# THE NEXT GENERATION – ENERGY FROM WASTE FACILITY

## IPC PRESENTATION
## 2 MAY 2018


CLARE BROWN – URBIS

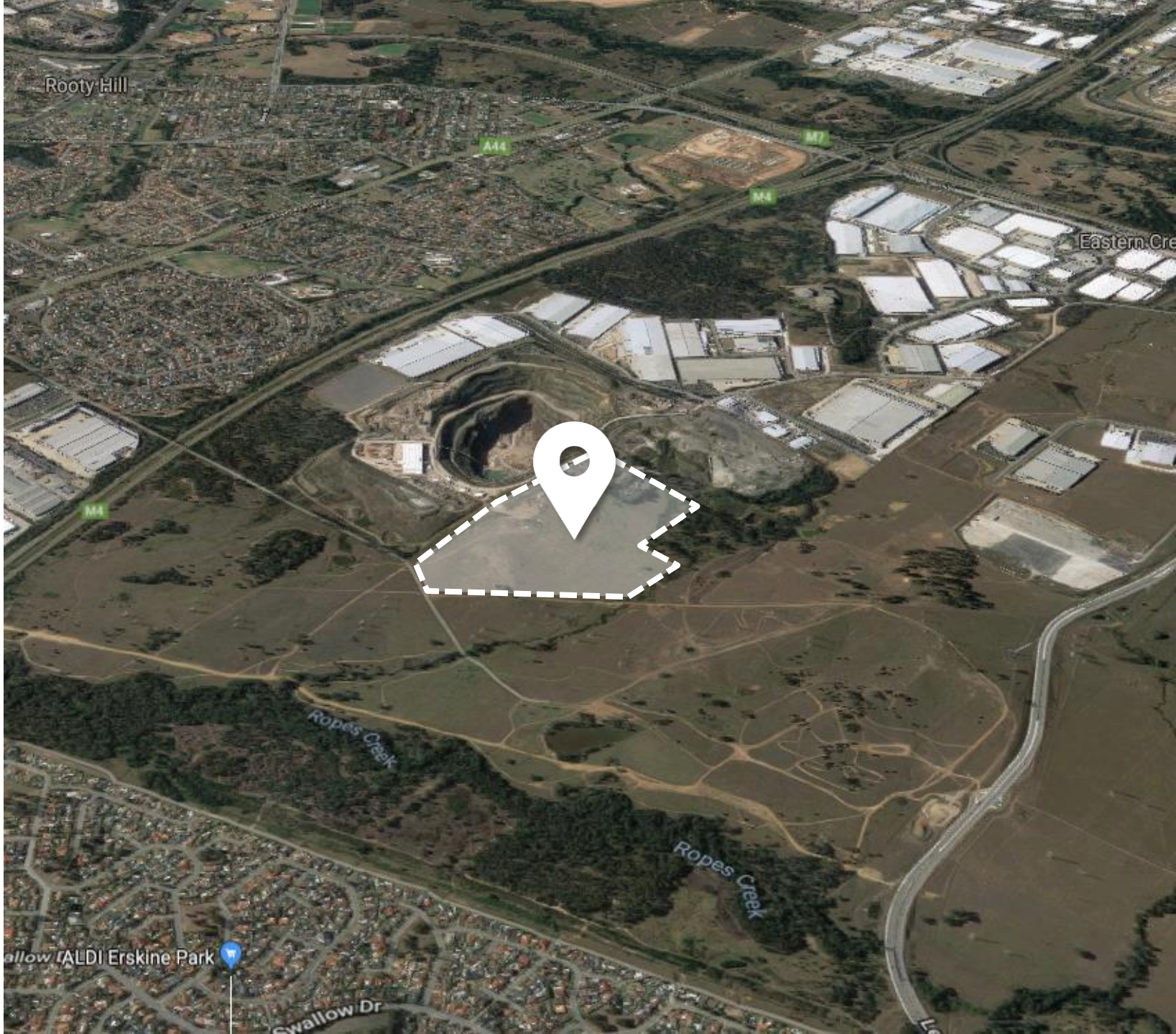
CHRIS BIGGS – DADI

# OVERVIEW

1. THE SITE
2. PROPOSAL
3. DPE RECOMMENDATION
4. Q&A

# THE SITE

- Zone – IN1 General Industrial.
- Part of larger landholding – Genesis Xero Waste Facility and Landfill.
- Residential, commercial and industrial land uses.
- 1km buffer to low density residential housing areas.
- Connected via M4 Motorway and M7 Motoray.

