

The Environmental Impact Statement (EIS) and specialist studies submitted with the development application (DA) are considered to be inadequate in a number of key areas which are listed as follows:

## 1 Environmental concerns

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### 1. An independent consultant has assessed the EIS for Council and has advised that it is unsatisfactory

- a. An independent environmental consultant company, Jacobs Group (Australia) Pty Limited (Jacobs), was engaged by Council to review the technical accuracy of the EIS and specialist studies submitted with the DA.
- b. Jacobs has concluded that the facility as currently proposed will not meet relevant environmental criteria and standards. Jacobs has advised that additional information is required before a detailed assessment of the proposal can be finalised. Jacobs independent review forms part of Council's submission to the Department and is included at **Appendix B**.
- c. In summary, the independent review of the EIS and supporting technical reports has raised the following key concerns:
  - i. The assumptions made in the EIS are inaccurate and do not consider the Australian context.
  - ii. The air quality and greenhouse gas assessment is incomplete.
  - iii. The odour assessment report is incomplete.
  - iv. The soil and water assessment is incomplete.
  - v. Site contamination investigations have not been undertaken in accordance with the EPA guidelines.
  - vi. The development fails to consider the use of cooling towers.
  - vii. A heat balance has not been provided.
  - viii. The development proposes 2 steam turbines when only 1 is required.
  - ix. No basis has been provided for the unrealistic plant availability.
  - x. Co-firing the fuel in accordance with best practice has not been considered and would increase the efficiency of the facility.
  - xi. The EIS provides misleading information about the export of heat.
  - xii. The EIS provides misleading information about the reuse of the ash.
  - xiii. Air pollution control (APC) residues are not being processed on site.
  - xiv. The EPA has not been consulted in terms of whether the low frequency noise criteria used is acceptable.

- d. These issues raise doubt regarding the overall accuracy of the EIS. Unless these matters are properly addressed, it is considered that the Department will be unable to properly assess the proposal.
- e. Further information, as identified in Jacobs review at **Appendix B**, is required to determine what impact the proposal will have on the locality, and if any amendments or further ameliorative measures are required. On this basis, the DA as currently proposed should not be supported.

**2. The facility must be licenced by the NSW Environment Protection Authority (EPA) and must comply with the EPA's NSW Energy from Waste Policy Statement**

- a. The NSW Environment Protection Authority's (EPA's) Energy from Waste Policy Statement 2014 sets out the policy framework and technical criteria that apply to facilities in NSW proposing to thermally treat waste or waste-derived materials for the recovery of energy. It is recommended that the Department consult with the EPA to ensure that the proposal complies with this policy statement and satisfies the EPA's licencing requirements.
- b. Based on the independent review by Jacobs, the facility as currently proposed will not meet relevant environmental criteria and standards. Council is therefore concerned that the EPA's technical criteria will also not be met.

## 2 Waste management concerns

**1. Only half of the waste fuel will be sourced from the neighbouring Genesis Xero Waste facility**

- a. The following table provides a summary of the total amount of waste to be processed and where the waste will come from. These figures are discussed below.

Source	Volume in tonnes per annum (tpa)	Percentage	
Directly from the Genesis MPC <b>after being screened</b> (i.e. enters the EFW facility via an underground conveyor)	136,000 tpa	10%	= 45% from the Genesis facility
Redirected from the Genesis MPC <b>without screening</b> and prior to entry, as this is waste that would have been landfilled according to the applicant (i.e. arrives at the EFW facility in trucks via the internal service road)	469,000 tpa	35%	
From third parties (i.e. via the public road system).	500,000 tpa	37%	= 55% from unknown sources
Unknown	245,000 tpa	18%	
<b>TOTAL</b>	<b>1.35 million tpa</b>	<b>100%</b>	<b>100%</b>

- b. Of the 1.35 million tonnes of input material, approximately 136,000 tonnes per annum (tpa) will be sourced directly from the neighbouring Genesis MPC. A private underground culvert and conveyor will be provided to transfer the 136,000 tonnes of waste material from the Genesis MPC to the EFW facility on proposed Lot 2. This is 'left-over' waste that would otherwise have been sent to landfill following the sorting/recycling process at the MPC. We agree that this is an appropriate waste source.
- c. In response to Council's written concerns about the source of the waste, the applicant states that a further 469,000 tpa will be 'redirected from Genesis' - this is waste which currently goes to Genesis to be landfilled, as it is waste of a type which cannot be recycled. It is claimed that it will be viewed and classified either at Genesis and redirected from there via the service road [not the precinct road] to the EFW or viewed and classified at the EFW plant. It is also claimed that these procedures will be supervised by the EPA to ensure that they comply with the EPA guidelines and ensure that none of the material is capable of further recycling.
- d. Our concern is that the screening procedures will be inadequate and that this material may be unsuitable for the EFW facility (e.g. it may contain hazardous material such as asbestos) and should continue to be sent to landfill. More information and justification is required to clarify this and the procedures for the classification of the waste.
- e. We believe that the 469,000 tpa of material should first be sorted/recycled at the Genesis MPC. This would ensure that any residual waste is properly screened for suitability as a fuel source for the EFW facility.
- f. Based on the EFW facility having a processing capacity of 1.35 million tpa, this means that only 45% of the waste fuel is coming from the Genesis facility. This is a significant difference from the pre-lodgement discussions with Council which suggested that the majority of the fuel for the EFW facility would be obtained from the Genesis MPC (up to 95%). This would have ensured that controlled screening measures were in place.
- g. The EIS includes a list of items that will fuel the EFW facility, and includes everything from glass and paper to garden organics. This can only mean 1 of 2 things – either less recycling is now going to occur at the Genesis MPC, or the remaining 55% of waste received from third parties will include a mix of unsorted waste, including items suitable for recycling. Either way, it is considered unsatisfactory that paper, garden waste, etc. is being added to the fuel stream for the proposed EFW facility and is not being recycled.
- h. This highlights a major issue with the EIS - it is severely deficient in the clarity of information provided on fuel sources, whether these materials can be further recycled and the screening procedures. There are also inconsistencies with the originally claimed source of material being largely from the Genesis recycling and landfill facility.

### **3 Half of the waste will be sourced from unknown third parties**

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- a. As only 45% of the input waste material will be sourced from the Genesis facility, the balance (55%) will come from unknown sources.
- b. Based on the EFW facility having a processing capacity of 1.35 million tpa, the balance would be approximately 745,000 tonnes.

- c. The submitted traffic report indicates that 500,000 tpa will come from third parties via the public road system. The remaining 245,000 tpa, however, is unaccounted for. If this waste is sourced from the general public, this would raise significant concerns.
- d. The applicant has advised that the 245,000 tpa is “in part attributable to any additional business and any change in waste streams”. The Genesis Xero Waste facility has lodged a separate Section 75W application under the EP & A Act 1979 to seek approval for the construction of an undercover pre-sort centre (PSC) on its site to increase the amount of recycling achieved. The applicant has indicated that if and when the PSC modification is approved, it will give the applicant an improved opportunity to sort and recover commercial and industrial type waste.
- e. Despite this advice, it is still unclear who the third parties will be, if the 500,000 tpa will be sourced from EPA accredited bodies and what sort of waste will be included in the 500,000 tpa (though it appears to include paper, glass, green waste, etc.). Further, we do not understand:
  - i. Why the 500,000 tpa (and in fact the whole 745,000 tpa) is not first going through the Genesis facility for screening/recycling.
  - ii. Whether there will be an eligibility criteria for any waste coming in directly from a third party.
  - iii. What measures will be in place to ensure hazardous materials are not mixed in with the third party waste.
  - iv. Why so much material is being received from third parties when we were led to believe by the applicant that only a small portion of the fuel waste (approximately 5%) would come from third parties.
- f. In response, the applicant seeks to assure us that the 500,000 tpa will be from approved third parties. It advises that this waste will have already undergone recovery/recycling under EPA supervision and therefore does not need to be processed at the Genesis MPC.
- g. The applicant has advised that it is in the commercial interest of the approved third parties (who are sizeable organisations in their own right) to do their own recovery operations and collect materials that are suitable for reprocessing and re-selling. The resulting residue material (i.e. 500,000 tpa) will then be transported to the EFW facility.
- h. It is unclear, however, if the residue material (500,000 tpa) has the ability to be recycled further (i.e. is it material that does not hold commercial value to the third parties, but is still capable of being recycled?). It is also unclear what measures will be in place to prevent hazardous materials from being concealed in this waste stream. It is therefore our view that your Department should obtain additional information from the applicant and that the EIS should be updated to address these matters.

## **2. Further information is required to address waste management issues**

- a. A waste management report commissioned by the applicant was originally prepared by Mike Ritchie and Associates. The waste management report has been revised by a new consultant (Environ). Environ relied on the original report and inaccuracies have been carried through.

- b. The updated waste report prepared by Environ introduces a number of new waste streams which the original report did not identify. There are significant unknowns in the quantity, composition and type of waste that will make up the plant feedstock. Due to the lack of detail regarding the waste composition and lack of clarity on the sources of waste, the calculations for plant efficiency and greenhouse gas emissions carry a fairly high margin of error.

**3. There is potential for hazardous material to be concealed within the waste loads**

- a. As outlined above, 469,000 tpa of fuel waste will be redirected from the Genesis facility and up to 745,000 tpa of additional fuel waste (i.e. 500,000 tpa from third parties and 245,000 tpa from unknown sources) will be sent directly to the EFW facility.
- b. It is considered essential that further information is obtained in regard to how this waste is sorted before it enters the EFW facility.
- c. It is considered that each load should undergo a thorough sort (rather than just a quick visual inspection) prior to determining if it should be rejected or not. If the acceptability of the load is determined by a visual inspection only, there is the potential for problem items (e.g. asbestos) to be concealed. We believe all waste should first go through the Genesis facility to prevent this from occurring.

## **4 Town planning concerns**

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**1. A site-specific Development Control Plan (DCP) is not required**

- a. The EIS indicates that the applicant is preparing a site-specific Development Control Plan (DCP) in consultation with your Department to address Clause 18 of *State Environmental Planning Policy (Western Sydney Employment Area) 2009*. Clause 18 requires that a DCP be prepared for the land subject to a DA. The draft DCP is being prepared concurrently with the assessment of the DA and has not been included as part of the exhibition material.
- b. We believe, however, that a site-specific DCP is not required given that the area is already subject to the Eastern Creek Precinct Plan (which is a deemed DCP).
- c. We believe Clause 18 of the SEPP only relates to sites which are not already in the Eastern Creek precinct area.
- d. Any proposed draft DCP, however, should be forwarded to Council for comment prior to determination of any DA for the EFW facility or subdivision of the land.

**2. The proposed subdivision is unsatisfactory and should not be supported**

- a. The plans lodged with the EIS originally proposed the subdivision of the land into 11 lots.
- b. We object to the proposed plan of subdivision for the following reasons:
  - i. The Eastern Creek Precinct Plan nominates a road through proposed Lots 7, 8 and 10, and this road has not been shown on the plan. Alternatively, the applicant has not sought a DCP road pattern variation to address the requirements of the Precinct Plan.

- ii. Roads & Maritime Services (RMS) has plans to extend Archbold Road. The alignment of Archbold Road at its south-western boundary cannot be endorsed without first obtaining RMS approval.
  - iii. The upgrade of Archbold Road at the M4 Motorway has not been shown. Details must include the area of land required for any future potential on and off ramps. The applicant must also include evidence that it has consulted with the RMS regarding its requirements.
  - iv. The status of the proposed conveyor/culvert under the future public road has not been shown. A stratum subdivision will need to be undertaken to address this matter.
  - v. Access to the proposed subdivision is reliant on the construction and dedication of Honeycomb Drive across the Dial a Dump Industries (DADI) / Genesis site. The road has not been completed to date, although it is understood that it will occur jointly with the adjoining property owner (Hanson Group) over the next 12 months.
  - vi. Appropriate road access is currently unavailable. If Honeycomb Drive is not completed, an alternative would be for the existing Archbold Road over the M4 Motorway (into the Minchinbury Industrial Estate) to be upgraded to Council's engineering standards. Details would need to be provided if this option is chosen.
- c. The final plan of subdivision must also address the following issues already raised with the applicant:
- i. The southern riparian area should be included as part of the abutting lots (i.e. proposed Lots 1 and 2). This will ensure that the owners of Lots 1 and 2 will share responsibility for the riparian area.
  - ii. The conservation area (located on the corner of Archbold Road and the M4 Motorway) is to be incorporated into proposed Lot 6. This will ensure that the owner of proposed lot 6 is also responsible for maintaining the conservation area.
  - iii. Appropriate public road access, including provision of a cul-de-sac head, is to be provided to proposed Lot 10.
- d. It is recognised that proposed Lot 4 does not comply with the minimum allotment size requirement set out in the Precinct Plan. The applicant has indicated, however, that the lot will accommodate an electricity substation and will be dedicated to Ausgrid. Any subdivision approval should include appropriate conditions to ensure that this lot is only used for this nominated purpose.
- e. The existing easement over proposed Lot 10 and existing Lot 4 (i.e. marked as "A2" for a right of access 25 m wide) must be extinguished as part of the registration of any subdivision plan.



