CLEANAWAY'S WESTERN SYDNEY ENERGY AND RESOURCE RECOVERY CENTRE PROPOSAL
(SSD-10395)

LMS ENERGY SUBMISSION

Prepared for the NSW Department of Planning, Industry and Environment

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1. Introduction

Thank you for the opportunity to provide comment on the proposed Western Sydney Energy and Resource Recovery Centre (SSD-10395).

The Cleanaway thermal combustion energy-from-waste (EfW) proposal's key benefits are cited as reducing CO_2e emissions by more than 390,000 tonnes per year and the reduction of waste to landfill by up to 500,000 tonnes per year.

LMS Energy questions the scope and validity of core assumptions and processes used to calculate the proposal's benefits and hence whether this thermal EfW facility can serve the public interest.

By LMS Energy's assessment, a **series of essential calculation errors have been made in the EIS** and an incorrect baseline used, such that if this proposal proceeds:

- **it will result in significantly more carbon emissions in the near future than under the current baseline, emitting around 80,000 tonnes CO_2e more each year (that is, some 467,000 tonnes more than reported in the EIS)** once the baseline is adjusted to include landfill biogas capture.
- the **relative emissions will progressively further worsen across the facility's lifetime** as:
  - increased volumes of organic waste are directed away from landfill (as sought through federal and NSW waste and circular economy policies and climate change policies).
  - an increasing share of the NSW electricity market is met by natural gas and renewable sources, such as solar and wind, under the NSW Government's energy policies.
- there is an **increased probability that waste reduction and resource recovery goals will be undermined,** as has occurred in Europe, such that the National Waste Policy 2018 and NSW Waste Strategy and Circular Economy objectives will be hindered.
- there will be a **decreased opportunity for capture of nutrients and renewable energy from organic waste.**
- the **proposal has a significant opportunity cost of around $1.5 billion** across its lifetime that would have been available for sound waste management practices and broader community benefits, but instead will be redirected to private profit.
- **landfill will still be required** for residual wastes arising from thermal EfW.

As Western Sydney Councils and the NSW State Government provide for future population's waste infrastructure and management needs, they are striving to also achieve better use of waste and protect against climate change. Approval of this thermal EfW facility would have long-term financial and environmental consequences for future generations given its scale, feedstock requirements and investment cost.

There are alternative pathways and technologies for municipal waste which better support carbon emission reductions and the diversion of waste materials to higher order uses across time at less cost than large volume thermal EfW.

2. Who are LMS Energy?

LMS Energy is Australia's **largest emissions reducer**[1] and **most experienced EfW company**, having operated for almost 40 years in the waste and bioenergy sectors. **100%** Australian owned, the company owns/operates **50 biogas facilities** across Australia and New Zealand. It has also recently established six solar farms on Australian landfills. **To date, LMS has abated more than 40 million tonnes of carbon from the earth's atmosphere.**

It is important to note that LMS does not own or operate landfills. LMS is focused on delivering circular economy outcomes through energy recovery from organic waste. Further information is available at www.lmsenergy.com.au.

Landfill biogas is 100% renewable, deriving wholly from natural processes for organic wastes, is the lowest cost EfW technology in Australia and provides baseload electricity to aid grid stability and power homes and businesses. **Overall, the landfill biogas sector provides around 30% of Australia's total carbon abatement[2].**

As we all strive to implement policy and actions to avoid and mitigate climate change for our future, including through seeking a circular economy, LMS Energy hopes we keep building from the outcomes already being achieved in the waste sector. Accordingly, there are key corrections needed within a number of elements in the EIS to allow accurate assessment of the proposal's comparative outcomes.

3. Essentional calculation errors for emissions and offsets

In reviewing the EIS, LMS Energy has found a number of inconsistencies and apparent calculation errors.

Key amongst these are:

- The EIS does not consider its emissions relative to contemporary EfW landfill biogas capture activity and energy generation. Once this baseline is used, it reduces the proposal's net benefit by around 390,000 tonnes CO_2e (as discussed in Section 5 of this submission).
- The nature of the waste feedstock (particularly the proportion of fossil fuel derived waste) is critical to the facility's predicted emissions and predicted offset calculations. A number of inconsistencies and calculation errors exist in relation to this waste feedstock which result in a net increase to facility emissions of around 80,000 tonnes CO_2e. These issues include:
  - Intended waste feedstocks for the facility are variably reported and used in different parts of the EIS (for example, in the Greenhouse Gas and Energy Efficiency Report, Table AF4 (p37) references a 50:50 split between MSW and C&I, whilst Table 2 (p22) and Table A1 (p34) give a 30:70 split, repeated in Chapter 18).
  - The facility's renewable offsets appear to have been calculated from total electricity exported from the facility rather than only the renewable portion of its waste received (for example, in Table 5 (p25) and Table A1 (p34) of the Greenhouse Gas and Energy Efficiency Report) [3].
  - The fossil fuel derived component of waste is presented as 12% for MSW and 19% for C&I (for example in Table A3, p36, of the Greenhouse Gas and Energy Efficiency Report) and these figures appear to have been used for the subsequent facility emission figure of 307,431 tonnes CO2e presented in Table 4 (p23). However, using the waste makeup detailed in Table A3 and the 30:70 split, shows around 54% of total emissions would be fossil fuel derived.