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# THE APPLICANT

- **The Next Generation NSW Pty Ltd** – stand-alone company formed by Dial A Dump Industries and Genesis Xero Waste Facility to develop a low carbon electricity generating plan that will be fuelled by waste derived fuels.

**Key Specialists:**

| COMPANY NAME | TECHNICAL DISCIPLINE |
|---|---|
| TNG: Ian Malouf / Chris Biggs | Owner/Operator |
| Urbis – Clare Brown / Stewart Doran | Planning |
| AECOM – Amanda Lee | Human Health Risk Assessment |
| ERM– Damon Roddis | Air Quality/GHG, Ozone, Noise & Odour |
| Ramboll – Martin Brunner / HZI – Dr Marc Stammbach | Technology |
| MRA - Mike Ritchie / Charlotte Wang | Waste |

# BACKGROUND

**April 2015** – EIS submitted for two stage facility (1.35m tonnes)

**November 2016** – Amended EIS submitted (1.105million tonnes)

**July 2017** – RTS submitted

**September 2017 –** Amended application lodged with revised RTS to support Stage 1 (552,500 tonnes only)

**April 2018 –** DPE Recommendation for Refusal

# THE PROPOSAL

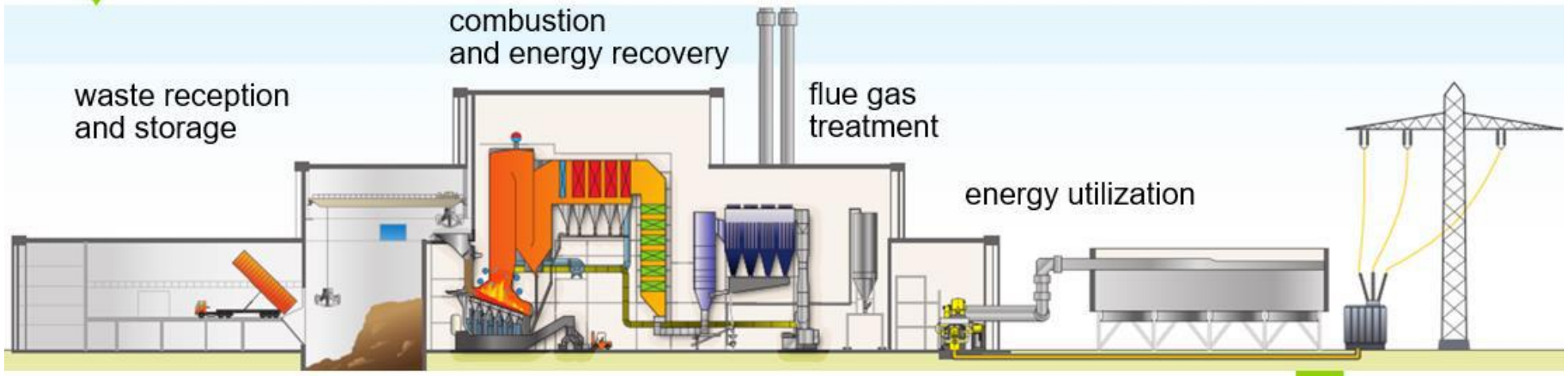
# STAGE 1 FACILITY

- Complete construction of the Tipping Hall and Waste Bunker and combustion lines 1 and 2 comprising:
  - Two independent boilers.
  - Flue Gas Treatment systems.
  - Stack.
  - One Turbine.
  - One Air Cooled Condenser.
  - Auxiliary equipment including two generators.