- f. As part of any subdivision assessment by your Department, matters relating to flora and fauna, Aboriginal archaeology, salinity and site contamination will also need to be considered. Our review of the supporting documentation indicates that, of the 10 proposed lots, site contamination investigations have only been undertaken over proposed Lots 1 to 4. A subdivision approval over the remainder of the site should therefore not be given until site contamination investigations are undertaken over proposed Lots 5 to 10 and over the area of the new roads. Where relevant, a Section 88B restriction should be imposed informing any purchaser that site contamination validation is yet to be undertaken over the lots.

**3. No retaining works are to be provided on the property boundaries**

- a. The applicant has advised that, as part of the EFW facility, no retaining work is required on the property boundaries (i.e. proposed Lot 2). However, further cut and fill plans, together with all retaining wall details, should be obtained to confirm this is the case.
- b. In the event that any retaining walls or works are located on the boundary, an appropriate easement for maintenance or support must be provided on the adjoining lots (i.e. Lot 1, 3 or 4 as appropriate).
- c. Any retaining wall over 3 metres is to be of masonry construction and is required to be stepped with a 1.5 m wide terrace (as per the Precinct Plan), to reduce the bulk and scale of these walls. All details are to be provided for approval.

**4. The use of proposed Lots 1 and 3 following completion of the bulk earthworks must be subject to a separate DA**

- a. The EFW facility will be located on proposed Lot 2 only. This allotment will require significant bulk earthworks in readiness for the building. The material cut from the site will therefore be placed on the adjoining lots (proposed Lots 1 and 3) to avoid any significant change in levels and to effectively drain the site.
- b. During construction of the EFW facility, proposed Lots 1 and 3 will be used for the storage of building materials and heavy machinery. Once the development has been completed, the allotments will be left vacant. It is recommended that the use of these lots be subject to a separate DA, as no end user of these lots has been nominated in this proposal.

**5. The EIS is silent on whether the development is 'Integrated Development'**

- a. It is unclear whether the development constitutes 'Integrated Development' under Section 91 of the *Environmental Planning and Assessment (EP&A) Act 1979*, requiring the concurrence of the Office of Environment and Heritage (OEH) under Part 3 of the *Water Management Act 2000*.
- b. The proposed development is located within 40 m of the bank of a watercourse (i.e. the Ropes Creek tributary) which would typically constitute 'Integrated Development' under the EP&A Act.
- c. The applicant has indicated, however, that under the *Water Management Act 2000* the proposed development only requires a total riparian zone of 40 m (i.e. measured 20 m either side from the top of the bank). A 20 m setback from the bank of the creek to the development has therefore been shown on the submitted stormwater drainage plan.

- d. It is recommended that the Department review this matter and ensure that any necessary concurrence from the NSW Office of Environment and Heritage is obtained, including any general terms of approval (GTA) which are to be included as part of any consent granted.

**6. The development is inconsistent with the *Broader Western Sydney Employment Area draft Structure Plan 2013***

- a. The Broader Western Sydney Employment Area Draft Structure Plan 2013 implies that developments should achieve an employment target of around 21 jobs per hectare (i.e. this is based on ultimate development of around 10,000 hectares, with 212,000 jobs when the area is fully developed).
- b. The proposed development generates around 6 jobs per hectare and is therefore well under the employment target.
- c. The EIS should recognise that the proposal is a low employment generating development and investigate if any measures should be taken to address this.

**7. The cumulative impact assessment is incomplete**

- a. The cumulative impact assessment has taken into consideration the adjacent Hanson development once operational. The assessment, however, does not discuss the cumulative impacts of the Genesis Xero Waste Facility in terms of any proposed changes to its future operations.

**8. The height of the facility must not impact on any airport prescribed airspace**

- a. Bankstown Airport Limited has advised Council that it is in the process of seeking a Declaration of Prescribed Airspace for Bankstown Airport under the *Airport (Protection of Airspace) Regulations 1997*. The Blacktown council area is located beneath the airspace related to Bankstown airport and as such, it is recommended that the Department liaise with Bankstown Airport Limited (Mario Bayndrian on ph. 8709 9407) to establish if the height of the facility (i.e. 54 m high buildings and 103.7m high ventilation stacks) will satisfy any Civil Aviation Safety Authority (CASA) requirements. Separate approval may also be required from CASA for the installation of a safety light on top of the facility.
- b. We are also concerned that the height of the facility may conflict with CASA requirements for the future Western Sydney Airport (Badgerys Creek airport). The CASA should therefore be invited to comment on the proposal to establish if any amendments are required to safeguard the operation of the airport.

**9. A larger area of native vegetation should be retained**

- a. The offsets proposed for the endangered ecological communities (River-flat Eucalypt Forest and Cumberland Plain Woodland) are located within an area already identified as “riparian habitat” in the Precinct Plan. While there is no requirement under SEPP (WSEA) 2009 to protect and rehabilitate this area, the Stage 3 Eastern Creek Precinct Plan does include an objective to “preserve and improve the ecological integrity of the watercourses and riparian corridors” and this must be considered.
- b. The biodiversity offsets should be in addition to the existing protection and management requirements. The total area used within the offset calculations therefore does not satisfy this basic principle. This is highlighted by the fact that some of the proposed offset area (Figure 11) is within an area of waterfront land,



includes vegetation previously mapped as River-flat Eucalypt Forest and includes the proposed bio-retention basin and batters located in the riparian habitat. It is therefore recommended that additional existing endangered ecological communities be retained within the development footprint and/or additional offsets be provided.

- c. It is recommended that your Department confirm with NSW Office of Water that they agreed to the removal of the small section of the first order stream located to the east of the bio-retention basin (i.e. that runs in a north-south direction).
- d. A vegetation management plan for the riparian habitat corridor is to be included as a condition of any consent granted.
- e. The north-south main collector road should be designed to eliminate any potential impact on the riparian habitat corridor.

#### **10. The proposal impacts on an area of high Aboriginal significance**

- a. Although Aboriginal groups have agreed to the relocation of the artefacts to the riparian area, there is no evidence to suggest that the Office of Environment and Heritage (OEH) concurs that this is an acceptable outcome. The EIS notes that only phone conversations were held with OEH. This is considered insufficient consultation to enable us to be confident that they support the methodology. It is therefore recommended that the applicant provide written evidence of support from the OEH for the proposed methodology (i.e. destroying the site complex and relocating the artefacts to the riparian creek reserve).
- b. It is recommended that the Department also ask the applicant to clarify why the development needs to impact on an area of high aboriginal significance that has been proposed for many years to be a reserve. It is unclear why developing the proposed reserve area was unavoidable and what other alternatives (if any) had been considered. For example, why can't the proposal be located on proposed Lot 5 instead?
- c. The Aboriginal Heritage Study prepared for the applicant by GML Heritage Pty Limited states that the preference is for the reserve areas to remain undisturbed, and that only if it was unavoidable to disturb then would it be acceptable to look at mitigation measures. We are concerned that the proposal will result in the loss of some of the interpretive and educational value of the site, not to mention its setting within a remnant of forest that has remained relatively undisturbed over time.

#### **11. A draft voluntary planning agreement is required**

- a. The EP&A Regulation (Clause 270) states that a draft voluntary planning agreement (VPA) or Section 94 Contributions Plan must be adopted before a consent authority can determine a consent in the WSEA. Appropriate arrangements must therefore be made by the applicant with the Minister for Planning to contribute towards the provision of State level roads Western Sydney Employment Area, prior to any consent being granted.
- b. On another matter, Council wrote to the Department on 13 October 2014 regarding the payment of outstanding local contributions to Council that are payable over land owned by the same developer as a result of a Land and Environment Court decision. Council has requested that the Department enforce compliance with the

NSW Land and Environment Court issued conditions of consent, but to date no formal response has been received from the Department.

- c. Although the subject proposal is a separate matter, Council should request that the Department's Compliance Section finalise this matter before any further consents are issued over the applicant's land.

## **5 Engineering and drainage concerns**

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### **1. The stormwater drainage concept does not comply with the Precinct Plan**

- a. Council's drainage engineers have reviewed the stormwater drainage and water cycle management issues for the proposal and have concluded that the stormwater concept has not been designed in accordance with the Eastern Creek Precinct Plan for Stage 3. The stormwater drainage concept has also failed to consider the Section 94 Contributions Plan stormwater layout for the area. The following recommendations are made:
  - i. The *Civil Infrastructure Report* refers to the Upper Parramatta River Catchment Trust (UPRCT) parameters, which is incorrect. Stormwater management for the site must be designed to meet the Eastern Creek Precinct Plan requirements. Amended details should be submitted for Council's endorsement.
  - ii. Overland flow from the catchment above the site needs to be managed through the site.
  - iii. Flow from the proposed precinct road and residue land is to be directed to the precinct basin, not to the proposed basin on Hanson's property adjoining the site.
  - iv. The precinct basin is required to provide suitable public access for maintenance.
  - v. A flood impact study is to be undertaken, as the information provided is not current. The impact study is to model the 2 year and 100 year ARI, and the Probable Maximum Flood.

### **2. Previous drainage advice provided by Council has not been followed**

- a. Council provided advice on this application on 24 October 2014 as follows:
  - i. *The first issue is that there is no reference to the stormwater management controls in Council's adopted precinct plan for this area (SEPP59 Eastern Creek Precinct 3). This appears to be the result of incorrect advice provided to the proponent's consultant by Council's DSU engineer. See section 3.2 of Appendix E. The OSD controls in Council Engineering guide requiring compliance with the UPRCT policy do not apply for development in this precinct as the controls in the adopted precinct plan are to be complied with.*
  - ii. *The second issue is the flood information used for assessing flooding impacts. The information used is likely to be out of date as there were creek restoration orders issued to restore the creek and therefore the modelling relied on may not be current. It is also not clear whether permission was obtained from Brown or Council as the information used was provided in the context of legal proceedings and general information for review of draft S94*

*contributions plans for this area. The flood assessment should also include modelling of the PMF as the proposed project can be classed as critical and sensitive infrastructure in relation to flooding impacts.*

- b. This advice is still current as the *Civil Infrastructure Report*, prepared by at&I refers to managing the on-site detention using the Upper Parramatta River Catchment Trust (UPRCT) parameters. As stated in the previous advice this is incorrect and the detention basin is to be designed to meet the Precinct Plan (*SEPP59 Eastern Creek Precinct 3, 2005*) requirements.
- c. A brief summary of the Precinct Plan requirements require the stormwater detention system to:
  - i. Match peak developed flow rates to existing to manage of storms from the 2 Year to 100 Year ARI events.
  - ii. The frequency of bank full flows would not increase and waterway stability shall conform to Council's current water quality control policy (see BCC DCP 2006 Part R).
  - iii. Investigate the impact of the PMF on the stability of the detention basin.
  - iv. Stormwater runoff quality management is to be undertaken on-site.

See Section 5 of the Precinct Plan for the full list of controls and objectives.