Hence, LMS Energy estimates the facility **may have emissions around 467,000 tonnes CO_2e per year more than reported** in the EIS. **This difference means it could have worse emission outcomes than the current baseline**.

[1] https://offsetsmonitor.org.au/ - Issued Australian Carbon Credit Units (accessed on 12/11/2020). LMS Energy is responsible for around 15% of total issued ACCUs.
[2] https://offsetsmonitor.org.au/ - Issued Australian Carbon Credit Units (accessed on 12/11/2020).
[3] The nature of how offsets are calculated is discussed in this submission under 'Avoided grid emissions'.

4. Consideration of alternatives – the ‘do-nothing’ option (chapter 2.6.1)

The ‘do-nothing’ option is summarily dismissed in one paragraph, based around the statement that NSW policies identify ‘the treatment of waste for the purposes of energy as a more suitable option compared to landfill’.

The EIS subsequently fails to acknowledge that both the Woodlawn and Lucas Heights landfills, reported elsewhere in the EIS as currently servicing Western Sydney, are contemporary, highly engineered landfills with biogas capture and power generation systems. The respective operators of these landfills indicate high gas capture from these sites[4].

Furthermore, if a new landfill was to be established to service Western Sydney’s waste management requirements, rather than the proposed thermal EfW facility (given the suggested closure of Lucas Heights in 2033), its construction and operation would be held to modern landfill standards, ensuring minimal environmental issues and facilitating high landfill biogas capture and associated power generation.

The failure to consider these circumstances is an important oversight as it has affected the ‘baseline’ considerations subsequently used for assessment of environmental outcomes across the EIS.

When assessing the implications of this oversight, **LMS has found that the issue has been compounded by a series of essential calculation errors in the EIS**, including attributing offsets to the total amount of waste received (rather than only the renewable portion) and miscalculating the fossil fuel derived proportion of waste. These are detailed in Appendix 1.

The outcomes reported in the EIS are highly inaccurate relative to a business as usual scenario. **In fact, the proposal may have more than 460,000 tonnes of CO_2e emisisons per year than reported** in the EIS.

This difference means a worse emission outcomes of around 80,000 tonnes CO_2e per year from the current baseline. The character of these differences is explained in Figure 1 on page 7.

5. Greenhouse gas and energy efficiency (chapter 18) – Key claimed proposal benefits

The emissions outcomes of any thermal EfW proposal are dependent upon:

1. Avoided landfill emissions
2. Direct emissions from the combustion of fossil fuel derived waste
3. Avoided grid emissions from offsetting grid electricity generation

These elements warrant separate and explicit consideration in an EIS as they are sensitive to changes in the applicable ‘baseline’, waste composition and energy supply mix. They are discussed in turn below.

i. Avoided landfill emissions

Similar to other thermal combustion EfW proposals, the EIS for this proposal relies heavily on the argument that burning rather than burying our waste will produce a beneficial emissions outcome.

Landfill emissions depend on biogas capture at the relevant local landfill(s) and the amount of organic waste received. Landfill biogas is generated from the breakdown of organic waste in landfill. Typically, some proportion of the biogas generated is captured and flared or used to generate electricity: this amount relative to total biogas generated provides the ‘biogas capture rate’.

[4] See for example, https://www.veolia.com/anz/our-services/our-facilities/landfills/woodlawn-bioreactor-facility and https://www.suez.com.au/en-au/who-we-are/suez-in-australia-and-new-zealand/our-facilities/engineered-landfills-and-smart-cells (both accessed on 12/11/2020).

In calculating comparative emissions, the EIS has used an assumed landfill biogas capture rate of 46.2%. This capture rate is inappropriately based on an average of all Australian landfills operations. Using this average is highly misleading due to:

- the figure being diluted by the high number of small landfills in Australia (typically <10 tonnes/day) without or with only very limited gas capture, and
- the capture rate for the average taking into account all 'old' waste that may have been deposited in poorly developed landfills decades ago[5].

For accurate comparative performance, the EIS's emissions calculations need to use a biogas capture rate that reflect the practices at landfills from which the proposed facility will divert waste. In this case, it should use the existing modern landfills at Lucas Heights and Woodlawn and a hypothetical new landfill established to contemporary standards (given Lucas Heights' forecast closure in 2033).

