

Questions from Cllr Tom Ryves 7th August 2021

Q1. Do you have any information on the number of days when the wind will be blowing in a NW direction, as there is genuine concern that KL and its environs will be a settling area for particles?

A1. A NW direction would mean a south easterly wind. Winds from the SE occur 4% of the year (note it is based on hourly data rather than number of days); if we consider winds from SE, ESE and SSE the percentage increases to 13.6% of the year.

However, since your interest is King's Lynn, we think you meant NE i.e. a south westly wind. Winds from the SW occur 15.1% of the year (once again based on hourly data); if we consider winds from SW, WSW and SSW the percentage increases to 34.1% of the year.

Q2. Is there an ability or intention to undertake carbon capture in the stack?

A2. Yes, in recognition of the global need to move to net zero carbon by 2050, land within the proposed site for the Energy from Waste (EfW) Combined Heat and Power (CHP) Facility has been set-aside for future environmental improvements which could include carbon capture from the fossil fuel element within the residual waste.

Since around half of the residual waste originates from biogenic (replenishable) sources, this is already classified by Government as renewable energy (carbon neutral), ie the same status as wind and solar energy.

Q3. There is reference to academic research as to harmful side effects from particulates released by incinerators. Can this be summarised?

A3. There are numerous research papers that can be sourced from the internet; however, it is very important to understand their year of publication, source, context, and relevance to energy from waste in the UK. Many research papers can be unintentionally misrepresented by objectors to energy from waste proposals.

It is the role of Public Health England (a Prescribed Consultee in the planning process) to review academic research and if necessary, commission studies into the health effects of energy from waste. PHE's position on energy from waste is;

"...modern, well run and regulated municipal waste incinerators are not a significant risk to public health. While it is not possible to rule out adverse health effects from these incinerators completely, any potential effect for people living close by is likely to be very small".

The following link provides a (helpful) short summary of PHE recent research and conclusions.

<https://www.gov.uk/government/publications/municipal-waste-incinerators-emissions-impact-on-health/phe-statement-on-modern-municipal-waste-incinerators-mwi-study>

Q4. Whilst you refer to energy from waste I assume that gas is used to maintain furnace heat. So is it possible to consider, for each watt generated, how much is from the fuel and how much from the waste?

A4. There is no requirement to use support fuel to maintain the furnace temperature in normal operation. Ultra-Low Sulphur fuel oil is used in the furnace auxiliary burners during start up to heat up

the furnace. Once the temperature is above 850°C waste is fed to the furnace and the combustion is self-sustaining. The auxiliary burners are then switched off.

The auxiliary burners are also used during shut down to ensure the furnace temperature remains above 850° C until all the waste on the grate has been fully burnt out.

Q5. For the capacity of this plant, assuming it operates at 100% how many tons of waste per day will be delivered and how many truck loads taken into the plant? Presumably the no of vehicle movements generated will be twice this amount.

A5. Our preliminary traffic assessment has assumed the following

Waste delivered to the EfW CHP Facility in HGVs:

- Monday to Friday – 2,166 tonnes/day in 112 vehicles (224 vehicle movements)
- Saturday to Sunday – 602 tonnes/day in 32 vehicles (64 vehicle movements)

In addition, we have deliveries of consumables and the export of ash in HGVs. These equate to:

- Monday to Friday – 30 vehicles/day (60 vehicle movements)
- Saturday to Sunday – 0 vehicles/day

Therefore, assuming the facility were to operate at 100% (625,600 tonnes/year) the total number of HGVs in any one weekday would be 142 resulting in 284 two-way vehicle movements.

Q6. Is waste delivered in trunckers or can it be delivered by refuse collection carts?

A6. As a regional facility, we have assumed that 90% of waste deliveries will be via bulk carrier (mostly articulated) lorries with 10% by smaller refuse collection vehicles.

Q7. What is the regulatory environment and how is it enforced? NB how often is the facility inspected?

A7. The EfW CHP Facility would be regulated by the Environment Agency who will issue an Environmental Permit (EP) to operate the facility.

The EP which will specify the amount of and types of waste which can be treated by the EfW CHP Facility and certain conditions which have to be met during the commissioning and operation. The EP will also set the emission limits for all regulated pollutants in compliance with relevant legislation and the requirements for monitoring and reporting on the operation of the EfW CHP Facility.

All regulated emissions have to be reported to the Environment Agency quarterly and a full summary report on the operation of the EfW CHP Facility provided annually.

The Environment Agency can visit and inspect the EfW CHP Facility at any time.

In accordance with best practice, MVV intends to submit an application for the EP shortly after the submission of the Development Consent Order planning application; a 'twin track' approach.

Q8. On particulates, is there real time monitoring and how many sites will there be? Who will have access to this data?