- d. Managing the stormwater runoff using the UPRCT parameters will not meet all the Precinct Plan requirements for detention and waterway stability. This has not been demonstrated by the Report and drawings, as insufficient detail has been provided.
- e. Under the Precinct Plan and the draft Section 94 Contributions Plan (CP 18) for the area, it is planned to provide a precinct stormwater control basin at this location (Basin RC 1.1) to manage the peak flows off the catchment and to treat the flows of the roads only. This basin has a capacity of 14,500 m<sup>3</sup> and a PSD of 1.10 m<sup>3</sup>/s in the 100 Year ARI and 0.32 m<sup>3</sup>/s in the 2 Year ARI.
- f. It should be noted that from the recent LEC decision and major project approvals on the adjacent sites (Lighthouse Business Park and Hansen) have required the proponent provide their own stormwater management. These outcomes need to be considered in design the project stormwater management system.
- g. The EFW plant stormwater management system will need to comply with the precinct plan stormwater management controls. The layout of the proposal will need to make provision for the precinct basin. The runoff from the proposed precinct road and residue land will need to be directed to a precinct basin, with suitable public access, so that it can be maintained.
- h. As stated in our previous advice, flood information is now out of date. There has been works undertaken to relocate the creek channel onto its original alignment and this needs to be taken into account in the flood impact. The flood impact needs to be assessed for the 100 Year and 2 Year ARI and PMF storm events. This information is required to inform the design of the outlet(s) from the basin.
- i. The design of the stormwater management system is to be designed in accordance with the Precinct Plan and to Council's requirements.

### **3. The on-site detention details are incomplete**

- a. The report notes the use of UPRCT V3 parameters in Section 3.2 (PSD 80L/s/Ha and SSR 470 m<sup>3</sup>/Ha). However, in Section 4.2 the report uses the UPRCT V4 parameters for the sizing of the basin (PSD 150L/s/Ha and SSR 455 m<sup>3</sup>/Ha). The UPRCT V4 parameters are not currently adopted for use within the Blacktown LGA. Also there are a lower PSD (40 L/s/Ha) and SSR (300 m<sup>3</sup>/Ha), which have not been used as part of the calculations.
- b. The drawings refer to a bioretention basin only. It is assumed that the basin also provides detention for the development.
- c. Details are required on the basin showing plan, sections, outlet structure(s) and creek flood levels.
- d. For a precinct basin the design ponding depth is 1.2m.
- e. Hydrological and hydraulic models are to be submitted for review.

- f. Draining of the Precinct Road to the proposed Hansen basin is not suitable and needs to be drained to a precinct basin for the following reasons:
  - i. The Hansen basin has been designed to cater for the Hansen property only. There has been no allowance for additional catchments to drain to that basin.
  - ii. The timing of the construction of the Hansen basin is unknown at this time and will be undertaken with the approved subdivision works.
  - iii. The timing of the construction of the stormwater drainage line and swales from the road to the basin is also unknown for the reason above.

**4. The water quality details are incomplete**

- a. Water quality treatment is to meet the precinct plan requirements.
- b. The treatment of the stormwater runoff from the site needs to be separate from the treatment of the runoff from the public roads. Currently the design is mixing the flows.
- c. A water quality model is to be submitted for review.

**5. The overland flow details are incomplete**

- a. The report states that overland flows through the site have been designed to safely convey the flows. However, there is not enough information provided to assess the adequacy of this statement.
- b. As part of the Lighthorse approval a portion of the finished quarry landform has been nominated to drain to the precinct basin on this site. This needs to be taken into account in the design of the overland flow through the site to the precinct basin.
- c. In addition an overland flow from the precinct road needs to be directed around the site, to the precinct basin.

**6. The public roads are to be consistent with the Precinct Plan**

- a. Access to the facility is via Honeycomb Drive. The road will need to be extended as part of the proposal to provide direct access to the facility. We raise no objection to the proposal subject to the public roads being consistent with the road pattern approved as part of the Eastern Creek Precinct Plan Stage 3. All road construction is to occur in accordance with RMS Road Design Standards and Council's Engineering Guide for Development 2005.
- b. An appropriate easement for the road underpass tunnel and conveyor belt between the subject site and the neighbouring Genesis MPC will also need to be created prior to any dedication of the road to Council.

# The Next Generation Energy from Waste

BLACKTOWN CITY COUNCIL

**EIS Review**

27 July 2015



**JACOBS®**



## The Next Generation Energy from Waste

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### Document history and status

Revision	Date	Description	By	Review	Approved
3	27/07/2015	Final	M Hather	Strategic Planning	M Davies
			J Moore	Waste / GHG	M Davies
			I Fletcher	EfW Technology	M Davies
			M Davies	Air Quality, Odour Health Impact	M Davies
			S Hughes	Noise	M Davies
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## Important note about your report

The sole purpose of this report and the associated services performed by Jacobs is to review The Next Generation EIS for an Energy from Waste Facility proposed at Eastern Creek, NSW in accordance with the scope of services set out in the contract between Jacobs and the Client. That scope of services, as described in this report, was developed with the Client.

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# 1. Introduction

## 1.1 General Introduction

In response to a letter (the Brief) from Blacktown City Council (BCC) dated 25 March 2014 Jacobs and a subsequent Expression of Interest (EoI) from Jacobs we were engaged by Council to undertake a technical review of the Environmental Impact Statement (EIS) for The Next Generations' proposed Eastern Creek Energy from Waste (EfW) facility as per the following instructions from BCC.

Our initial review was submitted to BCC on 30 October 2014. This subsequent submission (16 June 2015) provides a review of the EIS as placed on exhibition on 27 May 2015.

## 1.2 Scope of Review

The scope of the review is as follows:

*BCC are looking to appoint a suitably experienced consultant to conduct a technical review of the Environmental Impact Statement to provide comment and guidance to Council on the EIS for compliance with the relevant legislation, codes of best practice and guidelines to assess the suitability of the proposal.*

*This analysis must be completed within 14 days to allow Council to review and collectively comment back to the DP&I during the exhibition stage.*

Our review focuses on the technical accuracy of the EIS and its specialist studies consistent with the Director General Requirements (DGRs) and to provide advice to BCC as to whether the project meets relevant criteria and standards. Where we think additional information is required we include recommendations suitable for submission to the DP&I.

As required by the Brief the review focuses on key environmental aspects relevant to EfW operations, which include:

- Air quality - potential harm from offensive and hazardous odours and emissions;
- Noise; and
- Soil and water management.

We also provide review of the strategic planning context, appropriateness of the proposed EfW plant and waste management.

In particular the review focuses on an overall technology review (Chapter 2) and how the EIS has addressed the Director General's requirements (Chapter 3).

## 2. Energy from Waste Technology Review

### 2.1 Overview

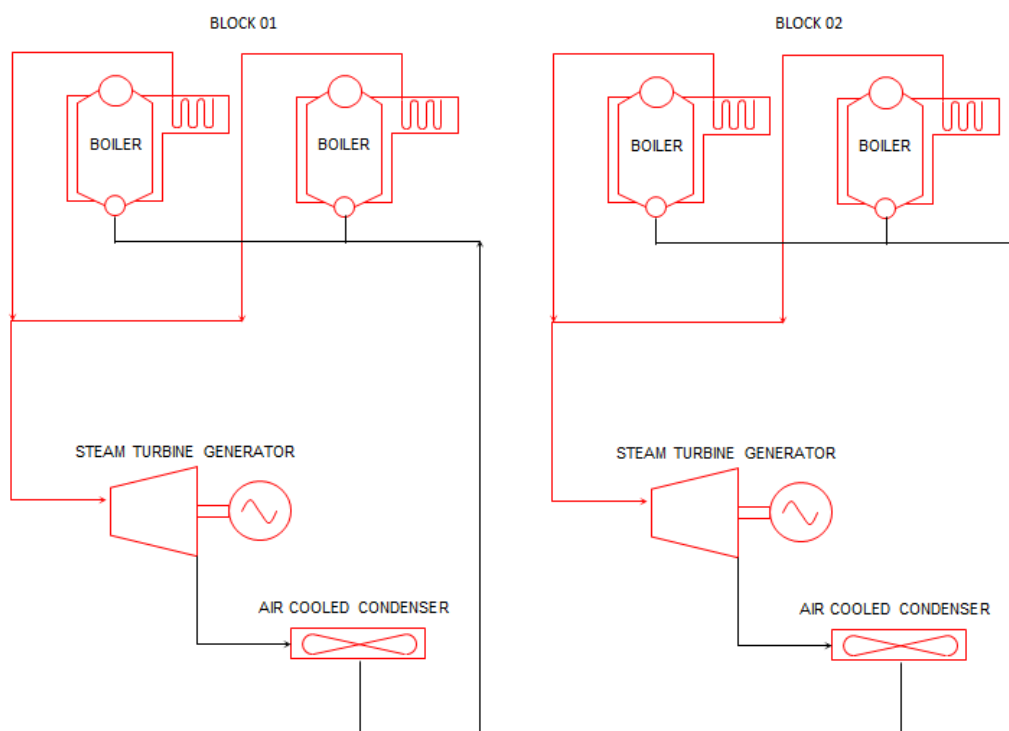
The Concept Design Report is by Fichtner, dated 11 March 2015. The Concept Design has assumed “the Australian planning and consenting regime is similar to the UK”, and on this one assumption, the whole design has been based on meeting UK regulatory requirements, particularly the EU’s industrial emissions directive. We would expect the local Australian regulations (specifically NSW Group 6 emissions rather than EU WID) to be applied as this is the correct context for this EfW plant, although it is acknowledged that the EPA refer to the EU WD with respect to EfW plants.

The Waste Management Report has been revised by a new consultant Environ. The new consultant relied on the previous MRA report, and as such, inaccuracies (e.g. the erroneous statements about potential export of heating and cooling, and use of diesel fuel) have been carried through.

The technology proposed is a grate boiler designed for firing waste, coupled to a steam turbine generator and air cooled condenser. The proposed technology supplier is Hitachi Zosen Inova, (formerly Von Roll), providing an air cooled moving grate for combustion, which is the same combustion system used in the former Woollahra-Waverley incinerator. Part of the grate is water cooled to allow for firing high calorific fuels.

The plant is designed in two blocks each with 2 boilers feeding a single steam turbine generator (2 blocks of 2 x 1 arrangement), which totals 4 boilers or ‘4 lines’ of waste feed (refer Figure 1). It is anticipated that the blocks will be built in stages, but no indication is given of the timing.

**Figure 1 Two blocks – Total 4 boilers and 2 steam turbine generators.**



Grate firing is the most appropriate technology for firing the fuel proposed.

The boiler / steam turbine cycle is the most appropriate means of generating electricity from the waste for a stand-alone plant.

## 2.2 Cooling System

An air cooled condenser has been proposed for the main cooling system, which have a high capital cost, high electrical consumption, have a large visible profile, and generate noise from the fans. The alternative is cooling towers, which are more efficient, and have greenhouse gas (GHG) benefits by improving the electrical generation capacity of the plant, and are less effected by high ambient temperatures in summer, but have a high water consumption. Cooling towers were dismissed without proper consideration, and as a minimum, we consider that these should have been evaluated against air cooled condensers. Cooling towers improve efficiency / reduce the emissions (mainly greenhouse gas) of the plant. The Fitchner report dismissed cooling towers, without consideration of:

- locally available recycled water sources e.g. St Marys WWTP;
- different climatic conditions in Australia, and
- best practice.

Cooling towers using recycled water are currently used at the 160MW Smithfield Cogeneration Plant, and the proximity of the St Marys Water Recycling Plant may be able to similarly provide a source of recycled water for TNG. It is notable that all non-coastal power stations in NSW use cooling towers (which is best practice), and none use air cooled condensers.

## 2.3 Steam Cycle

The steam temperature (400-430°C page 13 and 425°C page 4) are similar to other waste to energy plants, however the temperature selected should be based on the analysis of the fuel. No specific steam pressure is provided (page 11).

The steam conditions should be based on ultimate and proximate analysis of the fuel and ash, and the steam cycle selected based on the economics in the NSW context, and demonstrated in a heat balance. No heat balance has been provided, in the revised EIA. This is essential to demonstrate the performance of the plant, which is the basis for all fuel, ash, water and air emissions. As a result, poor data and assumptions are carried throughout the whole EIA.

## 2.4 Two Blocks

The plant has been designed with two steam turbines, which will have higher capex and opex costs and have a moderate efficiency penalty compared to a single turbine. A single steam turbine generator has been dismissed as inappropriate for only 2 or 4 boilers operating. This isn't correct, and turbines will operate in sliding pressure mode down to half load, with the governor used for throttling the steam flow below this load. A single steam turbine is best practice for plant efficiency, and if there are reasons to deviate from best practice, then they need to be explained.