Notably, biogas capture rates at modern landfills, which are highly engineered containment systems, are likely to exceed 80%. Indeed, with contemporary landfill engineering and regulated management, even greater than 90% biogas recovery is possible from new waste[6]. These capture rates have been demonstrated by LMS using actual, tested data from the Wollert Landfill, Victoria[7] and is representive of many sites across LMS's portfolio of 50 projects.

The landfill bioenergy produced from landfill sites also offsets grid emissions from other electricity generation sources. Compounding the inaccuracy of its baseline comparison, **the EIS fails to include these landfill bioenergy grid offsets despite all major Sydney landfills having bioenergy generation** (while overstating offsets from the proposal's electricity generation as discussed below).

Adoption of a baseline with a biogas capture rate representative of modern landfills (85%), and recognising existing electricity offsets, has a significant affect on the comparative outcome of the proposal as set out in Figure 1[8].

Under the revised scenario depicted in Figure 1, **the proposal offers no abatement of carbon and has a negative emissions impact of around 80,000 tonnes CO_2e per year.**

This emissions profile is predicted to become worse as the proportion of organic material in the residual waste stream decreases over time (as discussed in direct combustion emissions below and in Figure 3).

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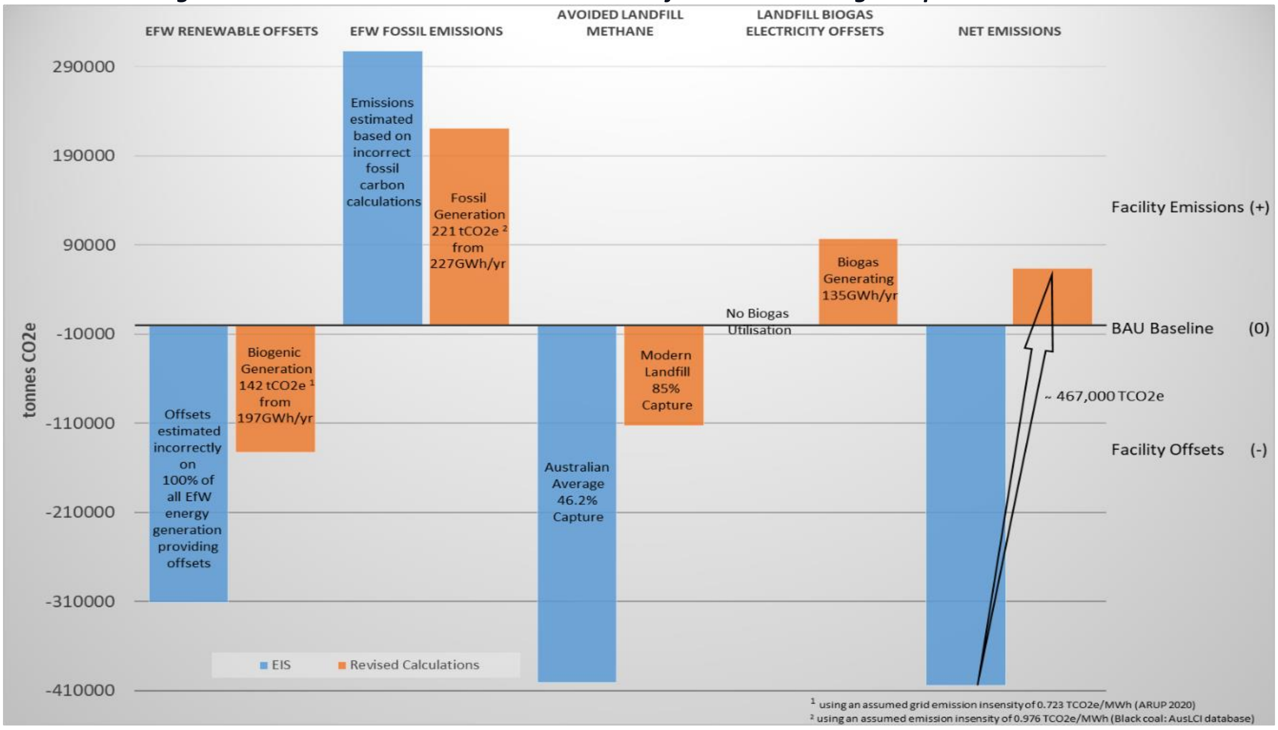
[5] Given this, even the average capture rate is improving markedly across time so any possible use of it would need to be forward-looking, not static.
[6] Solid Waste Association of North America (2007) Landfill Gas Collection Efficiencies and Spookas, K et al (2006) Waste Management Vol 26 pp516-525.
[7] Hyder Consulting (2010) Comparative Greenhouse gas life cycle assessment of Wollert Landfill, Final Report.
[8] Even if the EIS's existing figures are used relative to this baseline, emission benefits reduce to an almost negligible level.