# THE TECHNOLOGY & PROCESS

- none-recyclable waste
- additives for flue gas cleaning

IN




- energy - electricity and heat
- aggregates & metals for recycling
- cleaned flue gas
- flue gas cleaning residues

OUT

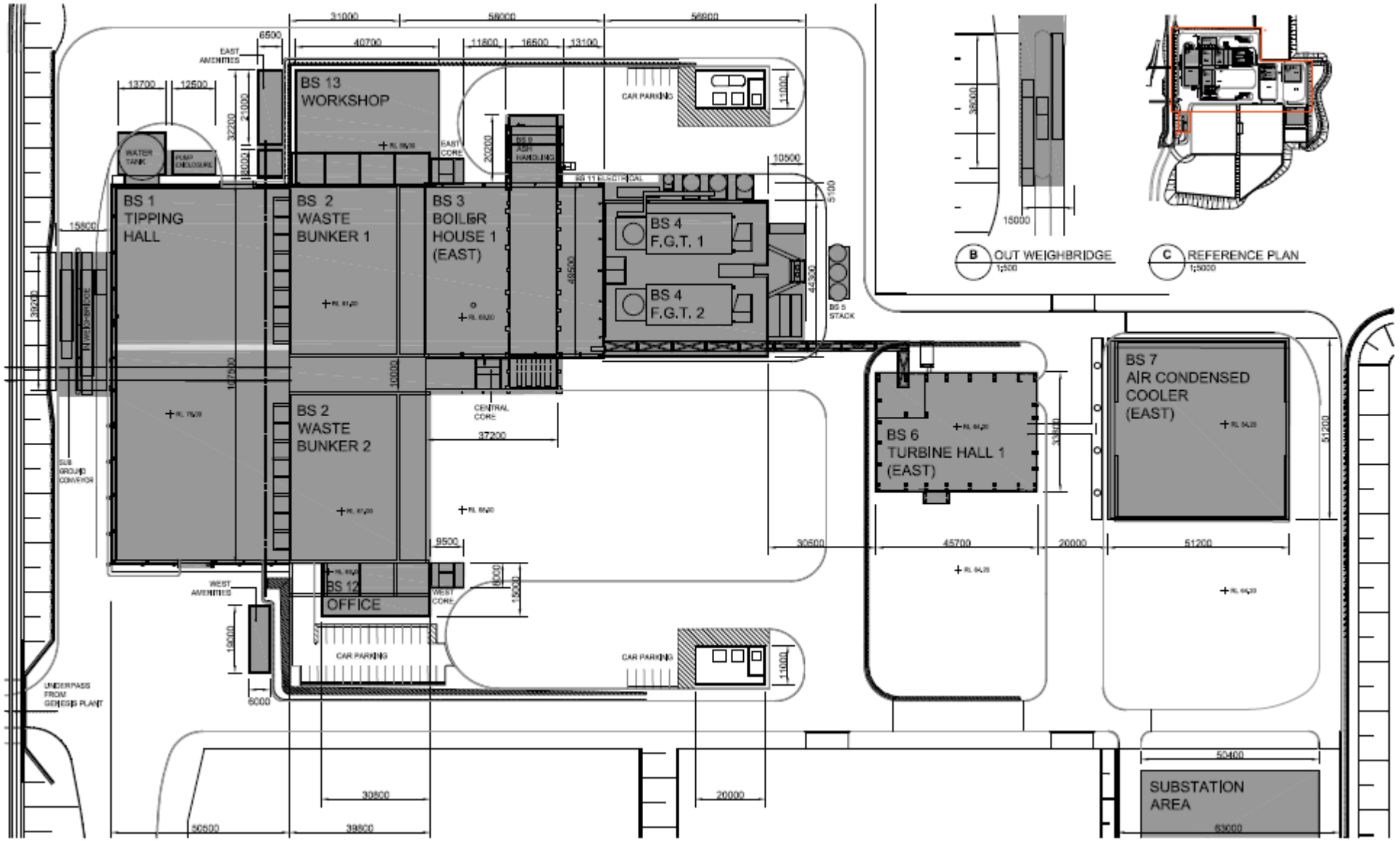
- **Moving grate system with water and air cooled grate bars** – offers the most flexible and cost effective solution for the fuel mix being considered.
- **Turbine exhaust cooling system** for the facility is an Air Cooled Condenser – preferred option as they do not require water and do not generate an effluent discharge.
- **No Visual Plume** – except for exceptional and limited climatic conditions.
- Export electricity and heat to nearby consumers.
- **QA procedures at Genesis Recycling Facility** to ensure compliance with NSW EPA Energy from Waste Policy and consistent fuel quality with no unacceptable materials.
- Generate three types of solid waste by-products:
  - Bottom ash.
  - Boiler ash.
  - Flue gas treatment residues (APC residues).