We suggest the reason for selecting two steam turbines appears to be for staging the construction of the EFW plant. This may be to mitigate against the risk fuel volumes not increasing as expected, and to avoid the expense of planning permissions at a future date for expansion.

## 2.5 Availability

The assumed plant availability of 92% is highly optimistic, and it overstates the potential electricity generation and the benefits of the whole EFW plant. Achieving such a high availability is not realistic in the Australian context, where we have no solid fuel waste to energy plants, and therefore lack the experience required to achieve high availability. Even conventional solid fuel fired power plants in Australia, do not achieve an availability this high.

It is stated (Concept Design pg 5) that WTE plants in the UK achieve 85%-91% availability. The basis of the availability is not stated (Equivalent availability factor as per IEEE 762, is needed to determine the plant output in MWh)



## 2.6 Efficiency

The plant efficiency has been “assumed to be 30%” (Concept Design page 5 and 10). No basis is provided for this assumption, in terms of a heat balance and a proper fuel analysis. Riverside WTE plant (UK – built by Hitachi Zosen), is reported to be the “most efficient WTE plant in the UK” achieves only 27% net efficiency. We believe the assumption of 30% efficiency is too high and overstates the electricity generated and the benefits of the EFW plant. All aspects of the EIA which stem from this assumption are questionable.

We anticipate the efficiency will likely be around 25%, but this can only be determined with a proper fuel analysis and heat balance.

The best practice for EFW is to co-fire the fuel in a utility plant, where the efficiencies are around 40% (NCV basis), which is much greater than the nominal 25% efficiency TNG would achieve. However this has not been considered at all, and the EIA should include reasons why Best Practice has not been followed in this particular case. Co-firing is a higher outcome on the resource efficiency pyramid, and therefore should be pursued instead of, or in conjunction with a EFW plant. This would require the waste to be separated into high and low quality components, as suitable for utility and EFW plants, and reduce the size of the EFW plant located at Eastern Creek.

## 2.7 Net Output

The net plant output of 140MWe (Concept Design page 8), is based on an erroneous assumption of 30% net efficiency, and inadequate fuel data, and plant availability which is considered too high.

## 2.8 Fuel

The fuel analysis has now been revised, and is based on separate C&I and C&D compositional data.

## 2.9 Water

The overall water consumption is nominated as 25.6 m<sup>3</sup>/h (Concept Design pg 25), but no breakdown is provided. It is assumed that the water treatment plant effluent and the boiler blowdown volumes will be consumed by ash quenching. Therefore the waste water will be disposed with the bottom ash in evaporation and absorption (bottom ash 25% H<sub>2</sub>O by weight). The wet bottom ash is proposed to be recycled as aggregate, however water may degrade the value of the aggregate.

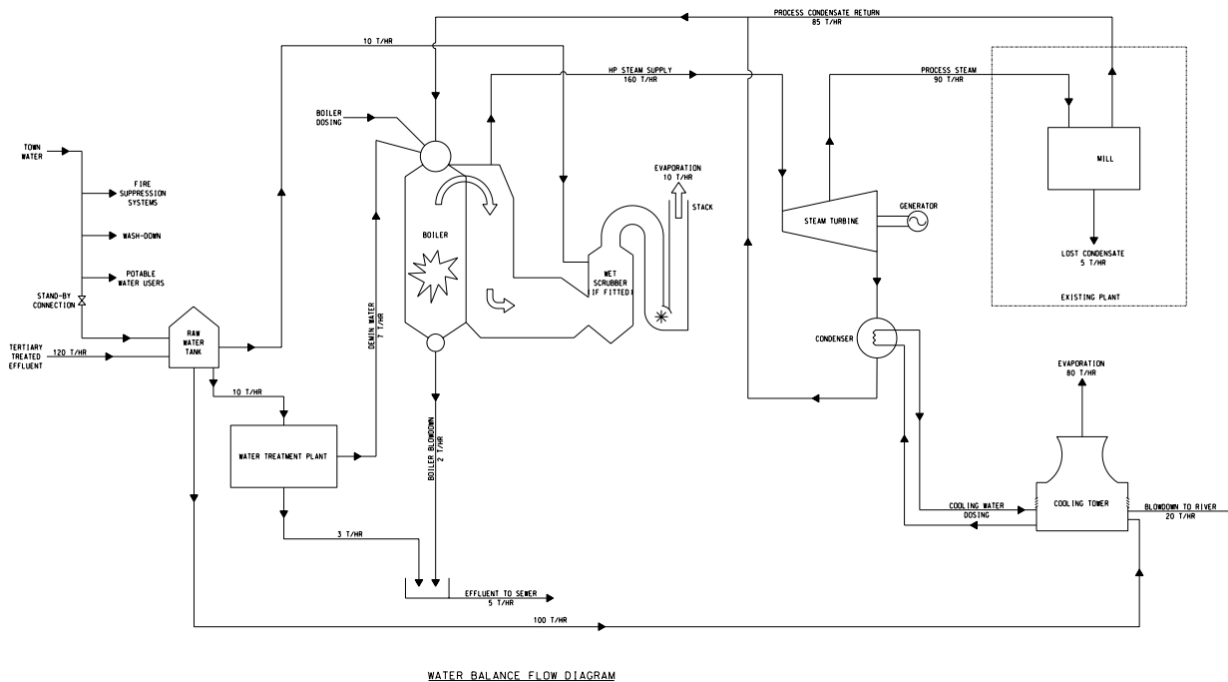
Water generated from commissioning e.g. boiler chemical clean at commissioning would be removed from site by truck to a licensed facility. This is reasonable due to the small volumes proposed. We would recommend a boiler maintenance drain tank be added, to allow for reuse of the water following maintenance.

No water analysis is provided.

No water balance is provided, which is essential to determine how water is used and reused within the plant. The Soil and Water Report Section 7.2 and EIS Section 3.16 deals with water only at a high level for the actual power plant.

A detailed water balance must be part of the EFW concept design or by the proposed contractor. A typical diagram is provided below, which details the major flows of water throughout the process, and the sources of waste water generation. (refer **Figure 2** below)

**Figure 2: Sample Water Balance Diagram, detailing sources and quantities of waste water.**



## 2.10 District Heating

The assumption that it is possible to export heat or cooling from the plant is erroneous, and has been perpetuated throughout the revised EIA without first being tested. "Without any changes to the main plant design, the Facility will be configured so that it will be possible to also export heat to nearby consumers for space heating or cooling or hot water" (Concept Design page 17).

In almost all cases, it is not practical to modify steam plant after construction to export heat in a suitable form, and for the EIA to suggest so, is misleading.

The quantity and grade and form of heat to potential customers e.g. Austral has not been considered, Therefore it is highly unlikely the plant will be able to export heat in a suitable form. Unlike the UK, there are no district heating systems in NSW. The cost of electricity in NSW generally does not make such schemes viable for smaller energy consumers.

In Sydney the main consumers of steam are the paper mills at Smithfield, Botany, and the Botany industrial complex, but this would require relocating the WTE plant. An alternate location which would allow heat export (at approximately double the proposed plant efficiency), has not been considered for the Energy from Waste plant. This is an essential part of the justification for the proposed site.

## 2.11 Ash

### 2.11.1 Bottom Ash

The concept design includes a boiler wet bottom for bottom ash, where the ash is quenched with water, and a dry ash handling system for the boiler hopper ash and fly ash or APC residues

Ramboll and HZI have provided an estimation of the ash composition based on literature and plant operational data (but no references supporting their analysis have been provided). The results indicate the bottom ash can be classified as General Waste, and Boiler Ash and APC residue as Restricted Solid Waste, because of Lead and Cadmium levels. (However no discussion is provided on the sources of lead and cadmium, and why they are high). These ash classification results are not consistently reported throughout the EIA, and several times it is suggested that the APC residues will require trucking to a hazardous waste facility (which is a possibility, but unlikely a normal operating scenario) and even interstate, which is not legal.

The EIA should nominate where the ash will be landfilled if required i.e. General SW to Landfill A, Restricted Solid Waste to Landfill B and if the waste composition changes and ash exceeds TCLP2 and SCC2 limits, then to Landfill C.

It is preferable, however, that ash should be recycled, and that if landfilling occurs, then this occurs at site to avoid unnecessary truck movements of restricted material. This may require a change to the license for the landfill of the former Pioneer quarry.

It is proposed to recycle bottom ash as road aggregate, but there are no firm proposals, and the comments do not reflect the NSW context where RMS are not supportive of reuse of ash materials for construction.

### 2.11.2 Air Pollution Control (APC) Residues

The EFW plant will generate around 45,000 tonnes per annum of APC residues. This consists of fly ash, plus spent lime and activated carbon. A breakdown of the ash constituents has been provided in Section 8 of the EIA.

It is assumed the APC residues will be trucked off site, but there are no details regarding the long term disposal location. The disposal locations should be nominated for the life of the plant. .

It has been assumed that that APC residues (ash) may be reusable in concrete, however this is pure speculation. The EIA cites the EU where APC is recycled in concrete, however it does not consider the Australian context where only a small portion of the available fly ash on the market, is used in concrete. NSW Road and Maritime Services is not supportive of fly ash being used in any of its construction works. The EIA is misleading in its statement regarding reuse of APC residues, and it is highly likely they will need to be landfilled.

### 2.11.3 Processing

The potential treatment of APC and Boiler ash is mentioned, however there are no facilities nominated where this treatment would occur. We are also unaware of the existence of any such treatment facilities in the region. Consideration should also be given to the APC residues being processed on site, to reduce their EPA classification level prior to transport, and then landfilled at an appropriately licensed site.

### 2.11.4 Conclusion

The concept design, based on a steam cycle WTE plant, with grate combustion system is sound, and reflects the good practice for standalone WTE plants.

The basic inputs to the concept design were either not provided, or the assumptions made were not as accurate as would be expected.

The concept design should be demonstrated using heat and mass balances for solids, liquids and gases i.e. heat balance for the steam cycle, fuel and ash balance, air and flue gas balance and a water balance. These are essential for verifying inputs and outputs to the waste to energy plant, and the claims made in the EIA.

### 3. Director General Requirements

#### 3.1 Strategic Planning and Consultation

Director General Requirements	Summary of Applicant's position	Review/Comments (Oct 2014)	Applicants response	Review of Applicant's response (June 2015)
Likely interactions between the development and existing, approved and proposed operations in the vicinity of the site	<p>Section 1 indicates that this is addressed in Section 3</p> <p>Whilst there is no specific section on cumulative impacts, the assessment of individual impacts issues (i.e. noise, traffic, air etc) include consideration of cumulative impacts.</p>	<p>Section 3 does not provide a specific assessment of likely interactions between the development and existing, approved and proposed operations in the vicinity of the site cumulative impacts.</p> <p>There is discussion in Section 2 regarding the Genesis Xero Waste Facility (GXWF) – but not specifically in the context of cumulative impacts with the proposed development.</p> <p>The cumulative impact assessments provided for each issue are not consistent in terms of addressing existing, approved and proposed operations in the vicinity of the site. The assessments primarily address only existing operations.</p>	<p>Additional consideration of cumulative impacts provided.</p> <p>EIS Section 9</p>	<p>The EIS identifies potential cumulative impacts being noise, air and traffic.</p> <p>The EIS indicates the key cumulative issue would be noise.</p> <p>The assessment now includes the adjacent Hanson development once operational.</p> <p>The cumulative noise of the proposal and the Hanson development would exceed the amenity criteria by 1 dB and the Precinct Plan goal by 2 dB.</p> <p>These exceedances are considered marginal and only predicted to apply during the night under temperature inversion conditions. Accordingly additional mitigation is not proposed.</p> <p>The assessment does not discuss the cumulative impacts of the Genesis Xero Waste Facility – in terms of any proposed future changes to existing operations – which has presumably been included in the baseline assessment.</p>