Figure 1 – Emissions outcomes relative to landfills with 85% biogas capture rates and



revised calculations to reflect use of waste with 54% fossil fuel derived content

ii. Direct combustion emissions

The EIS indicates that the proposed facility will burn both organic and fossil fuel derived wastes, such as plastics, for energy. The potential make-up of these in the immediate and longer-term has a significant effect on the facility's emissions. The waste mix across time is significant as emissions from the combustion of organic wastes are not counted towards a facility's emissions contributions (since these materials would otherwise breakdown).

Figure 1 demonstrates expected facility emissions with an average of 54% fossil fuel derived wastes.

Under the National Waste Policy Action Plan 2019, Australia is seeking to halve organic waste to landfill by 2030, which would bring average total organic content to around 30%. Complementing this, the recently released report, *The circular economy opportunity in NSW*[9], highlights organic waste as an area of high potential opportunity for promoting a circular economy. The EIS also recognises that the share of organic and FOGO collections is expected to increase. In NSW, successful recovery at this scale this could see around 1 million additional tonnes of organic material redirected away from disposal/landfill per year[10].

Declining organic content in the residual waste stream, and hence an increased share of fossil-fuel based wastes, would result in higher direct combustion emissions from the proposal. Figure 3 shows these trend impacts for a declining organic share in MSW (in an increased renewables environment).

The static nature of the EIS's approach and failure to fully consider the changing of this waste mix over time for emissions is misleading, particularly given the long life span of these facilities, the Federal and NSW Government

[9] NSW Circular (2020) The circular economy opportunity in NSW.

[10] Noting a 2017-2018 total waste to landfill of 7.48M tonnes per PwC (2019) NSW Waste Sector Volume II: Situational Analysis for the NSW Government and an assumed current composition of around 45% organic material.

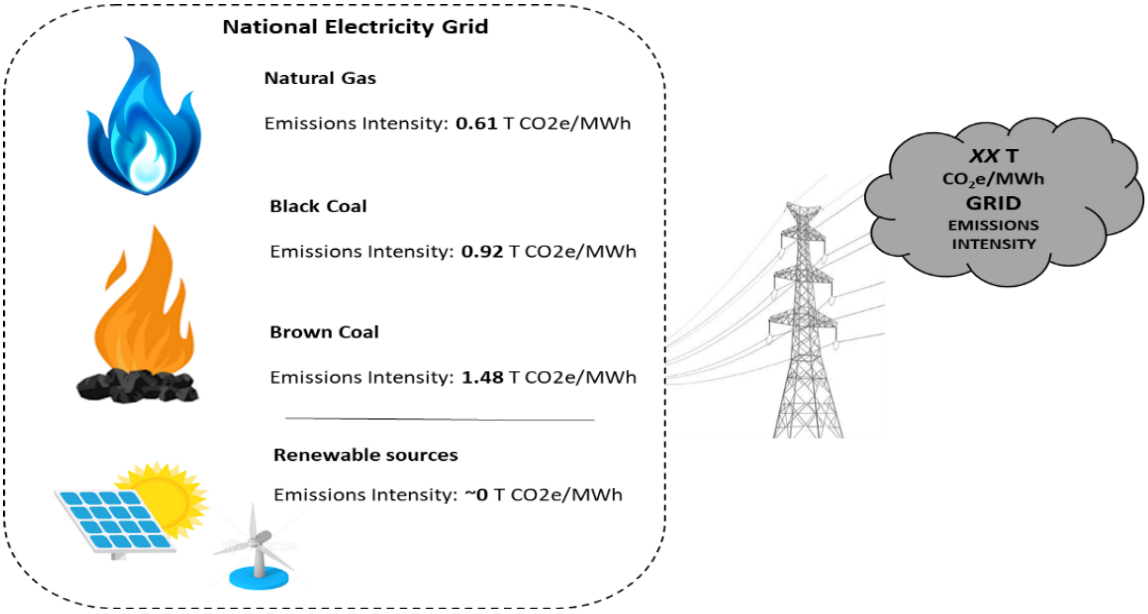
stated objectives to reduce organics from the residual waste stream and the significant emissions impacts this has on the proposal.

It is also noted that the energy and associated emissions required for treatment/disposal of incinerator bottom ash (IBA), flue gas treatment residues (FGTr) and boiler ash arising from combustion to enable their reuse or safe disposal have not been set out in the EIS analysis.

iii. Avoided grid emissions

The proposal's emissions profile includes "avoided grid emissions", which arise from the project's energy generation offsetting other electricity sources. As such, this measure is dependant on the sources of electricity generation actually being used for the grid. The greater the proportion of renewable sources in use, the lower the emissions intensity of the grid (and therefore a lower impact of any "avoided grid emissions" offset). Figure 2 depicts the calculation of emission intensity.

