CLEANAWAY

Making a sustainable future possible together

Bromelton Energy and Resource Centre
Stakeholder Reference Group

Meeting #6 | 5 May 2026

Acknowledgement of Country

Cleanaway acknowledges the Traditional Owners of the lands on which we operate and in the communities in which we exist. We pay our respect to all Aboriginal and Torres Strait Islander peoples.

Artwork by Marcus Lee, a proud Aboriginal descendant of the Karajarri people from North Western Australia.

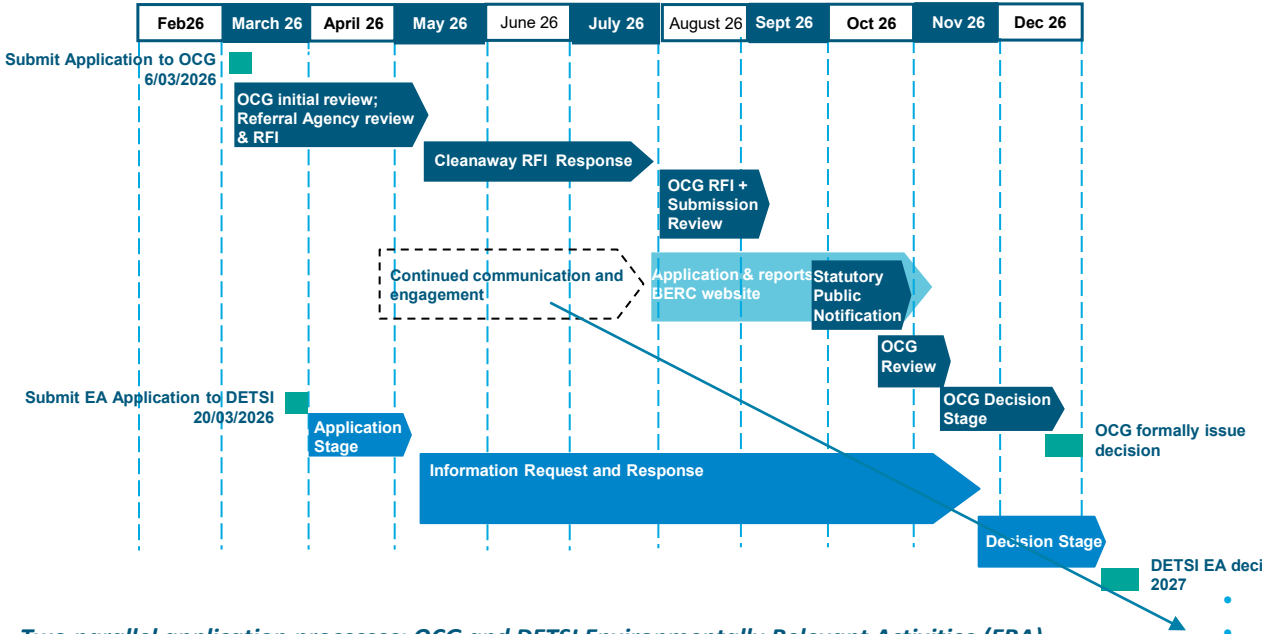
It represents Cleanaway's commitment to fostering a sustainable circular economy and symbolises our deep respect for the land, oceans and waterways of Australia.

The three central circular clusters represent the three pillars of reconciliation: Relationships, Respect and Opportunities. These three pillars provide the backbone and support for Cleanaway's ongoing reconciliation journey.