# FUEL SOURCE

- **Fuel types** – refer briefing note.
- **Design fuel reviewed based on:**
  - Availability in Sydney Metro area.
  - Types that comply with EfW policy.
  - Calorific Values of the fractional components.
- Fractions of fuel types derived from **independently conducted audits** of the waste streams.
- **Design fuel composition developed** based on typical values for each fuel and estimated mix.
- **Input fuel will always be mixed** as part of normal operations to be as homogenous as possible.

# FUEL SOURCE – CONT.

- **C&D Waste** in Europe is generally sourced separated on site manually by unskilled labour – in NSW, C&D Waste is not source or site separated and highly mechanised taking place at centralised waste collection facilities (Genesis).
- **Independent Waste Audits** identified compositional attributes of CRW, MRF residual and Floc waste.
- **No asbestos or misc. items of concern found** in audited samples.
- Genesis procedures are very refined and **highly effective at removing all materials required.**
- High degree of homogeneity present in comparison to European examples – **results in a more efficient burn process** and less spikes during incineration.


BS 13
WORKSHOP
BS 1
TIPPING
HALL
BS 2
WASTE
BUNKER 1
BS 3
BOILER
HOUSE 1
(EAST)
BS 4
F.G.T. 1
BS 4
F.G.T. 2
BS 2
WASTE
BUNKER 2
BS 12
OFFICE
BS 6
TURBINE HALL 1
(EAST)
BS 7
AIR CONDENSED
COOLER
(EAST)
SUBSTATION
AREA
CAR PARKING
CAR PARKING
CAR PARKING
EAST
AMENITIES
WEST
AMENITIES
EAST
CORE
CENTRAL
CORE
WEST
CORE
WATER
TANK
PUMP
ENCLOSURE
SUB
GROUND
CONVEYOR
UNDERPASS
FROM
GENESIS PLANT
BS 5
STACK
B
OUT WEIGHBRIDGE
1:500
C
REFERENCE PLAN
1:5000