Figure 2 – Grid emission intensity (tonnes CO2e/MWh) derives from the mix of power sources in use



The EIS uses an emission intensity of just under 0.73 tonnes CO2e/MWh. It has derived this figure as potentially relevant for NSW at 2024 when the facility seeks to commence operation[11]. However, the EIS does not assess the implications of the likely offset reductions that will occur across the proposed facility's lifetime as NSW achieves an ever increasing share of renewable energy and carbon reductions.

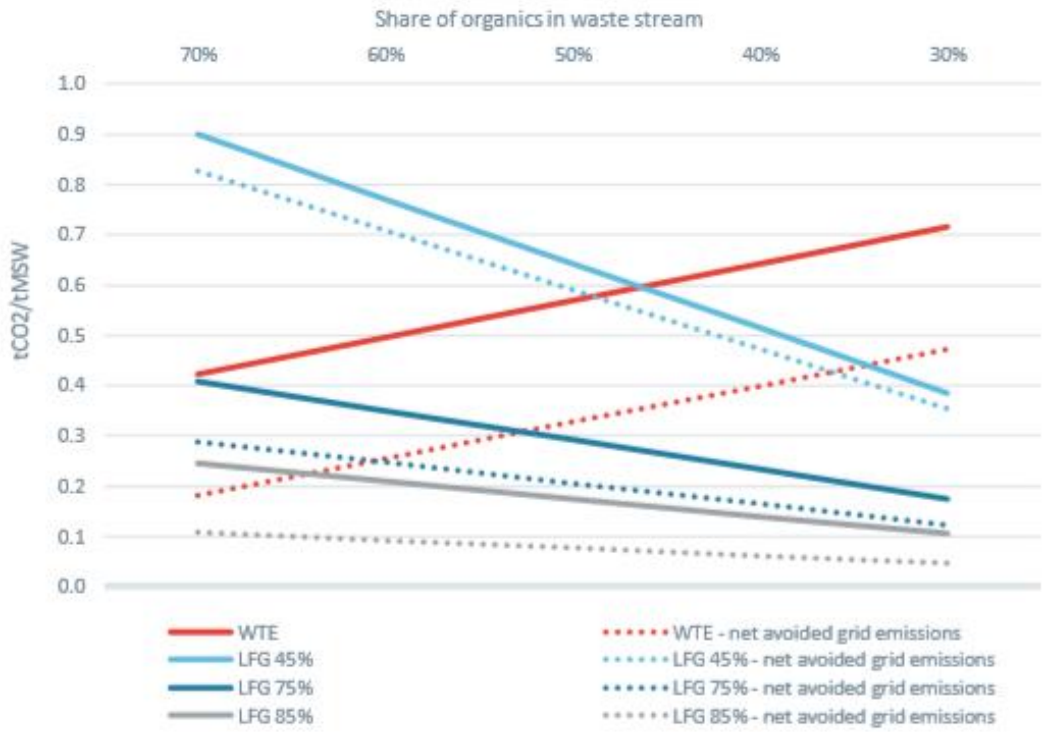
As high emission electricity sources continue to be replaced by renewables and natural gas as NSW pursues net zero emissions by 2050, including a 35% reduction on 2005 levels by 2030[12], the emissions intensity of the grid will fall. With a reducing emissions intensity, the purported thermal EfW benefits from avoided electricity emissions would also reduce over time. Thus, fully considering the likely future emissions intensity, derived from NSW's energy targets across the intended lifespan of the facility, is essential for an accurate assessment of the likely emisisons outcomes that this proposal could achieve.

[11] National grid emissions intensity is already lower than this and will decrease further by 2024.
[12] NSW Government (2020) Net Zero Plan Stage 1: 2020-2030. A 35% reduction involves around 35.8MT.

LMS notes that landfill bioenergy offsets will also reduce under future electricity generation changes. However, a lower grid emissions intensity will reduce the avoided electricity benefits of thermal EfW by more than it will reduce comparable landfill bioenergy offsets: this is because thermal EfW derives energy from fossil fuel derived wastes as well as organic wastes. The proportional difference should be provided for in the assessment process.

For example, Figure 3 outlines the impacts of a declining organic share in MSW received by a thermal EfW facility (labelled WtE) and for landfill bioenergy systems (of varying capture efficiencies: 45%, 75%, 85%) at an emissions intensity of 0.4 tonnes CO2e/MWh. This emissions intensity is consistent with either gas generation or approximately a 50% mix of black coal and renewables.

Figure 3 - Impact of declining organic share (displacing electricity with emissions intensity of 0.4tCO2e/MWh)[13]



In Figure 3, the Y-axis shows emissions per tonne of MSW and the X-axis shows the proportion of organic waste. The solid lines reflect the direct emissions from WTE/EfW and landfill bioenergy (at varying capture efficiencies). The dashed lines are the net emissions for each waste management option after accounting for the electricity offsets associated with that option at an emissions intensity of 0.4tCO2e.

