SEPP 59- Eastern Creek Precinct Plan (Stage 3). It has also been agreed that the stormwater management basin will be retained in private ownership.
Detention Basins and Constructed Wetlands **The area of the site falls within the Ropes Creek Tributary Catchment.**	
A summary of Council requirements adopted for this catchment is as follows: • Detention Basins and wetlands to – include appropriate safety features, especially with regard to edge treatments – be designed to prevent induced salinity – be sized to attenuate peak flows to a maximum of rural flows over a range of storms from the critical 2 year ARI event up to and including the critical 100 year ARI event – be sized to limit pollutant export loads to the levels specified in the water quality section of this Precinct Plan • detention basins shall be designed to attenuate flows to a maximum of the rural	The civil and stormwater design principles have been designed to comply with this. Confirmation was received from Blacktown City Council that the On Site Detention calculations for this area should confirm with the Blacktown City Council Stormwater Management SEPP 59- Eastern Creek Precinct Plan (Stage 3).

Control	Comment
flowrates. This shall be addressed over a range of storms from the 2 year ARI to the 100 year ARI. • WSUD to achieve target reductions: – 85% Total Suspended Solids (TSS) – 65% Total Phosphorus (TP) – 45% Total Nitrogen (TN) – 90% Total Hydrocarbons – 90% Gross Pollutants (GP) • FFLs to be a minimum of 300mm freeboard to 100 yr overland flows. • Delivery of rainwater tanks to provide alternative source of water.	
6.0 Extraction and Rehabilitation	
Development relating to an area directly adjacent to the Pioneer Quarry pit shall be setback a minimum of 30m (when measured from the top of the bank of the pit). The 30m setback shall be provided as a landscaped buffer, with appropriate earth mounding and fencing in order to screen the operation of the quarry. The landscaped buffer shall remain until such time as the quarry pit is rehabilitated to Council's satisfaction.	The former pioneer quarry is currently in use as the Genesis Xero Waste Facility. The proposed Facility has been appropriately sited to take advantages of the direct synergies between the operational resource and recovery centre and the proposed development. The proposed Facility is predominantly set back 30 metres from the former quarry. A concept landscape plan has been prepared to appropriately screen the proposed development from the Genesis Xero Waste Facility.
7.0 Environmental Management	
Ecologically Sustainable Development measures to be incorporated into all developments, including: • measures to reduce waste and conserve water (by including water recycling); • measures to minimise run-off and stormwater generation; • promote biological diversity by increasing habitat through appropriate retention, planting and maintenance of native flora considered representative of the area;	Assessment of the proposal against the principles of ESD is provided in **Section 25** of this amended EIS.

Control	Comment
• implementing a waste management strategy and promoting the achievement of the 60 per cent waste reduction • reduce energy consumption and increase inherent energy efficiency through design and materials selection, and adopting energy management plans. • Where possible encourage the use of alternative modes of transport. • providing levels of on-site parking aimed at reducing reliance on private vehicles for journey to work trips.	
Water Conservation Controls • Use of waster efficient fixtures demonstrated. • Site Water Management Plan that investigates, and where feasible, provides for the integrated management and use of water. The Site Water Management Plan should demonstrate that other water sources have been considered including:	Where appropriate water efficient fixtures can be used. A detailed infrastructure plan has been prepared by AT&L and is provided at **Appendix E**.
Energy Efficiency: demonstrate appropriate use of energy efficient materials during construction.	The proposal involves the production of green electricity.
Air Quality: Air Quality Assessment to be undertaken, where necessary recommended mitigation measures should be provided.	A detailed air quality assessment has been undertaken and is provided at **Appendix K.**
Waste: • Identify all likely waste streams and quantities combined with initiatives to reduce waste diverted to landfill;	A waste management report has been prepared to support the application, refer to **Appendix J**. The proposal to reuse residual waste (i.e. left over) materials for the purpose of generating energy is consistent with the waste hierarchy and will divert waste from landfill –