Agenda

1. Welcome and introductions
2. Project update
3. Copenhagen tour experience – David Kassulke
4. Deep dive presentation: Air quality, emissions, monitoring and human health – Natalie Shaw & Therese Manning
5. Reference facility: Greatmoor
6. 2026 SRG and engagement suggestions
7. Actions and close

Project update



Two parallel application processes: OCG and DETSI Environmentally Relevant Activities (ERA)
Program subject to change; dependent upon OCG and Referral Agency process and timeframes

- Planning application submitted to Office of Coordinator General (OCG) 6 March 2026
- Referral agency reviews:
  - Queensland Health
  - Department of the Environment, Tourism, Science and Innovation
  - Transport and Main Roads
  - Energy Queensland
  - Seqwater
  - Department of Primary Industries
  - Urban Utilities
  - Scenic Rim Regional Council
- Continued engagement during 2026 – in addition to the OCG Statutory Notification requirements
- Statutory notification is when public submissions are invited by the OCG (timing TBC with OCG)

- Advertising
- Newsletters
- Online webinar with technical experts
- In person drop-in session with technical experts
- Boonah Show
- Beaudesert markets
- SRG

Reference EfW facility: Copenhagen

David Kassulke site visit experience and observations

‘Energy from Waste’ facility

Located in Copenhagen Denmark

Built in 2019 for 532 Million Euro

Mount Lindesay Scenic Rim

Very proud to reside within the Scenic Rim,

The only location within Australia named by Lonely Planet in their Top Ten World Destinations 2022

In large part due to the friendly and welcoming nature of residents

Transit via Dubai

Emirates Airlines A380 is a15 hour flight from Brisbane.

Indeed

By comparison our Scenic Rim region makes other parts of the world appear very ordinary indeed.....

We must preserve our quality of life.

Bergen Norway

A beautiful and remote region of Scandinavia

Copenhagen Denmark

Is a compact country with a robust economy who are respected globally for their commitment to preserving environmental values.

Population density of thousands of persons per hectare versus Scenic Rim with one or two persons per hectare.

Denmark are recognised world leaders with measures to improve Environmental Sustainability through circular economy

Amager plant

This photo is taken from the window of the Airport hotel.

The Amager facility is central on the horizon, note Building roof has ski slope falling from left to right.

Water vapour from stack is to the left.

Ocean is to the right, winds are predominantly onshore from the North Sea

Household rubbish for the facility yields approx. 34 % water content.

Note high population density adjoining the facility.

Neighbours

Residential apartments next door to the Amager facility - with city centre clearly visible beyond the apartment complex.

Visitor Car Park

In addition to its primary function, the Amager facility has become a very popular gathering point.

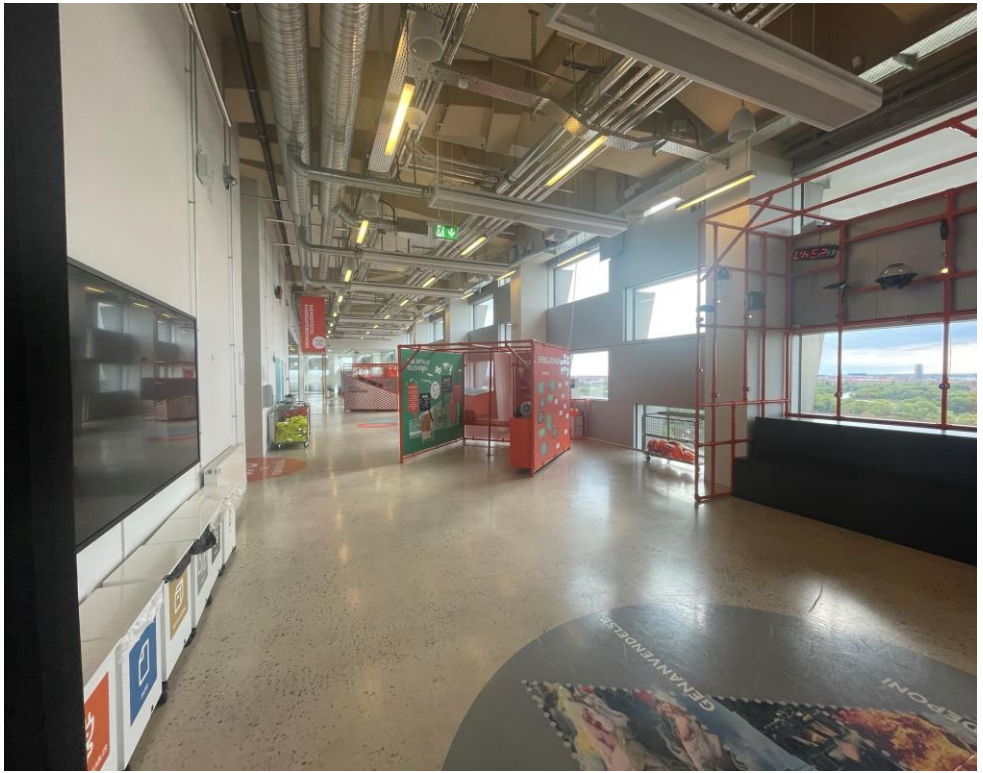
Visitors can take the lift to the roof top and take in the views of Copenhagen and out to the North Sea. There is seating for the public, along with a refreshment bar for cold drinks.