This figure demonstrates some very important findings:

- A landfill with power generation and capture rates of 85% or greater provides superior emissions outcomes compared to EfW/WTF when organic content is 70% of total waste received (which is higher than current levels). **Its relative benefits increase further as organic share declines (as predicted and proposed under the National Waste Policy Action Plan).**
- Even at an extremely conservative landfill biogas capture rate of 45%, EfW/WtE produces more emissions from MSW once the share of organics declines to around 35% of total waste received. The National Waste Strategy is

[13] Frontier economic calculations presented in Figure 3 in Frontier Economics (2020) Assessing emissions from waste to energy.

targeting 30% organics by 2030, at this point the proposal will result in a significantly worse emissions outcome than the current baseline activities.

6. Waste flows and achieving a circular economy

The EIS states that around 1.6 million tonnes of waste is sent to landfill from the Western Sydney region. Household recycling rates are reported as being 42% currently.

Chapter 5 of the EIS suggests that the proposal's feedstock strategy will be to target residual waste from source-separated sources. However, the EIS also observes that the proponent is seeking an authorisation from the NSW EPA under its Energy from Waste Policy for an increase to the maximum allowable percentage of residual waste from processing facilities receiving mixed MSW and mixed C&I waste. The EIS observes elsewhere (for example, Technical Report E Waste flow analysis for Greater Sydney) that just 5% recovery is considered best practice from such materials while the Policy infers some 60% should be recovered before combustion.

Like all thermal combustion EfW proposals, this facility will require long-term waste contracts for viability. The proponent indicates they will preferentially seek contracts where source-separation measures are in place but it is evident that most essential for the proposal needs will be sufficient contracted waste volumes. The implications of this need careful consideration – for example, if C&I waste comprises 70% of total waste received and 60% of that comes from businesses with source separation (per Chapter 5.4.1), that would still leave around 210,000 tonnes of commercial waste destined for thermal EfW, with only up to 10,500 tonnes to be removed by pre-processing.

Similarly, if contracts are entered into with Councils primarily without FOGO, even at 30% of total waste received, that could constitute a further 200,000 tonnes destined for thermal EfW with only up to 10,000 tonnes to be removed by pre-processing. This is despite awareness that if the material were subject to better, earlier separation, up to 60% may be recoverable. This has the potential to significantly delay or even de-rail actions to pursue a circular economy at multiple levels:

i. Waste generation

The European nations considered leaders in Combustion EfW (e.g. Finland, Denmark, Austria) actually fall behind the European average in terms of waste reduction, with many now unable to meet EU recycling targets.

By comparison, according to OECD waste data[14], Australia has seen its household waste generation rate reduce by six times the European average over the same period. In fact between 2000 and present day, Combustion reliant EU countries have gone from producing less waste per capita compared to Australia, to producing more waste.

Figure 4 - European thermal combustion EfW

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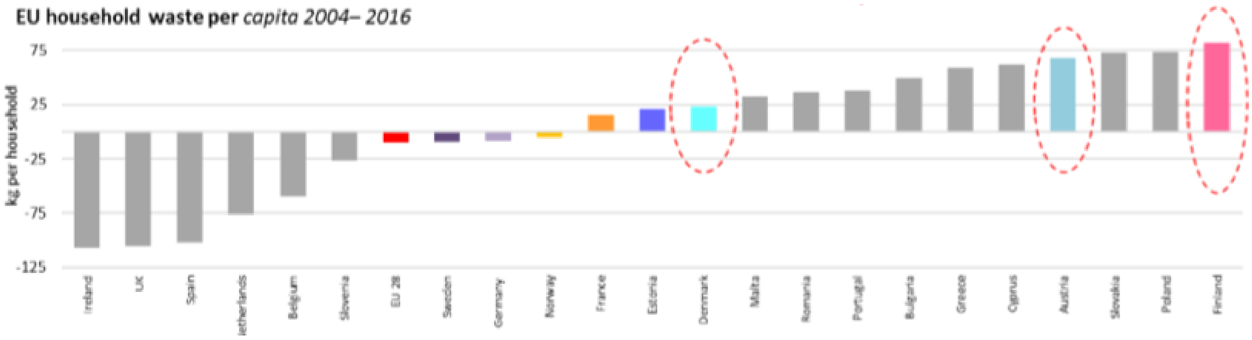
[14] Eurostat: https://ec.europa.eu/eurostat/data/database (accessed 16/4/2020).