Control	Comment
• Identify any licensing requirements under the Waste Avoidance and Resource Recovery Act 2001;	the lowest and least desirable method of waste management.
Salinity: *Where appropriate salinity modelling should be undertaken and a management plan submitted.*	A soil and water assessment has been undertaken and the site identified as being moderately saline with low potential for impact. Notwithstanding, a range of management and mitigation measures have been included to manage the potential for salinity.
8.0 Biodiversity	
Applications for development of an allotment of land containing an identified conservation area or riparian corridor shall demonstrate that satisfactory arrangements have been made for the ongoing protection, enhancement, and management of biodiversity on that land.	As detailed within the Flora and Fauna Assessment (**Appendix G),** the outcome of this assessment has been considered in detail in the amended EIS and where necessary mitigation and offset recommendations made.
9.0 Heritage	
Non-indigenous heritage located at Southridge house and property. A Conservation Management Plan ('CMP') prepared by Eric Martin and Associates dated August 2003 relates to the management of this site. Applications for development of an allotment of land containing an identified conservation area shall demonstrate that satisfactory arrangements have been made for the ongoing protection, enhancement, and management of indigenous heritage values on that land.	The proposed Development has been assessed in relation to indigenous and non-indigenous cultural heritage as detailed within the Heritage Impact Statement and Aboriginal Cultural Heritage Assessment submitted at **Appendix R** and **Appendix S**.
10.0 Traffic and Transport	
The development should demonstrate: Compliance with the road design principles contained in the following documents: Roads and Traffic Authority, *Road Design Guidelines*; and Roads and Traffic Authority, *Guide to Traffic Generating Development*, (1993). The site should be accessible by public transport. Parking: Off street parking should be designed to be consistent with the car parking standards of this Precinct Plan.	A detailed Traffic Impact Statement has been prepared by Traffix (**Appendix Q**) in support of this application that resolves all roads and parking proposed comply with the relevant standards. The site is accessible via existing public transport connections to and from Honeycomb Drive to local centres.

Control	Comment
14. Landscaping	
A landscape plan is to be prepared and submitted with development applications for each allotment.	A concept landscape plan has been prepared in support of the SSD, DA and is submitted at **Appendix D**.

8.5.2. Blacktown Development Control Plan 2015

Since the lodgement of the SSD, DA in April 2015 Blacktown City Council have brought into effect a revised Development Control Plan, replacing the Blacktown Development Control Plan 2006.

As the land is regulated by the deemed DCP, Eastern Creek Precinct Plan Stage 3 under the provisions of SEPP (WSEA) the provisions of the amended DCP are no technically relevant to the assessment of the application.

Notwithstanding this, regard has been given to the controls for determining compatibility of the development with the broader LGA, noting that sites within the immediate context will be developed in response to the provisions of the ECPP and likely future character will hence be a reflection of these primary controls.

The following sections of the updated DCP would, if not for the operation of the ECPP, relate to the proposal:

- Part A: General Guidelines;
- Part E Industrial Zones;
- Part G: Site waste management and Minimisation;
- Part I Contaminated Land Guidelines; and
- Part J: Water Sensitive Urban Design and Integrated Water Cycle Management.

Table 39 provides a summary of the matters considered in relation to the relevant areas of control. Where a zone-specific control is available, the more general control within Part A of the DCP has been omitted.

Table 39 – Blacktown DCP 2006 Assessment

Control	Comment
Part A – Introduction and General Guidelines.	
3.2 Areas Requiring Fill	Council has identified areas within the LGA that require land filling to facilitate development. The development site is not identified in Council's planning maps as being subject to these requirements. Notwithstanding this bulk earthworks form part of this application and are addressed in **section 16** of the amended EIS.
3.3 Tree Preservation	While much of the Site is clear of significant vegetation, Consent is sought for the removal of some vegetation as detailed with the Flora and Fauna Assessment prepared by Abel Ecology at **Appendix G**. Where possible existing vegetation has been retained by siting the development outside the 40 metre setback to the Riparian Corridor, the area of the Site that is currently the most vegetated.

Control	Comment
3.4 Cultural Heritage	Both Indigenous and Non-Indigenous Cultural Heritage have been assessed by GML Heritage is preparation of the SSD, DA. The assessment has found that the area has a low potential for historical archaeological remains of low significance to be present within the development area. The assessment of cultural significance is further detailed within **section 22** of this amended EIS.
4.0 Roads	In preparing the application for the proposed Facility AT&L Civil Engineers designed an internal estate road to allow for access in keeping with the relevant Australian Standards and the general principles as detailed within the DCP.
7.4 Crime Prevention Through Environmental Design	A CPTED assessment has been undertaken within the amended EIS at **section 9.4**.
8.0 Development on Flood Prone Land	The site, in particular the southernmost parts adjacent to the Roes Creek Tributary, are **not** identified in Council's planning maps online as being subject to local flooding or flooding general. Notwithstanding this, the development has been designed to take into account the outcome of flood modelling carried out by Brown Consulting in March 2010 (**Appendix Z**) for Blacktown City Council. This report formed the basis of the existing flood levels for the creek to the south of the Site. The 100 year ARI flood level determined in this Brown Report adjacent to the proposed basin has been adopted as the tail-water level for hydraulic modelling of the basin and stormwater network. This level has been assigned as 52.8 metres AHD as detailed within the Civil Infrastructure Report at **Appendix E**. Based on this modelling carried out by Browns, the proposed flood levels of the creek do not adversely affect the Site. Flood levels associated with the creek are at least 2m below the proposed finished levels of the Site.
8.5 Survey Plans	A Survey Plan has been prepared by Land Partners in accordance with the DCP requirements and is submitted with this amended EIS at **Appendix A**.