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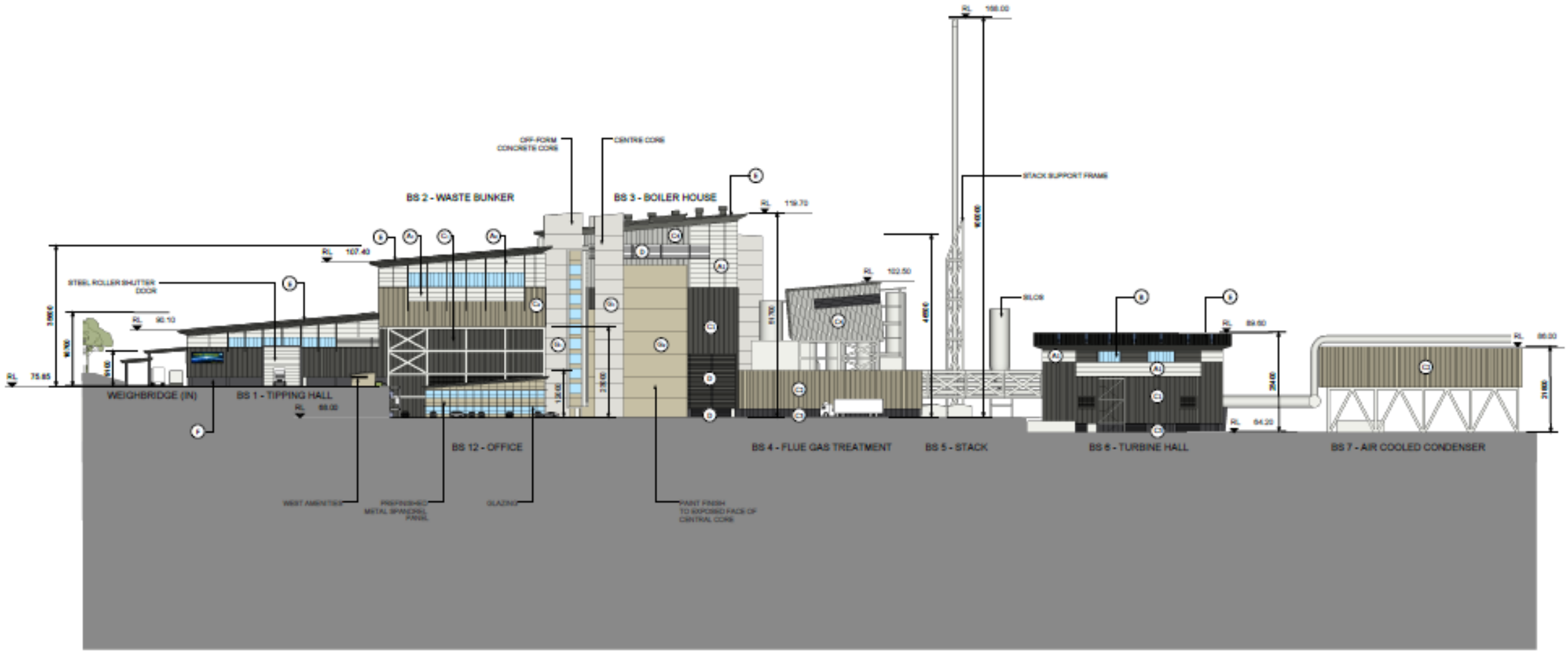
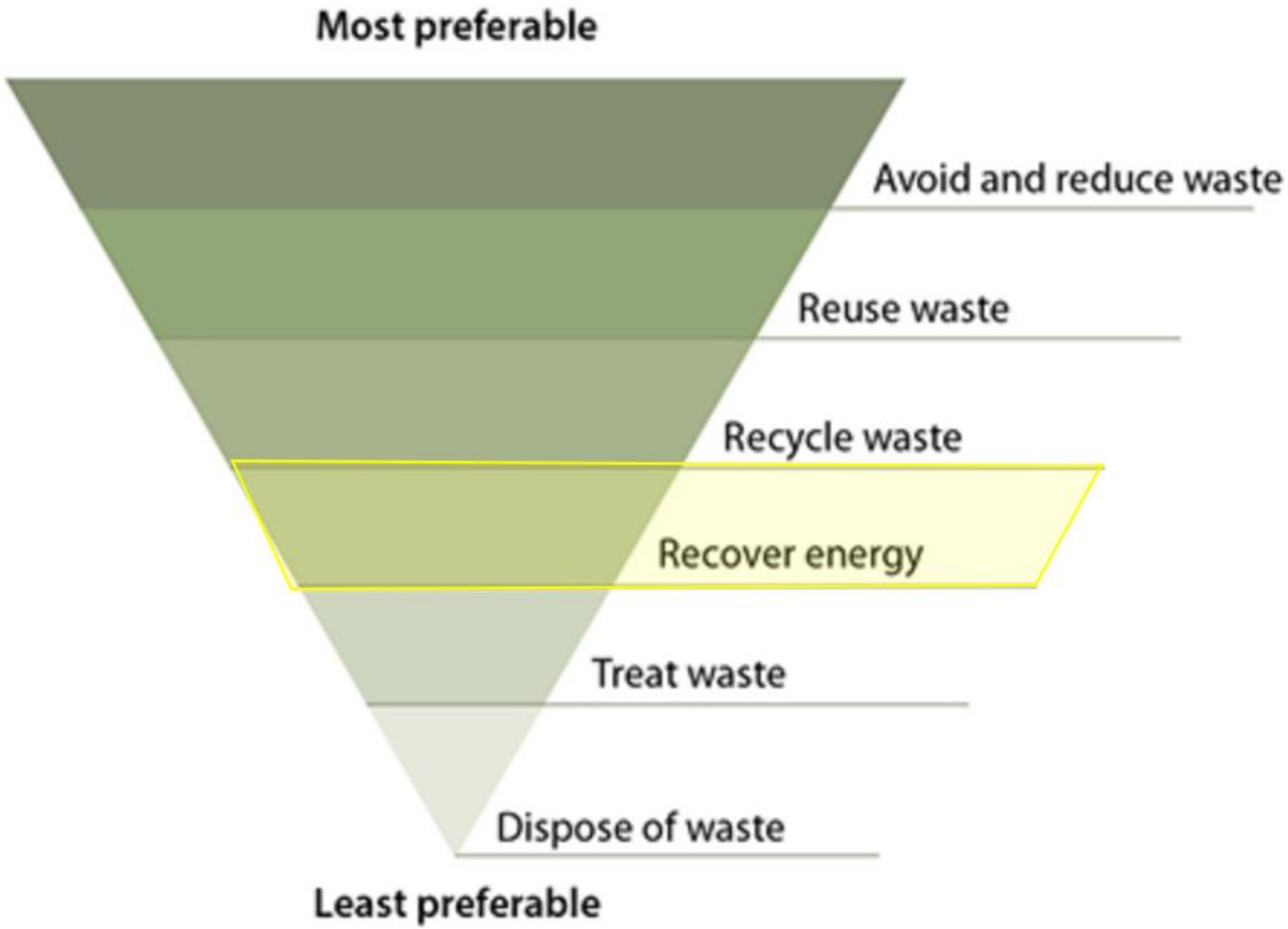