Figure 5- EU household waste per capita



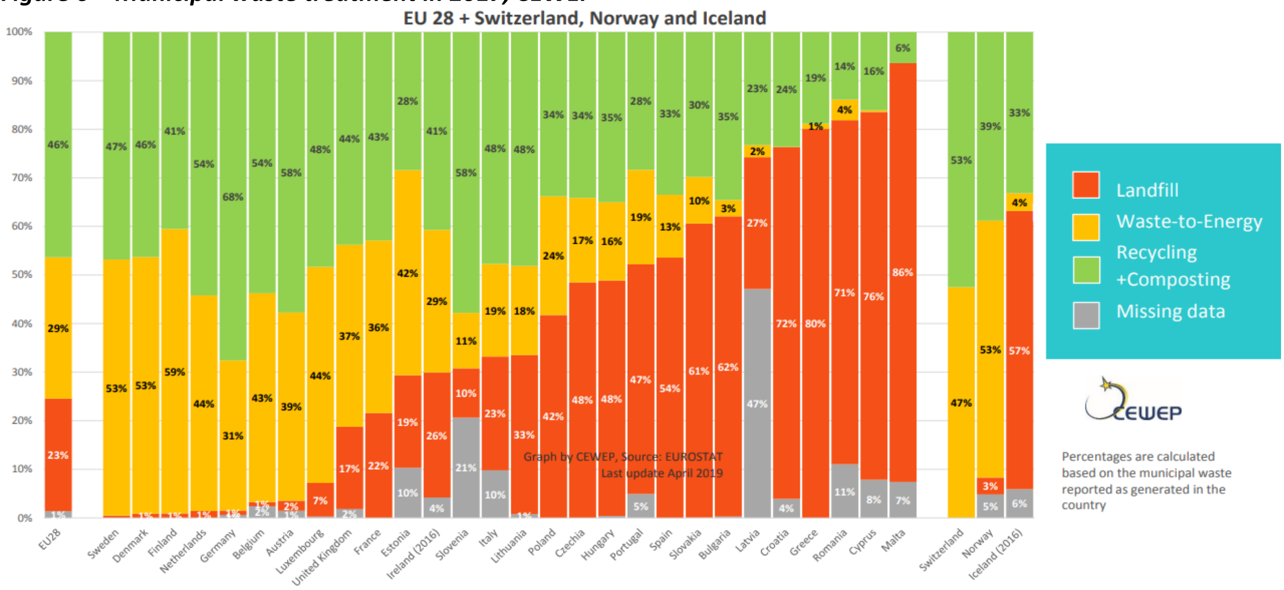
The outcome on waste generation is so pronounced that the EU is now pivoting from thermal combustion EfW facilities and recently advised its member states that such facilities are no longer eligible for clean energy subsidies as they are not considered to promote sustainability[15].

ii. Resource recovery options

A key tenet of both the circular economy and waste hierarchy is that when a material can no longer be used it should be recovered.

In Europe, where thermal combustion EfW is prevalent, recycling rates are typically lower (as set out in Figure 6) than parts of Australia that have encouraged a source separation approach (for example, South Australia achieved MSW recycling of 59% in 2018-2019 and an overall recycling rate of 83.9%[16] and it will be seeking 75% MSW recycling by 2025 underpinned by a series of targeted actions[17]).

Figure 6 – Municipal waste treatment in 2017, CEWEP[18]



[15] Environmental Justice Australia. 'Waste to Energy', What does it mean for communities and the Environment, 2019
[16] https://www.greenindustries.sa.gov.au/SArecycling.
[17] https://www.greenindustries.sa.gov.au/south-australias-waste-strategy-consultation-draft-2020-2025.
[18] https://www.cewep.eu/municipal-waste-treatment-2017.

Recognising that thermal EfW can restrict sustainability objectives, **the EU has recently explicity excluded these proposals from a list of economic activities considered for 'sustainable finance'** (ie, those that can make a substantial contribution to climate change mitigation and **which do no significant harm to other environmental objectives such as a transition to a circular economy, waste prevention and recycling**)[19].

A local, highly pertinent example of the negative impact that thermal EfW facilities are having on recycling choices is available from WA. The below extract is taken from a news article from "Perthnow" in May 2020, where the Mandurah Council in Perth has decided not to source separate organic waste for recycling despite State government incentives being available. The key driver for this decision was that this council intends to send all of its waste to a Combustion EfW facility, thereby eliminating the opportunity for nutrient recovery from the organic waste resource.

> *"The State Government has funded a Food Organic Garden Organic (FOGO) bin for six years, in addition to the usual waste and recycling bins. However, City of Mandurah chief executive Mark Newman said the council had considered a third bin [green] in April 2017 and decided not to proceed, as it was committed to the Avertas Waste to Energy project instead."* [20]

iii. Less value from waste

As a resource, organic waste can provide the dual benefits of:

- Producing low emissions biogas when landfilled or processed through an anaerobic digester, which can play an important role in Australia's energy transition (Dispatchable Electricity, Renewable Natural Gas, Green Hydrogen); and

- Providing a soil nutrient product when composted or from digestate from an anaerobic digester.