A8. The emission levels of particulates are continuously monitored in the EfW CHP Facility chimneys. MVV will provide the average weekly chimney emissions data on their website.

Whilst not relevant to particulates, you should know that preliminary discussions with the KLWNB Council's environmental health officer indicated they are keen to expand the current diffusion tube monitoring network to include locations within the vicinity of the EfW CHP Facility. Five general locations were identified, these are:

- Emneth;
- Marshland St James;
- Walpole Highway;
- West Walton; and
- Walton Highway.

The diffusion tubes would be installed 1-year prior to and 4-years post operation. Should planning consent be approved, MVV would be happy to work with the Council to extend their monitoring network.

Q9. Is there an analysis available of the particulates created, captured and those that are released into the environment?

The pollutants released from the combustion of waste are very similar to those released from fires and fireworks on bonfire night. However, the flue gases from the combustion of waste will be cleaned in a flue gas treatment system before being released to atmosphere via a 90m high chimney.

The pollutants released are those associated with combustion (carbon monoxide, nitrogen oxides and trace organic compounds such as methane), acid gases from materials in the waste (sulphur dioxide, hydrogen chloride and hydrogen fluoride), dust (particulate matter), ammonia (from the abatement system), trace quantities of heavy metals and dioxins and furans.

As highlighted in A7 (above) the proposed EfW CHP Facility will be regulated by the Environment Agency and emissions to air must comply with specified limits, which would be set out in the Environmental Permit.

The preliminary air quality assessment has considered these specified limits with the appropriate mitigation/abatement of emissions in place. The air quality assessment then compares the outputs of the modelling against air quality objectives to ensure the protection of human health. The results of the assessment concludes that there would be a negligible effect arising from the majority of pollutants and a small effect from nitrogen and sulphur dioxide. The conclusion is that operational air quality effect on human receptors would not be significant.

Q10. Does this plant increase carbon output over other methods of managing non recyclable waste?

A10. In practice the alternative to the EfW CHP Facility for managing non-recyclable waste is landfill disposal. When compared to landfill disposal the EfW CHP Facility would not increase carbon outputs. This is evident in our preliminary assessment of Climate Change, which provides a comparative assessment of carbon emissions for the EfW CHP Facility with landfill disposal, indicating that the plant would achieve a net saving of 4,296 ktCO₂e over its lifetime when compared to landfill. This is in part due to the greater release of uncaptured methane from waste decomposing in landfills, escaping through the capping layer (with methane having a higher global warming potential than carbon dioxide), and also the higher savings for avoided emissions from electricity generation for the EfW CHP Facility. The findings of the preliminary assessment are in line with a recent life cycle assessment study

by Zero Waste Scotland (July 2021^[1]), comparing the carbon impacts of sending one tonne of residual municipal waste to either EfW or landfill in 2018, which identified that average EfW impacts were 27% lower than landfill when in CHP mode, which is proposed for the Medworth project.

Q11. Is it practicable to sort the waste to increase recyclability at the site?

A11. No, the waste used to produce energy at the EfW CHP Facility would be waste that remains after recycling ie it is residual waste.

Q12. Is there a model for carbon saving/creation from the overall process?

A12. The preliminary Climate Change assessment describes the methodology/model used to calculate carbon emissions generated and saved by the EfW CHP Facility's process. The model is based on a carbon assessment carried out by the Carbon Trust for the Cory Riverside EfW Facility^[2], comparing emissions from the combustion of residual waste as a fuel source in the EfW Facility, with the alternative scenario of landfill disposal with electricity generation from the collection of landfill gas (LFG). The assessment of carbon emissions for the EfW CHP Facility process takes into account: CO₂ emissions derived from the combustion of residual waste; equivalent CO₂ emissions for nitrous oxides and methane from the combustion of residual waste; equivalent CO₂ emissions for fuel used in auxiliary burners during start-up and shut-down; and savings for avoided emissions from the generation of electricity by the EfW CHP Facility. The assessment of comparative emissions for landfill is based on data available from a DEFRA study^[3], providing factors for landfill methane emissions modelling based on a UK scenario, also including the capture of LFG for use in gas engines to generate electricity. In addition, the assessment of carbon emissions for the EfW CHP facility includes embodied carbon emissions associated with construction of the plant, and carbon emissions for transport, maintenance and decommissioning.

^[1]<https://www.zerowastescotland.org.uk/content/climate-change-impact-burning-municipal-waste-scotland>

^[2]<https://www.coryenergy.com/wp-content/uploads/2018/01/Cory-Carbon-Report-v1.1.pdf>

^[3] DEFRA (2014). DEFRA Review of Landfill Methane Emissions Modelling:
http://randd.defra.gov.uk/Document.aspx?Document=12439_WR1908ReviewofMethaneEmissionsModelling.pdf