Director General Requirements	Summary of Applicant's position	Review/Comments (Oct 2014)	Applicants response	Review of Applicant's response (June 2015)
<p>Consideration of any relevant statutory provisions</p>	<p>Section 1.4 of the EIS indicates that this is addressed in Section 3.2- 3.4.</p> <p>Section 8.2 indicates that the project is integrated development.</p> <p>Section 8.3 EPBC Act. The EIS indicates that 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.</p>	<p>Sections 3.2-3.4 do not address the relevant statutory provisions. The discussion is provided in Sections 7 and 8.</p> <p>SSD proposals are not integrated development and do not require the concurrence of other state agencies – consultation with relevant public authorities occurs before the Director-General issues DGRs for the preparation of the EIS.</p> <p><u>Commonwealth</u></p> <p>Only listed threatened species and ecological communities were identified as a potential trigger for MNES under the EPBC Act. Appendix G indicates that impacts are not likely to be significant. It is noted that whilst the Proponent may be able to make a determination about whether impacts are likely to be significant, only the Commonwealth can ultimately decide whether or not an action is a controlled action.</p> <p><u>NSW</u></p> <p>Based on a preliminary review, relevant statutory requirements including consideration of typical planning related legislation and EPIs (i.e. SEPPs, LEP and DCPs) have been appropriately identified. It is noted that section 89J and 89K of the EP&amp;A Act removes certain legislative requirements for SSD.</p>	<p>Document references have been updated.</p> <p>References to Integrated Development have been deleted.</p> <p>Section 1.</p> <p>This has been addressed in The Flora and Fauna Assessment Report. Appendix H.</p>	<p>The response is considered adequate. It is noted that the Applicant does not consider that impacts are likely to be significant and therefore does not consider that an EPBC referral is required.</p>

Director General Requirements	Summary of Applicant's position	Review/Comments (Oct 2014)	Applicants response	Review of Applicant's response (June 2015)
Consultation	Reference to consultation with agencies as nominated in the DGRs is provided in Section 6.1 of the EIS	No reference to consultation with NSW Health as required under the DGRs	Consultation with NSW Health has taken place. EIS Section 6.	Applicant has provided information to NSW Health and NSW Health has indicated that it will respond to the EIS.
An assessment of the development against State Environmental Planning Policy (Western Sydney Employment Area) 2009	<p><b>Zoning/Permissibility</b></p> <p>Section 8: The proposed use is not identified as development permissible with consent under the provisions of the IN1 General Industrial Zone – and hence would be prohibited under the SEPP (WSEA)</p> <p>However the proposed development is consistent with the zone objectives and is permissible under the provisions of the State Environmental Planning Policy (Infrastructure) 2007 being electricity generating works within an industrial zone.</p> <p>The proposed development is not consistent with the objectives of the E2 zone.</p> <p>Section 8.6. The proposed development is found to be generally consistent with the SEPP (WSEA) 2009.</p>	<p><b>Zoning/Permissibility</b></p> <p>Clause 34 of the ISEPP provides that development for the purpose of electricity generating works may be carried out by any person with consent on any land in a prescribed rural, industrial or special use zone. Being a prescribed a zone IN1 in the SEPP(WSEA) - the development would be permissible with consent.</p> <p>Zone E2 is not a prescribed zone and hence cannot rely on the ISEPP rather it would be subject to the specific provisions of SEPP (WSEA). Under SEPP (WSEA) the development would be prohibited in this zone. Notwithstanding, the development would not have any physical impact on this zone. Furthermore section 89E (3) of the EP&amp;A Act provides that for SSD, <i>“Development consent may be granted despite the development being partly prohibited by an environmental planning instrument.”</i></p> <p>The EIS indicates an intention that the E2 zoned land be subdivided for future employment land (i.e. Lot 9 approx. 10.6 ha). This would not be consistent with the provisions of SEPP (WSEA).</p> <p>The SEPP (WSEA) provides over 2,090 hectares of employment land that will support</p>	Subdivision for future development of E2 zoned land not proposed.	<p>Zoning/permissibility issues are resolved as it appears the proposal no longer includes any future development on land zoned E2.</p> <p>The Applicant has not responded to the issues raised around low employment density– see also next issue below.</p>



Director General Requirements	Summary of Applicant's position	Review/Comments (Oct 2014)	Applicants response	Review of Applicant's response (June 2015)
		<p>approximately 40,000 jobs for the people of western Sydney – approx. 19 jobs/hectare.</p> <p>The proposed development is around 6 jobs/hectare (on the best case assumption that the subdivision creation of Lot 2 (approx. 9 ha) is approved.</p>		
<p>A demonstration that the development is consistent with the Broader Western Sydney Employment Area draft Structure Plan 2013</p>	<p>The proposed Facility has been assessed 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:</p> <ul style="list-style-type: none"> <li>• Will directly employ 55 staff.</li> <li>• Will generate significant employment during the construction phase.</li> <li>• Proposed to amalgamate and strategically re-subdivide the site into 10 lots to be developed as future employment lands.</li> <li>• 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.</li> <li>• Will not impact any future Archbold Road development works</li> </ul>	<p>The Facility would generally align with the vision and principles of the Structure Plan particularly in respect of an industry that supports industrial uses and freight. Its location in an industrial precinct and proximity to the major road network would also be aligned with the Structure Plan.</p> <p>As indicated above sub-division of the E2 zone land as future employment land would not be consistent with the Structure Plan which assigns this land for environmental protection.</p> <p>With respect to employment the Structure Plan implies a target of around 21 jobs per hectare (assuming ultimate development of around 10000 hectares with 212 000 jobs when the area is fully developed ). The proposed development would have around 6 jobs/hectare.</p> <p>No information is provided in the EIS on job numbers for the adjacent GXWF development. Assuming 70 (based on article in Blacktown Sun Dec 2013) and the proposed subdivision of the site to approx. 28 hectares – the density of jobs/ha would be around 2.5. Combined with proposal (i.e.</p>	<p>Subdivision for future development of E2 zoned land not proposed.</p> <p>The proposed Facility during construction and operation phases will present an intensification of land use and employment on the land. The proposed subdivision also represents opportunities for further employment potential in the future.</p>	<p>Applicant has not addressed issues around the low employment density issue. It is accepted that it should not impact on adjoining lands from achieving a higher employment density but doesn't directly address that it is still a low employment generating development.</p> <p>However, as previously indicated the development needs be considered in the planning context that it can take advantage of being located next to a deep quarry that requires considerable fill. Whether there are realistically higher employment density developments alternatives is a matter for Council and beyond the scope of this review.</p>

Director General Requirements	Summary of Applicant's position	Review/Comments (Oct 2014)	Applicants response	Review of Applicant's response (June 2015)
	<p>Indirect employment will also be generated via support services such as maintenance workers and short term contractors</p>	<p>total of 37 hectares and 125 jobs) the density of jobs would be around 3.5jobs/hectare. Again this would appear much lower than the overall target for the WSEA.</p> <p>Whilst employment densities would seem much lower than what is envisaged in the Structure Plan the site needs to be considered in the context that it is adjacent to a deep quarry that needs considerable fill material. Hence any development that takes advantage of that situation needs to be considered in that context.</p> <p>Given the relatively low density of employment it will be important that it does not impact on adjacent lands within the Precinct from achieving much higher employment densities.</p>	<p>The proposed Development will not impact on adjoining lands from achieving a higher employment density.</p>	

Director General Requirements	Summary of Applicant's position	Review/Comments (Oct 2014)	Applicants response	Review of Applicant's response (June 2015)
<p>Justification that the site is suitable for the proposed development</p>	<p><b>Section 4.1</b></p> <p>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</p> <p>The reasons for the selection of site included:</p> <ul style="list-style-type: none"> <li>• Its location in relation to the fuel sources available in the Region;</li> <li>• Availability of existing supporting infrastructure including connection to the grid and availability of water supplies;</li> <li>• Excellent road links and availability of rail links;</li> <li>• Access to a pool of skilled labour for operations and maintenance; and</li> <li>• Solid record of environmental compliance at Genesis Xero Waste Facility</li> </ul> <p>The closest residential areas to the proposed development is Erskine Park 800 metres to the west of the site.</p>	<p>The site location would appear justified based on location in the Eastern Creek Industrial area, in an industrial zone (where the proposed use would be permissible), proximity to major motorways, proximity to the GXWF site and a reasonable buffer from nearby residents. Furthermore the development should be considered in the planning context that it can take advantage of being located next to a deep quarry that requires considerable fill.</p> <p>Issues with respect to the developments location in the Western Sydney Employment Lands is addressed elsewhere in this table.</p>	<p>No response provided</p>	<p>See above.</p>

Director General Requirements	Summary of Applicant's position	Review/Comments (Oct 2014)	Applicants response	Review of Applicant's response (June 2015)
<p>Demonstration that satisfactory arrangements have been or would be made to provide, or contribute to the provision of, the necessary local and regional infrastructure required to support the development</p>	<p>Section 1.4 of the EIS indicates that this issue is addressed in Section 7.</p> <p>Section 7.1 indicates "that the development will contribute to regional <i>roadworks through contributions</i>"</p> <p>Table 14 of Section 8.10.1 indicates: <i>A draft Voluntary Planning Agreement (VPA) is currently being prepared by the proponent in consultation with the Department of Planning and Environment and Blacktown City Council. A letter of offer has been provided to the Department of Planning and Environment and Blacktown City Council.</i></p>	<p>The EIS does not identify any specific development contributions. Notwithstanding it commits to a VPA which is assumed to be sufficient.</p>	<p>No response provided</p>	<p>It is assumed that Council is satisfied with the commitment to a VPA.</p>

### 3.2 Waste Management

Director General Requirements	Jacobs Review: Waste Management Report : 2014 Mike Ritchie Associates	How has this been addressed in updated Waste Management Report: 2015 Environ	Residual Issues
<p>A description of the classes and quantities of waste that would be thermally treated at the facility</p>	<p>The report provides tonnages of the materials expected to be processed at the TNG Facility annually, along with classification of the waste.</p> <p>Greatest confidence with regard to input material, appears to be linked to the output of the current Chute Residual Waste (CRW) from the neighbouring Generation Xero facility, as it is currently in operation. No composition data are provided in this report but a separate technical report is referenced (Appendix Y – The Concept Design Report). This material makes up approximately 12% of the total material to be processed.</p> <p>The remaining feedstock material is loosely classified as either: Commercial and Industrial (C&amp;I) or Construction and Demolition (C&amp;D) waste from an ‘authorised facility’. No waste composition data for this material stream are provided. Waste composition data are not needed to meet this DGR, but composition data are available for these waste streams, and could be used to detail the types of material expected (which would assist in defining other areas of this report in greater detail – such as expected calorific values, and expected contamination levels). It is essential for the waste composition data to be provided to the boiler vendor, and also to determine whether the chlorine levels will require a furnace residence temperature of 850 or 1100°C as specified in the EFW policy. Some composition data is provided in Appendix Y page 6, but its source is not known, and local real data should be used instead.</p> <p>Waste input quantities have been identified based on the intended throughput of the system (and expected net calorific value of the waste feedstock). This assumes that</p>	<p><b>General Note:</b></p> <p>The waste management report has been wholly revisited in the updated EIS. The original author was Mike Ritchie and Associates, whereas the new report is authored by Environ.</p> <p>The new report has taken the old report text and, in places, built upon it, providing further details in some places, updating data and providing full appendices of a range of additional data and procedures.</p> <p>Further, the application now appears to be staged, with only 50% of the capacity of the plant (two out of four lines) running – and it is assumed therefore that the planning application is only for 50% capacity (i.e. only 2 lines will be constructed out of 4).</p> <p>Data regarding proposed inputs and composition of each of the streams have now been provided.</p> <p>The proponent has had dialogue with the NSW EPA regarding wording of the NSW EPA EfW policy statement (see Appendix G). This dialogue included discussion surrounding:</p> <ul style="list-style-type: none"> <li>the wording of the EfW policy statement with respect to acceptable chlorine levels in specific waste types. The proponent feels that the wording is not in line with European standards, and as</li> </ul>	<p>Most of the data seem reasonable. The composition of Chute Residual Waste (CRW) derived from C&amp;I and C&amp;D waste is the same, which would not likely be the case. Additionally, assumption are made as to the composition of C&amp;I and C&amp;D waste received from other processing facilities. These assumptions make it clear that little is known about the potential input waste stream at this stage, which has implications for both the efficient operation of the proposal as well as the emissions to air and composition of the residues / ashes.</p> <p>It is stated that the EPA is considering proposed changes to the policy following their dialogue with the proponent. Points 1 and 2 above have potential local air quality considerations and either further expert input or clarification from the NSW EPA should be sought to fully understand the implications as it suggested that the proposed amendments may be too open-ended.</p>