When organic waste is disposed of in a thermal combustion EfW facility, the organic resource is permanently destroyed, meaning its nutrients can never be returned to soil. Burning organic waste is also an inefficient form of energy recovery from this resource and requires co-burning of fossil fuel derived waste (such as plastics) to achieve this reduced output, resulting in a worse emissions profile than efficient energy capture from landfill biogas.

iv. The opportunity cost

The capital and operating costs of landfill and anaerobic digestors are signicantly lower per tonne of waste handled than is applicable for thermal EfW. In NSW, waste levy costs increase the relative total disposal costs at landfill. However, the waste levy is used to promote sound waste management practices at all levels of the waste hierarchy, as well as providing broader community benefits from other government expenditure.

In contrast, similar waste management costs for thermal EfW will be directed towards private profit. For 500,000 tonnes of waste annually, this equates to a lost opportunity cost of over **$70 million dollars of State Government revenue per annum** (at current levy rates), and **around $1.5 billion over a 20-year life for the EfW facility**. This is State Government revenue that could be directed towards promoting a circular economy transition and other community improvements**, potentially creating nearly 50,000 ongoing jobs in NSW from as early as 2025**[21], and concurrently acting to reduce waste disposal rates.

[19] https://zerowasteeurope.eu/2019/09/waste-to-energy-is-not-sustainable.
[20] https://www.perthnow.com.au/community-news/mandurah-coastal-times/city-of-mandurah-says-no-go-for-fogo-kerbside-collection-c-1034377.
[21] NSW Circular, 2020, *The circular economy opportunity in NSW*.

v. The role of landfill

The diversion of waste from landfill is encouraged through various policies to promote more sustainable waste management and better resource use. It is not a 'benefit' in its own right if other positive environmental outcomes are not achieved.

In contrast to the ongoing high waste volume needs of thermal EfW facilities and the implications arising from this, landfills receiving less waste per year can enjoy longer lifespans. When landfill has modern biogas capture practices in place, it also achieves better carbon emissions outcomes than thermal EfW operations and ought to be equally merited for its role in energy recovery[22].

It is worth noting that ultimately, thermal EfW still relies on landfill to some extent for its operations. The proposed facility seeks to receive around 500,000 tonnes of household 'red bin' and C&I waste per year. It will undertake a level of pre-sorting on some portion of these materials (recovering around 5% of that material) and then combust the waste. Following combustion, the EIS reports that around 15-20% of the total received material will remain as incineration bottom ash (IBA) and a further 2.5% as flue gas treatment residues (FGTr), with each of these ash streams also receiving portions of the proposed facility's boiler fly ash.

The proponent hopes to see the IBA (with a boiler fly ash portion included) used in construction or similar purposes following its treatment at a separate processing facility. However, there is no Resource Recovery Order and Exemption at this time for such material under clause 91 of the *Protection of the Environment Operations (Waste) Regulation 2014*. Chapter 22 of the EIS reports that IBA reuse would be subject to a Resource Recovery Order being granted and that "a dedicated IBA processing, treatment, metal recovery and maturation facility where non-ferrous metals (or secondary metals) recovery" is under consideration only, and, if progressed, will be subject to a separate development process. If the material is not approved for reuse or the processing facility were not available, the IBA, reported as some 65,800 tonnes (dry weight) per year, would need to be directed to landfill. The FGTr and relevant portion of boiler fly ash is classified as hazardous waste and is to be treated and then directed to suitable landfill for disposal. Hence, it can be seen that the proposal would reduce the volume of waste to landfill but still needs landill accessible.

7. Conclusion

Having regard to the outcomes of different waste final fates (landfill bioenergy and thermal EfW) on emissions outcomes and the circular economy, LMS Energy considers that the proposal needs refined assessment and will offer worse outcomes than a business as usual alternative.

After robust analysis, it appears that the facility **may produce emissions of 467,000 tonnes of CO_2e per year, compared to** their stated benefit of negative 390,000 tonnes CO_2e per year reported in the EIS.

This difference means **the project could have worse emission outcomes than the current baseline and place a significant burden on future generations. Declining organics in waste and increased renewable energy use will further worsen this outcome over time** – both these trends are inevitable yet not fully assessed in the EIS emissions analysis. In such circumstances, LMS Energy submits that the proposal has unacceptable environmental and economic impacts and does not serve the public interest.

As Western Sydney Councils and the NSW State Government seek to accommodate future population growth and ensure that suitable waste infrastructure and management is developed to suit changing needs, new final waste fate proposals should be assessed against business as usual. There are alternative pathways and technologies for municipal waste that better support carbon emission reductions and the diversion of waste materials to higher order uses across time than large volume thermal EfW.

[22] For completeness, it is noted that waste transport emissions comprise a tiny fraction of energy able to be extracted from waste so travel distances to suitable land have minimal impact on landfill biogas energy benefits.