Control	Comment
10.0 Contributions	A letter of offer to enter into a Voluntary Planning Agreement (VPA) was submitted to Blacktown City Council on 22 October 2015.
Part E – Development in the Industrial Zones	
3.0 Subdivision of Industrial Land	The proposed subdivision will not create any lots less than the minimum area of 1,500m². Notably the smallest lot to be created is Lot 3, which has an area of 4,000m².
4.1 Setback	The development is appropriate setback from the nearest street alignment. Great than the required 10 metres to an industrial collector road.
4.2 Landscaping	A Landscape Concept Plan has been prepared in support of this SSDA and is submitted at **Appendix D**. This item is further detailed in **section 9.3** of this amended EIS.
4.5 Building Design and Construction	A high standard of visual and environmental quality has been assured in the design of the proposed Facility. As detailed within the architectural drawings and the visual assessment prepared in support of this SSDA, the proposed Development has made careful materials selection and appropriate sited the development to minimise visual impact from the public domain and sensitive adjoining land uses. The site topography assists in reducing the bulk and scale of the design with the proposed stacks located at the lower point of the Site to reduce the overall impact. These aspects of the development are discussed in greater detail in **Section 19** of this amended EIS.
4.7 Vehicular Access and Circulation	A full set of architectural plans and civil design of the proposed access arrangement have been submitted with this application in accordance with the DCP.
4.8 Car Parking	A traffic impact assessment has been prepared by Traffix and is submitted with this application at **Appendix Q**. The proposed Development relates to a relatively unique use that is not adequately covered by the generic land uses for which parking rates are provided within the RMS Guide to Traffic Generating Developments (RMS Guide), Blacktown City Council Development Control Plan (DCP) or the Western Sydney Employment Area – Eastern Creek Precinct Plan. As such a 'first-principles' assessment was undertaken. Having regard for the above, a total of 42 parking spaces are proposed within three separate car parking areas located on the site. Therefore, all future parking demands

Control	Comment
	associated with the proposed development can be readily accommodated on-site.
7.1 Services	As detailed within the Services Report prepared by AT&L and submitted with this application at **Appendix E**, the application has ensured that the development is capable of providing satisfactory arrangements for water, sewer, electricity and communications.
7.2 Pollution Control	The potential environmental impacts associated with the development have been considered in detail throughout the amended EIS and supporting technical reports. A risk assessment and recommended mitigation measures is provided in **sections 26** and **27**.
7.3 Areas Requiring Fill	The development will involve the dewatering and filling of a constructed Dam. A search of Council's planning maps on line; resolved that there was no DPC requirement to fill the land to facilitate development.
Part G: Site waste management and Minimisation	
• Maximise reuse and recycling of building and construction waste; • Assist the state and federal government in achieving waste minimisation targets; • Minimise the effects of waste on the environment.	The development is consistent with the waste management hierarchy established by the Federal and State Governments; All construction waste will be managed through the implementation of a CEMP; the adjacent property operates as an MPC, all materials will be managed on site and diverted to Genesis for recovery. The amended EIS provides details of wastes arising and the proposed management and disposal. Refer to **sections 4.8 and 10.**
Part I Contaminated Land Guidelines;	
The objectives of this Part are: • To ensure that potentially contaminated or contaminated land is adequately assessed to determine the extent of contamination. • To ensure that potentially contaminated or contaminated land is appropriately remediated so that it is suitable for its proposed use, and does not	A Preliminary and Detailed Site Investigation has been undertaken in accordance with the requirements of SEPP 55. The site has been found suitable for continued commercial and industrial use. There is no requirement for remediation and all spoil removed in relation to excavation and bulk earthworks will be reused on site. Any balance of fill material required will be clean VENM.

Control	Comment
result in any unacceptable levels of risk to the environment or human health.	
Part J: Water Sensitive Urban Design and Integrated Water Cycle Management.	
The objectives of this part of are to: • to facilitate water sensitive urban design and integrated water cycle management within the Development Application (DA) process. • Provide objectives, targets and controls for water conservation, water quality, waterway stability, on-site stormwater detention, erosion, sediment and pollution control and groundwater.	The proposed OSD and Bio-retention basin were designed based on Council's adopted 2006 controls. Since lodgement of the application the design requirements have been altered. Discussion with Council's Engineering Department in October 2016 has confirmed that subject to the basin being retained in private ownership the current design will be accepted. Accordingly, the basin will be retained and managed by TNG. A MUSIC model has been provided to BCC to demonstrate achievement of the relevant WSUD goals.