OFF-FORM CONCRETE CORE
CENTRE CORE
BS 2 - WASTE BUNKER
BS 3 - BOILER HOUSE
STACK SUPPORT FRAME
STEEL ROLLER SHUTTER DOOR
WEIGHBRIDGE (IN)
BS 1 - TIPPING HALL
BS 12 - OFFICE
BS 4 - FLUE GAS TREATMENT
BS 5 - STACK
BS 6 - TURBINE HALL
BS 7 - AIR COOLED CONDENSER
WEST AMENITIES
PREFINISHED METAL SPANDREL PANEL
GLAZING
PAINT FINISH TO EXPOSED FACE OF CENTRAL CORE

# TNG DELIVERING THE MISSING LINK FOR NSW

- TNG is part of an integrated waste management operation that will reduce landfill.
- Utilises residual waste that has been pre-screened for reuse and recycling materials.
- Process 552,500M tonnes of residual waste.



# ENVIRONMENTAL OUTPUTS

- **European Industrial Emissions Directive IED 2010/75/EU** has been used as the basis for the development of the NSW EfW Policy.
- IED limits considered the **most stringent requirements** for EfW plants worldwide.
- Facility **designed to operate** within these limits as a minimum.
- **Emissions from stack monitored 24/7** by an automatic computerised system and reported to NSW EPA.
- **Methods and standards used for monitoring** are consistent with the IED or as directed by NSW EPA.