Director General Requirements	Jacobs Review: Waste Management Report : 2014 Mike Ritchie Associates	How has this been addressed in updated Waste Management Report: 2015 Environ	Residual Issues
	<p>sourcing material is not a limiting factor (which will most likely be correct). However, there is no evidence in the report that waste fuel supply contracts have been discussed or agreed with authorised facilities that would make up the greatest bulk of feedstock, and will be critical to the efficient operation of the facility. Table 6-3 suggests that the facility, if in operation in 2010, would require approximately 52% of available NSW C&amp;I waste, and 78% of available NSW C&amp;D waste ('available' meaning the proportion of each waste which is allowed under NSW EPA policy to be sent for energy recovery). Data are sourced from NSW EPA reports. This is ambitious. The report caveats that by the time the facility is operational, it is expected that tonnages will have increased; however, waste projections which are available from the NSW EPA, were not used to support this (<a href="http://www.epa.nsw.gov.au/warr/WARRStrategy2013.htm">http://www.epa.nsw.gov.au/warr/WARRStrategy2013.htm</a>).</p> <p>No information is presented on the gate fees associated with the facility, and their likely comparison to those for local landfills. This is likely to be the major driver for waste generators using the facility over a landfill, and therefore influence the ability of the proponent to capture the large proportion of the NSW waste stream it is aiming for.</p> <p><b>Recommendation:</b> The proponent should provide clarity on the source of waste fuel to the facility now and in the future. The report states (Section 4.3) that a significant proportion of this waste is already received on site from authorised facilities and is currently landfilled, however, no data are presented to further inform the reader on how significant this is, where these facilities are, what agreements are in place and how this will change into the future.</p> <p><b>Recommendation:</b> Waste composition data should be</p>	<p>written would significantly affect the viable operation of the facility.</p> <ul style="list-style-type: none"> <li>• 2. Contaminants in the waste stream - the proponent is seeking a softening of the wording with respect to contaminants</li> <li>• 3. Sourcing eligible waste - the proponent is seeking amendments to allowable C&amp;D waste as in its experience this should be classified as being processed on site.</li> </ul> <p>The report has been significantly modified to focus only on 'Phase 1' which is 50% of the tonnage proposed in the original report (&gt;500,000 tonnes difference). It is unclear how this affects the planning application as presumably the majority of the whole facility needs to be built at once. Greater confidence is given to the numbers as a large proportion of the waste for Phase 1 is already received on site (Dial a Dump Industries claims to be able to cover all of this waste requirement across its waste network, although how economically viable it would be in terms of transport is unknown).</p> <p>However, the material inputs still rely on a range of sources of waste - some new from the previous report. The previous report focussed on C&amp;I and C&amp;D wastes only, however, the new report includes MSW from eligible councils (those that meet NSW EPA criteria). Appendix C provides a list of</p>	

Director General Requirements	Jacobs Review: Waste Management Report : 2014 Mike Ritchie Associates	How has this been addressed in updated Waste Management Report: 2015 Environ	Residual Issues
	<p>used to identify the likely residual component of waste to be combusted, leading to the Net Calorific Values presented, and discuss this in the context of other EPA programs to increase recycling and eliminate residual waste in the C+I and C+D sectors. Waste composition data used in Appendix Y – The Concept Design Report – appears to have the same composition for C&amp;I and C&amp;D wastes.</p>	<p>existing (and some proposed) C&amp;I and C&amp;D recycling facilities but this is not referenced in the report, and it is unclear what it is used for. Referencing councils that may be eligible to send their material for EfW without an understanding of whether this fits with their strategy is also a high risk strategy. As above – waste composition data are now provided although there still remain assumptions. It would appear that the input material quantities and characteristics are still based largely on assumptions about availability, with only approximately 23% of the waste already received on site.</p>	
<p>Demonstrate that waste used as a feedstock in the waste to energy plant would be the residual from a resource recovery process that maximises the recovery of material in accordance with Environment Protection Authority Guidelines</p>	<p>The report confirms that all material used as fuel would be the residual from the recovery process from authorised facilities. The report is also aligned with the NSW EPA Energy from Waste Policy, released in 2014, and appended to the report. This policy stipulates the percentage of input to these facilities which is allowed to be sent for energy recovery. The report (Section 4.3.2) states that TNG will conduct ‘independent audits’ to confirm that this is the case. It would be expected that TNG would manage its suppliers in such a way to ensure data are reported to it regularly on compliance with the EfW policy. This means receipt of reports from each supplier on the percentage that the residual waste represents of the total input to each supplier. The audits stated in the report would then be used to confirm the accuracy of this reporting. <b>Recommendation:</b> The proponent should confirm its</p>	<p>This issue has been partially addressed in the report through confirmation of the ‘GreenStar’ audits that the proponent conducts on itself and its suppliers, as well as the logging procedures for receipt of waste from different suppliers.</p>	<p>The issue associated with on-site recycling has not been addressed. It is not understood how the proponent will be able to assess the recycling rate it achieves at its facility for C&amp;I and C&amp;D loads when these are co-mingled after the initial weighbridge.</p>



Director General Requirements	Jacobs Review: Waste Management Report : 2014 Mike Ritchie Associates	How has this been addressed in updated Waste Management Report: 2015 Environ	Residual Issues
	<p>intentions with regard to ongoing monitoring and auditing of its suppliers to ensure that it is complying with the NSW EPA EfW Policy.</p> <p>Waste that is processed at the Generation Xero facility is expected to have a large recovery rate (stated at between 75% and 80%). This meets or exceeds the requirements in the NSW EPA EfW Policy for both C&amp;D waste (25%) and C&amp;I waste (50%). It is not clear from the report how this will be practically assessed, given that this facility receives both waste streams. These can be classified on the way into the facility at the weighbridge, but the recovery rate of these material streams post-processing (when materials are presumably mixed) will be difficult to confirm. As a greater proportion of the input is C&amp;I waste, presumably the facility could fail to meet C&amp;D targets but this wouldn't be flagged if the total facility diversion achieved &gt;75%.</p> <p><b>Recommendation:</b> The proponent should confirm how it intends to assess its conformance with the NSW EPA EfW policy where waste from different sources is mixed and processed on site.</p>		
<p>Procedures that would be implemented to control the inputs to the waste to energy plant, including contingency measures that would be implemented if inappropriate materials are</p>	<p>Details of the procedures for checking the appropriateness of waste materials are provided in various sections of the report. These are to be based on visual inspection of the loads at 3 checkpoints. Whilst the flow diagram for this process is incomplete and has issues in terms of the decision path flow, the intent is understood.</p> <p>Practically, the success of this system is based on the vigilance of operators and them being incentivised to report contraventions / contamination. Many loads will arrived at the site covered, and therefore visual inspection is not possible until the vehicle has tipped its load.</p> <p><b>Recommendation:</b> Site environmental management plans,</p>	<p>The new report includes a 42 page 'Spotters Manual' as an appendix for the Alexandria landfill as an example of the type of management plan it would use.</p>	<p>None</p>

Director General Requirements	Jacobs Review: Waste Management Report : 2014 Mike Ritchie Associates	How has this been addressed in updated Waste Management Report: 2015 Environ	Residual Issues
identified	when produced, should include detail on load inspection and rejection procedures, and the criteria for acceptance.		
Details on the location and size of stockpiles of unprocessed and processed recycled waste at the site	<p>No external stockpiles are proposed at this facility. Materials to be taken offsite for further processing will be held indoors / covered silos. If the material received is processed as much as forecast, then these stockpiles will not be significant if regularly collected.</p> <p><b>Recommendation:</b> None</p>	NA	None
Demonstrate any waste material (e.g. biochar) produced from the waste to energy facility for land application is fit-for-purpose and poses minimal risk of harm to the environment in order to meet the requirements for consideration of a resource recovery exemption by the EPA under Clause 51A of the <i>Protection of the Environment Operations</i>	<p>No material from the facility will be applied to land for agricultural purposes. There is suggestion in the report that air pollution control residue may be improved such that it can be used as cement replacement, but this is not confirmed.</p> <p>Bottom ash will be disposed in landfill. No data for the composition of the bottom ash is available (as the facility is not in operation) so proxy data for the expected composition (based on facilities in Europe which accept putrescible residential waste as well as non-putrescible waste) were used as a proxy. This highlighted potential contraventions of NSW EPA guidelines for Nickel and Lead. However, as noted in the report, sources of these elements would be less likely to occur in C&amp;I and C&amp;D waste, and with site checkpoints this impact should be mitigated. Ash monitoring will confirm compliance.</p> <p><b>Recommendation:</b> The anticipated chemical analysis of the APC residues and their potential uses other than landfill should be detailed.</p>	Chemical analysis of residues has now been provided based on the expected composition. Further details on expected end uses of residues are also provided.	None

Director General Requirements	Jacobs Review: Waste Management Report : 2014 Mike Ritchie Associates	How has this been addressed in updated Waste Management Report: 2015 Environ	Residual Issues
(Waste) Regulation 2005			
Procedures for the management of other solid, liquid and gaseous waste streams	<p>Information is presented on the proposed generation of wastes from the process and the treatment route for each of these, including how they are to be handled on site. No information is presented on the market capacity to handle or treat these wastes. Recent changes to the Protection of the Environment Operations (Waste) Regulation may put a limit on the distance which this material can be transported (there are, however, some caveats that may apply). It would be expected that facilities with appropriate licence and capacity to handle the waste generated by the facility would have been identified but this is not a major consideration.</p> <p>No impact associated with waste generation and transport off site is presented in this report, but it is assumed that these are covered elsewhere in the EIS (and appendices).</p> <p>With regards to liquid effluent (typically generated during boiler maintenance and operation), the report does not explain sufficiently its intended management. It suggests that overflow could be discharged to sewer or sent in a tanker off-site. No volumes are presented in the report (as it is suggested that the majority of the time, this effluent will be used for bottom ash cooling).</p> <p><b>Recommendation:</b> The proponent should provide indicative volumes of effluent discharge from the site, and if significant (or highly contaminated), explore the composition and discharge options in more detail.</p> <p>With regard to ash, no representative sample is available so a proxy ash analysis is provided from UK experience. Real ash analysis should be obtained from a local fuel composition data.</p>	The report has now been updated to state that no discharge of liquid effluent is expected under normal operating conditions. This addresses a previous comment.	None

Director General Requirements	Jacobs Review: Waste Management Report : 2014 Mike Ritchie Associates	How has this been addressed in updated Waste Management Report: 2015 Environ	Residual Issues
Describe how waste would be treated, stored, used, disposed and handled on site, and transported to and from the site, and the potential impacts associated with these issues, including current and future offsite waste disposal methods	As per the report, this DGR appears to be covered in other DGRs, including the previous. <b>Recommendation:</b> None	NA	None
Identify the measures that would be implemented to ensure that the development is consistent with the aims, objectives and guidance in the <i>NSW Waste Avoidance and Resource Recovery Strategy 2007</i>	The facility sits within the waste hierarchy, and the aims, objectives and guidance in the <i>NSW Waste Avoidance and Resource Recovery Strategy 2007</i> . Recent updates to this strategy have in fact included scenarios modelling Energy from Waste within the Sydney region, however, no mention is made of this. It is noted that the EPA forecast two EfW facilities – one of 200,000 tonnes per annum accepting Municipal Solid Waste, and one of 200,000 tonnes per annum accepting C&I waste, with the expansion of an existing C&D facility to handle 100,000 tonnes per annum. These are all significantly smaller than the proposed facility of 1.1 million tonnes per annum.  Linking this site with the Generation Xero facility, and its reprocessing / recycling capability, means that the proposal is able to deal with a range of wastes according to the	NA	None

<b>Director General Requirements</b>	<b>Jacobs Review: Waste Management Report : 2014 Mike Ritchie Associates</b>	<b>How has this been addressed in updated Waste Management Report: 2015 Environ</b>	<b>Residual Issues</b>
	waste hierarchy. Rather than outright rejection of loads and sending off site, the flexibility of the site allows materials to be further processed prior to being accepted. This means that they maintain the ability to further process waste streams to capture valuable recycle where feasible. <b>Recommendation:</b> None		