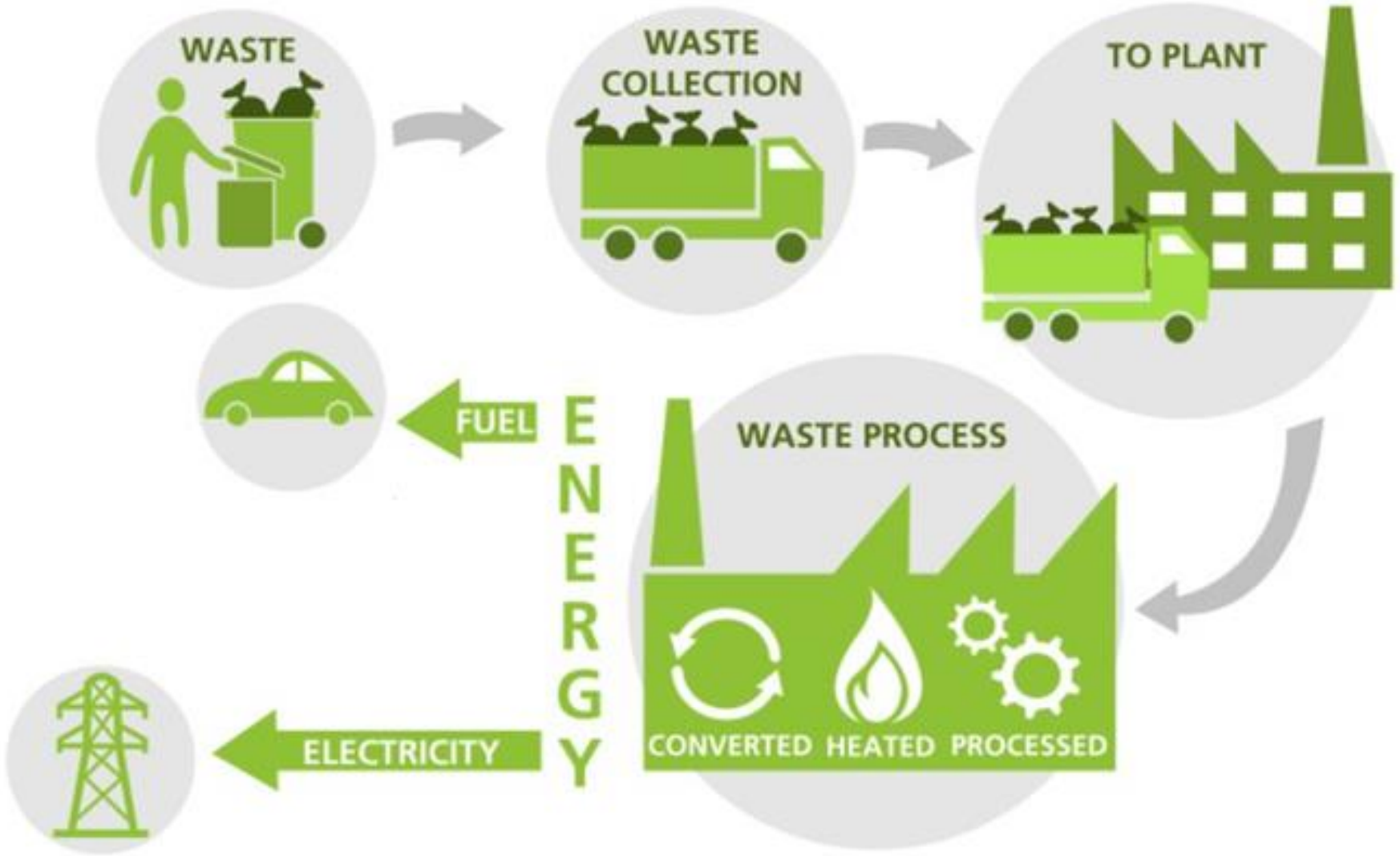
# ENVIRONMENTAL OUTPUTS – CONT.

- **Unprocessed waste or waste not subject to resource recovery** will not be delivered direct to the EfW Facility.
- Processed waste will be **delivered via an electrically driven covered conveyor** system or by truck.
- **Pre-processed waste streams by others** will be subject to Genesis quality assurance measures to ensure hazardous material is removed.
- **Cleared waste will be stored inside the bunker.** Sufficient storage for 5-7 days at full load is provided to cater for disruptions in fuel supply.
- EfW Facility will operate 24/7.
- **Tipping hall will be kept at negative air pressure** ensuring a constant inward flow of fresh air and ensure no odour escape.

# ENERGY OUTPUT

- **NSW EfW Policy reflects the R1 energy efficiency formula** from the European Waste Framework Directive.
- R1 to be **>0.65 as the minimum total system efficiency threshold.**
- EfW Facility has capacity to **generate net 68.65 Mega Watts** of electrical energy (MWe).
- The **R1 efficiency is predicted to be 0.86** (based on gross generated power) which is well above the threshold for new incineration plants.
- **The EfW Facility will meet the definition of recovery.**

# KEY OUTCOMES



# PROJECT BENEFITS

- Technology - tried and proven.
- Reduce waste going to landfill by 552,500M tonnes/pa.
- Green and renewable energy source.
- Encourages resource recovery.
- Delivers the missing link in the resource recovery framework.
- Delivered by a tier 1 construction team.
- Utilise Best Available Technology.
- Generate up to 68.65 MWe of energy – power for 100,000 homes.
- Net positive greenhouse gas impact, potential elimination of 13.6 to 17.1 Mt CO2-E over a 25-year period.
- Create 55 full time operation jobs and approximately 500 construction jobs.

# DPE RECOMMENDATION

- Reviewing basis of conclusions from DPE technical experts.
- Written response will be provided to the IPC prior to public meeting on 14 May 2018.

# QUESTIONS & ANSWERS

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# THANK YOU