### 3.3 Air Quality and Human Health

Director General Requirements	Jacobs Review: (1) Air Quality and Greenhouse Gas Assessment Report, (2) Odour Assessment Report, (3) Ozone Impact Assessment Report, (4) Human Health Risk Assessment Report
<ul style="list-style-type: none"> <li>A quantitative assessment of the potential air quality and odour impacts for the development on surrounding landowners and sensitive receptors under the relevant Environment Protection Authority guidelines</li> </ul>	<p><b>Air Quality and Greenhouse Gas Assessment Report:</b></p> <ul style="list-style-type: none"> <li>The report is prepared in accordance with the EPA's <i>Approved Methods for the Modelling and assessment of Air Pollutants in NSW, 2005</i>.</li> <li>Section 4.3: This section sets out proposed emission limits for the facility including limits set by <i>the Environment Operations (Clean Air) Regulation, 2010 (CAR,2010)</i> and the <i>Industrial Emissions Directive (IED) (2010/75/EU)</i>. Subject to the development being approved it is recommended that emission limits from these documents be included as conditions in the Environment Protection Licence (EPL) for the facility and require compliance on a continuous basis (100<sup>th</sup> percentile concentrations with averaging time no greater than 1 hour).</li> <li>Section 4.3: The basis for prescribing emission limits as set out in Table 4-2 and Table 4-3 appears to be identifying limits from <i>2010/75/EU</i> (Table 4-3) and then replicate <i>CAR,2010</i> (Table 4-2) limits for the same pollutants. The Human Health Risk Assessment Report also includes other pollutants eg PAHs and ammonia (NH<sub>3</sub>). It is recommended that all relevant pollutants be included in the assessment. The same applies to pollutant ambient air quality criteria as set out in Section 4.4. H<sub>2</sub>S is a notable exclusion from Section 4.4 and it is not included in the Odour Assessment either. It is noted that there are no half hourly limits for Cadmium and Mercury. <i>2010/75/EU</i> includes 0.5 – 8-hour criteria for these pollutants.</li> <li>Section 7.3: Table 7-4 should include model averaging times for each pollutant emission rates for all relevant pollutants that criteria are outlined for (either in <i>CAR,2010</i>, <i>2010/75/EU</i> plus those where ambient air quality criteria are specified).The reason for this is to provide clarity as to how the criteria have been assessed in the modelling, noting that <i>CAR,2010</i> and <i>2010/75/EU</i> have different criteria and averaging times for the same pollutants (in some cases). The calculated emission rates per stack are stated to be based on concentration limits in Table 4-3 and flue gas flow rates in Table 7-8 (from Fichtner 2014). The Fichtner 2015 Concept Design Report contains different flow rates to those shown in Table 7-8. This needs to be checked and emissions and modelling revised accordingly.</li> <li>Section 8.1: AERMOD has been used to predict the ambient concentrations of substances emitted to air from the facility. There is a high frequency of calm conditions in the Project area (around 30% according to Figure 5-1) and the assessment should confirm that the model is able to accurately predict impacts during these calm conditions.</li> </ul>

Director General Requirements	Jacobs Review: (1) Air Quality and Greenhouse Gas Assessment Report, (2) Odour Assessment Report, (3) Ozone Impact Assessment Report, (4) Human Health Risk Assessment Report
	<p><b>Odour Assessment Report</b></p> <ul style="list-style-type: none"> <li>General: The odour assessment report follows the same assessment approach as the air quality report and in accordance with the <i>EPA's Approved Methods for the Modelling and assessment of Air Pollutants in NSW, 2005</i>. The same comments made with respect to modelling approach on the air quality report apply to the odour report.</li> <li>Section 6: This section discusses odour emissions rates from the Genesis Facility and the proposed EfW plant. It states that fugitive odour may be released from the tipping hall when the roller door is opened to allow access to the facility but this should be minimal as the building will be maintained under negative pressures. Negative pressure infers air will be drawn into the building but there is no discussion in the odour report on how this will be extracted and whether any extraction air will be odorous. The air quality assessment states that combustion air for the furnace will be extracted from the tipping hall, but it is recommended that ventilation be discussed more fully.</li> </ul> <p><b>Ozone Assessment Report</b></p> <ul style="list-style-type: none"> <li>The ozone impact assessment is an EPA requirement and not specifically required by the DGRs. As such only brief commentary is provided as part of this review.</li> <li>The approach of providing both Level 1 and Level 2 ozone assessment is consistent with EPA policy as set out in <i>EPA's Approved Methods for the Modelling and assessment of Air Pollutants in NSW, 2005</i> and the document <i>Tiered Approach for Estimating Ground Level Ozone Impacts from Stationary Sources</i> (Environ, 2011).</li> </ul>
<ul style="list-style-type: none"> <li>A description of construction and operational impacts, including air emissions from the transport of materials</li> </ul>	<p><b>Air Quality and Greenhouse Gas Assessment Report:</b></p> <ul style="list-style-type: none"> <li>Section 9.1: There appears to be some inconsistency between the relationship of emission rates and model results as presented in the 2014 and 2015 air quality modelling reports. For example in the 2014 report cadmium (Cd) was stated to have an emission rate of 0.003 g/s (or 0.0035 g/s) per stack and a maximum GLC impact of 0.000010 <math>\mu\text{g}/\text{m}^3</math>. In the 2015 report Cd is stated to have an emission rate of 0.007 g/s per stack and an impact of 0.000014 <math>\mu\text{g}/\text{m}^3</math>. These results are inconsistent, and assuming the 2014 modelling has just been updated to reflect the higher emission rate an impact of 0.000020 <math>\mu\text{g}/\text{m}^3</math> would be expected. This is an important consideration and needs to be clarified as the GLC criteria for Cd is 0.000018 <math>\mu\text{g}/\text{m}^3</math>.</li> <li>Section 10.3: This section sets out greenhouse gas (GHG) emission estimates. The GHG section determines the emissions from the proposed facility from the carbon content of the fuel. The report references the source of this data, as the 2014 Fichtner Concept Design Report and is based on the proposed fuel mix. It is noted that the concept design report has been updated (Fitchner, 2015) and these data are now incorrect (i.e. the GHG report has not been updated following changes to the concept design report). There are a couple of issues with these</li> </ul>



Director General Requirements	Jacobs Review: (1) Air Quality and Greenhouse Gas Assessment Report, (2) Odour Assessment Report, (3) Ozone Impact Assessment Report, (4) Human Health Risk Assessment Report
	<p>data – linked to the waste report, namely the waste composition (and therefore chemical analysis) is the same for C+I and C&amp;D wastes. This shouldn't be the case. It is likely that an assumption has been made that the residue (i.e. what is left post removing recyclable material) is similar, but this is not explained anywhere in the reports that have been reviewed. The waste composition data for these material streams in NSW (or from NGER) is not used. It states in the Fichtner report that these data were 'provided from TNG' but has no other reference. It is recommended that clarity on the source and accuracy of the waste composition data is provided. The waste combusted is set as 1,350,000 tpa. This is the maximum value (not the expected) but it is not stated that this is the case. The value does not correlate with the waste management report revised total of 552,500 for operation of lines 1 and 2 only (which is presumably what the revised application is targeting).</p> <ul style="list-style-type: none"> <li>• Section 10.3: The report considers the avoided emissions from electricity generation and export and avoided from landfill. <u>For electricity generation</u> as the facility will operate for some years, it would be considered prudent to assume a reduction over time in the carbon intensity of grid electricity. The carbon intensity of NSW grid is incorrectly stated as 0.86 kgCO<sub>2</sub>e/kWh not 0.88 kgCO<sub>2</sub>e/kWh and therefore carbon offset offered is overestimated. <u>For landfill</u>, no link is made to the waste report nor the Concept Design report to determine the likely mix of waste which has avoided landfill. This is especially relevant since the updated waste reports states that MSW will be targeted as well as C&amp;I and C&amp;D wastes. Additionally calculations for the degradable organic content (DOC) of the waste stream are assumed to be 'Garden and Green' 'for conservatism'. No information is presented as to why this value might be conservative. As more detailed waste composition data are available in the waste report, a more accurate value should be derived to ensure that offset emissions are not being overstated. The carbon content factor in this section is also outdated following updates to the concept design report.</li> <li>• Section 10.3: Landfill emissions are assumed to be emitted in one year. In reality, it will be some time of continuous landfilling before maximum emissions are reached (70+ years). If this exceeds the proposed life of the TNG facility, then the potential annual offset may be overestimated. It is recommended that a time-series for waste emissions in landfill should be produced, identifying the point at which the facility starts to emit less than the landfill would, and the cumulative balance over the intended life of the asset. Additionally as Method 1 under NGERS is specified, then this should be used in its entirety (with all defaults for carbon contents and waste composition). Whilst the report has been updated to state that a simple model has been used, this recommendation stands.</li> <li>• Section 10.3: No mention is made of methane capture or combustion from the landfill other than to acknowledge that some landfills capture and combust methane, but that this is not currently the case at the Genesis facility. This misses the point that it is the offset emissions that are of interest here (i.e. emissions from landfills that the</li> </ul>

Director General Requirements	Jacobs Review: (1) Air Quality and Greenhouse Gas Assessment Report, (2) Odour Assessment Report, (3) Ozone Impact Assessment Report, (4) Human Health Risk Assessment Report
	<p>waste would end up in if it were not ent to the EfW plant in the proposal. This is especially relevant given that the updated waste report highlights that MSW will be targeted, which is not currently disposed at the Genesis facility. Modern landfills would be expected to install and run either a landfill gas engine or flare to reduce emissions. This is especially the case for putrescible landfills, where methane generation rates support their use. This should be considered to ensure that the emissions offset from landfill are not overestimated.</p> <ul style="list-style-type: none"> <li>Section 10.3: The assessment of landfilling is based the likely final throughput of the TNG facility at capacity (1,350,000 tonnes per annum). However, the updated waste report states that the approval is just for lines 1 and 2 (525,000 tonnes per annum). Additionally no mention is made of the likely emissions (or otherwise) of the output of the TNG facility which needs to be landfilled.</li> </ul>
<ul style="list-style-type: none"> <li>A human health risk assessment covering the inhalation of criteria pollutants and exposure (from all pathways i.e., inhalation, ingestion and dermal) to specific air toxics</li> </ul>	<p><b>Human Health Risk Assessment Report</b></p> <ul style="list-style-type: none"> <li>Section 1.2: The Human Health Risk Assessment (HHRA) Report is generally in accordance with the 2012 enHealth document <i>Environmental Health Risk Assessment – Guidelines for assessing human health risks from environmental hazards</i> with some exceptions as discussed below.</li> <li>Section 6.6: Table 6-4 and Table 6-5 include emission rates used in the HHRA. It states that the emission rates assume the facility operates at IED limits, i.e. those set out in <i>2010/75/EU</i>. It is recommended that more detail be provided ion how these emissions were calculated and consistency with emissions modelled in the air quality assessment. As an example cadmium (Cd) is stated as being modelled with an emission rate of 3.482 µg/s (assumed for the total facility), this is significantly different to the 0.007 g/s Cd emission per stack in the air quality report.</li> <li>General: There is no clearly defied Exposure Assessment as required by <i>enHealth,2012</i>.</li> </ul>
<ul style="list-style-type: none"> <li>Details of any pollution control equipment and other impact mitigation measures for fugitive and point source emissions</li> </ul>	<p><b>Air Quality and Greenhouse Gas Assessment Report:</b></p> <ul style="list-style-type: none"> <li>Section 7.1.2 outlines arrange of emission control technologies that can be used for EfW facilities and provides a list of facilities and the controls they have in place. It states that Table 7-3 includes the flue gas controls that will be installed on the TNG EfW facility. Table 7-3 is a summary of controls across existing plants. It is recommended an additional table is includes that states the specific controls for this facility.</li> <li>There is no discussion of fugitive dust emissions, and their mitigation.</li> </ul>
<ul style="list-style-type: none"> <li>A demonstration of how the waste to energy facility would be operated in accordance with best practice measures to manage toxic air emissions with consideration of the European</li> </ul>	<p><b>Air Quality and Greenhouse Gas Assessment Report:</b></p> <ul style="list-style-type: none"> <li>The plant has been assumed to be designed to meet Industrial Emissions Directive 2010, rather than the Waste Incineration Directive 2000.</li> </ul>

Director General Requirements	Jacobs Review: (1) Air Quality and Greenhouse Gas Assessment Report, (2) Odour Assessment Report, (3) Ozone Impact Assessment Report, (4) Human Health Risk Assessment Report
<p>Union's <i>Waste Incineration Directive 2000</i> and the Environment Protection Authority's draft policy statement <i>NSW Energy from Waste</i></p>	<ul style="list-style-type: none"> <li>• The plant has been assumed to meet the final NSW Energy from Waste policy, not the draft. (EIS pg 67-72).</li> <li>• The Genesis Xero Waste Facility generates uncontaminated wood waste and source separated green waste, but these are not proposed to be fired in the EFW plant. If they are proposed to be fired, (as is likely a higher resource recovery outcome for these low value materials), it should not be necessary to seek and exemption, as they will be fired in an authorised EFW plant.</li> <li>• The auxiliary fuel is now nominated as Natural Gas, but the EIA is not consistent in this regard, and in other parts it has been assumed to be diesel.</li> </ul>
<ul style="list-style-type: none"> <li>• An examination of best practice management measures for the mitigation of toxic air emissions; and details of the proposed technology and a demonstration that it is technically fit for purpose.</li> </ul>	<p>Refer above.</p>

### 3.4 Noise

Director General Requirements	Jacobs Review: Noise Impact Assessment Report
<ul style="list-style-type: none"> <li>Description of all potential noise sources such as construction, operational, on and off-site traffic noise</li> </ul>	<p>Noise sources for the proposal have been well documented and described in the noise impact assessment. Consideration of construction activities against several scenarios has been provided including an outline of typical plant and equipment for each scenario.</p> <p>Operational noise impacts have been assessed against a single scenario only but include the effects of adverse winds and temperature inversions for the site. A single operational scenario is expected to be sufficient given the static nature of day to day operations.</p> <p>The road traffic noise impacts for offsite vehicle movements have been assessed against surrounding roads and motorways. The assessment of these impacts is somewhat superficial, but considered to be adequate in regards to the level of impact expected from the additional traffic generated by the proposal.</p>
<ul style="list-style-type: none"> <li>A quantitative noise impact assessment including a cumulative noise impact assessment in accordance with relevant Environment Protection Authority guidelines</li> </ul>	<p>A quantitative assessment of construction and operational impacts has been undertaken for the proposal. The assessment has considered the cumulative impacts from both existing Genesis Xero Waste Facility and the recently approved but unbuilt Hanson Development, in conjunction with the predicted impacts from the proposed EFW facility. The assessment discusses the effect of modifying factors eg. impulsive, tonal or low frequency noise for the proposal and noise data does include a spectrum for the sound power levels used in the assessment to determine potential for these impacts. With respect to the low frequency noise criteria offered in the assessment (Broner, 2011), rather than Industrial Noise Policy (INP) the EPA should provide confirmation that this is acceptable. Low frequency noise impacts should also be assessed and compared to the stated criteria.</p>
<ul style="list-style-type: none"> <li>Details of noise mitigation, management and monitoring measures</li> </ul>	<p>It is recommended that operational noise impact mitigation measures outlined in the report should be adopted for the proposal. In addition to the report details, it is further recommended that a noise management plan be developed for the site outlining measures and protocols for minimising noise emissions.</p> <p>Specific noise monitoring measures for operational compliance were noted in the report, which detailed initial quarterly monitoring. This section of the report also outlined monitoring procedures, record keeping and investigation of non-compliances. Construction monitoring is mentioned, however, detailed monitoring recommendations for this phase of work are not included in the report.</p>

### 3.5 Soil and Water

Director General Requirements	Jacobs Review – (1) Brookfield Multiplex Construction Environmental Management Plan 2014, (2) CEMP Water Quality Management Sub-Plan 2014, (3) IGGC EIS Proposed Energy from Waste Facility Soil and Water Assessment 2014, (4) ADE Consulting Group Phase 1 Preliminary Site Investigation 2014, (5) ADE Consulting Group Phase 2 Detailed Site Investigation 2014
<ul style="list-style-type: none"> <li>Description of the water demands and a breakdown of water supplies</li> </ul>	<ul style="list-style-type: none"> <li>The plant water demands are 25.6 m<sup>3</sup>/h or 205,000m<sup>3</sup>/ann. (Concept Design pg 25). This is based on a “typical” EFW facility however it does not consider specific demands of the TNG plant.</li> <li>EIS (pg 29) differs with a water demand of 153,000 m<sup>3</sup>/ann, but the consumptions only sum to 137m<sup>3</sup>/ann.</li> <li>The water supplies are mostly from on-site detention, roof water, with the balance from Sydney Water</li> <li>No consideration has been made of the OSD quality and its suitability for the water treatment plant, or the use of recycled water from offsite.</li> <li>The ash water consumption (Concept Design p21) is between 35 to 64 ML/ann, but the Soil and Water assessment concludes dry ash handling will be used with a consumption of only 21 ML/ann.</li> </ul>
<ul style="list-style-type: none"> <li>Description of the measures to minimise water use</li> </ul>	<ul style="list-style-type: none"> <li>Air cooled condensers have been assumed in the Concept Design to reduce the plant water consumption.</li> <li>Blowdown heat recovery has been suggested (Concept Design pg 10), but without a heat balance it is not certain whether this is included in the plant design.</li> <li>Water consumers are the water treatment plant, boiler makeup, facility ablutions, general hose down and maintenance requirements, lime injection.</li> </ul>
<ul style="list-style-type: none"> <li>A detailed water balance</li> </ul>	<ul style="list-style-type: none"> <li>No water balance has been provided.</li> </ul>

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<ul style="list-style-type: none"> <li>Description of the construction erosion and sediment controls</li> </ul>	<p>Results of previous contamination investigations undertaken by ADI P/L (1995) indicated contamination of soils and sediments in the eastern area of the site and within direct drainage pathways due to the adjacent asphalt manufacturing plant.</p> <p>Recent Phase 1 and 2 contamination investigations (ADE Consulting P/L 2014) conclude that no contamination of the site from potential contaminating practices undertaken on and off site have occurred and that concentrations of potential contaminants with soil, sediment and surface water samples were below the applied criteria.</p> <p>ADE Consulting conclude that the site is deemed suitable for the commercial/industrial land use and the proposed development.</p> <p>The sampling densities imposed for the Phase 2 sampling and analytical event are not considered to be in accordance with the NSW EPA Sampling Design Guidelines (1995). Vegetation appears to have prohibited access and for inspection and assessment at many areas on site. The relatively shallow depth of assessment (0.5 meters below ground surface) does not allow for an opinion on the potential depth of contamination. Ecological investigation levels have not been applied to soil samples for all of the soils assessed.</p> <p>Based on the relatively low sampling density compared to the size of the site, and the limits for access across many areas of the site, there remains the potential for unexpected occurrences of contamination to be encountered during the construction phase.</p>

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<ul style="list-style-type: none"> <li>A description of the surface and stormwater management system, including on site detention, and measures to treat or reuse water</li> </ul>	<p>Brookfield Multiplex state that they operate under ISO14001 accredited environmental management system (EMS), including regular inspections, audits and reporting requirements. Under the application, a Construction Environmental Management Plan (CEMP) has been submitted. The CEMP nominates environmental management strategies to form the key controls under the CEMP., including:</p> <ul style="list-style-type: none"> <li>Risk registers to identify aspects and impacts and risk workshops;</li> <li>Environmental management plans and environmental work method statements;</li> <li>Environmental site inspections.</li> </ul> <p>Key erosion and sediment controls are to be contained in the Erosion and Sediment Control Plan (CEMP Appendix C). No details regarding any specific erosion or sediment controls are contained in Appendix 6. Detailed erosion and sediment control plans and systems are required.</p> <p>Specific development area is approximately 20 Hectares. Earthworks associated with general site construction activities, including:</p> <ul style="list-style-type: none"> <li>Bulk earthworks and piling;</li> <li>Internal roadways, underpass connection between TNG Facility and Waste Facility;</li> <li>Staff amenities;</li> <li>Staff carparking</li> <li>Water detention and treatment basins,</li> <li>Sewerage, water supply, communication and power supply services.</li> </ul> <p>Dewatering from groundwater wells is proposed to lower water levels to facilitate construction activities. Direct discharge to stormwater and the Ropes Creek Tributary is proposed. There is insufficient detail contained in the EIS to support direct discharge to Ropes Creek Tributary. There is insufficient detail contained in the EIS to support dewatering activities to facilitate excavations below the water table. Detailed investigations to support dewatering and the disposal of pumped/collected water is required.</p>



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<ul style="list-style-type: none"> <li>An assessment of potential surface and groundwater impacts associated with the development including the details of impact mitigation, management and monitoring measures</li> </ul>	<p>CEMP Water Quality Management Sub-plan includes objectives, targets and KPI's associated with surface and groundwater quality.</p> <p>Assessment of potential surface and groundwater impacts is contained within Proposed Energy from Waste Facility, Eastern Creek (SSD6236) Soil and Water, IGGC P/L June 2014. Key features associated with stormwater management include:</p> <ul style="list-style-type: none"> <li>Majority of site surfaces will be impervious, with open gutters pits and underground pipes to an on-site detention basin located in south west corner of development area;</li> <li>EfW, lay-down areas substation and roadways linked by piped stormwater drainage systems to the bio-retention basin.</li> </ul> <p>Tipping hall design floors are higher than roadway levels and containment systems are proposed to deliver all drainage to an internal drainage containment system. Volumes of leachate and/or contaminated process water generated as part of the EfW process are stated to be small and be collected and evaporated via the thermal treatment process. Effective separation of stormwater drainage from potentially contaminated areas is required to ensure the stormwater drainage system is protective.</p> <p>Proposed re-use of stormwater run-off on site is expected to require 100% of available collected water.</p> <p>Discharge of excessively high peak flows leading to increased erosion and flood risk has been identified in the EIS. Inadequate treatment or characterisation of discharged stormwater or groundwater could impact on the receiving aquatic environment.</p> <p>Risks to groundwater quality are considered low, based on the proposed impermeable surfaces over the majority of the site and the proposed surface water collection and containment systems.</p> <p>Further investigation of salinity conditions should be undertaken to identify high risk salinity areas close to drainage lines and monitoring programs designed to establish baseline and operational water quality values.</p>

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<ul style="list-style-type: none"> <li>An assessment of any potential existing soil contamination</li> </ul>	<p>Potential for the EfT process to result in contamination of stormwater drainage system if effective separation of stormwater drainage from potentially contaminated areas is not undertaken. These areas include:</p> <ul style="list-style-type: none"> <li>Tipping hall;</li> <li>Flue gas treatment and energy recovery system;</li> <li>Residue handling and treatment area</li> <li>Areas/systems used for handling, treatment and disposal of contaminated process water, including any leachate generated in the tipping hall.</li> </ul> <p>Laydown area pads no 1 through 5 are all up-gradient from Ropes Creek Tributary. The bio-retention basin is directly adjacent to and up-gradient to the Ropes creek Tributary. These areas pose a significant risk to water quality and the local catchment, if not managed appropriately.</p> <p>Measures to prevent contamination of stormwater include:</p> <ul style="list-style-type: none"> <li>EfW process to be undertaken within roofed buildings, limiting the potential for leaching of contaminants from incoming waste or process residue;</li> <li>Design floors, internal drainage systems grated drains wash-down areas Tipping hall design floor and related infrastructure is designed to be contained within a closed system to allow collection and reuse of stormwater.</li> </ul> <p>Proposed development includes excavations of up to 15 meters below ground surface. CEMP Water Quality Management Sub-plan includes incomplete information regarding the proposed abstraction of groundwater for construction purposes.</p> <p>Water demand for the EfW plant is understood to be provided by collection and storage of rainwater runoff from roof areas, re-use of stormwater from bio-retention basin and top-up from Sydney Water mains.</p> <p>Previous land usage has altered the flow regime and water quality of the riparian corridor and Ropes Creek Tributary. Further information is required regarding surface water quality and groundwater quality. Additional baseline monitoring should be undertaken to allow appropriate pre-development and operational monitoring requirements.</p>