School students visit for educational tours of the plant, what it is, what it does and what it achieves.

Educational exhibits

These exhibits are located within the visitor educational area of the Amager facility.

Great view of the neighbouring apartment complex out the windows at right.



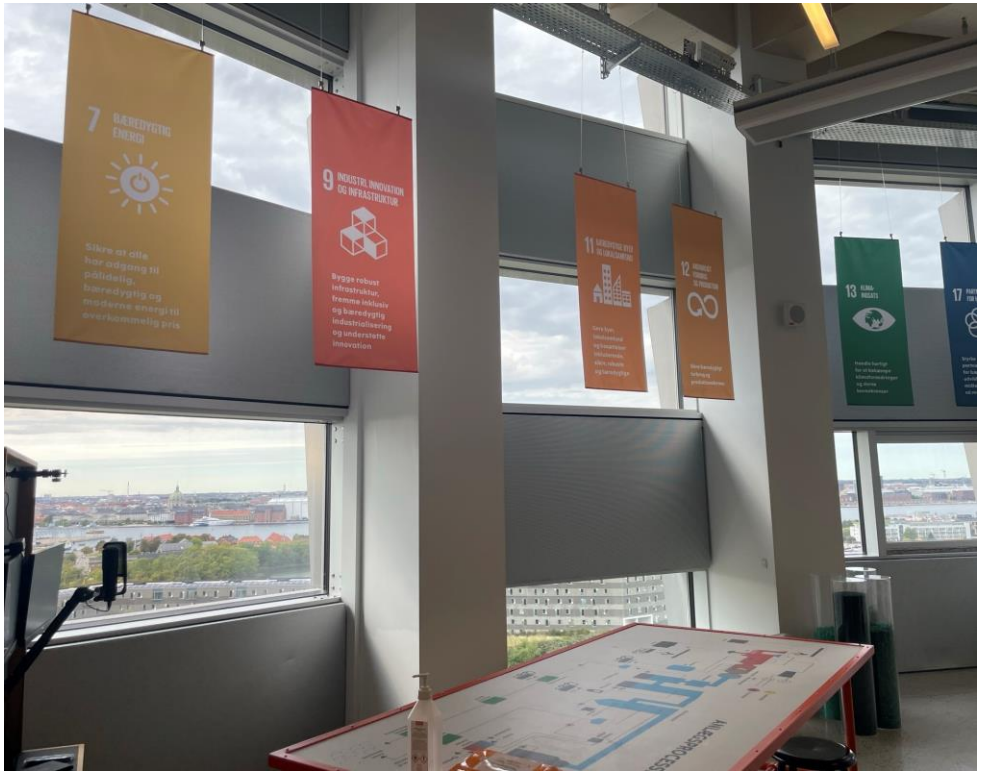
Your Mary

My tour host commented to me:

See out there, the Royal Palace ? That is where your Mary – from Tasmania is now Queen to King Fredrik of Denmark.

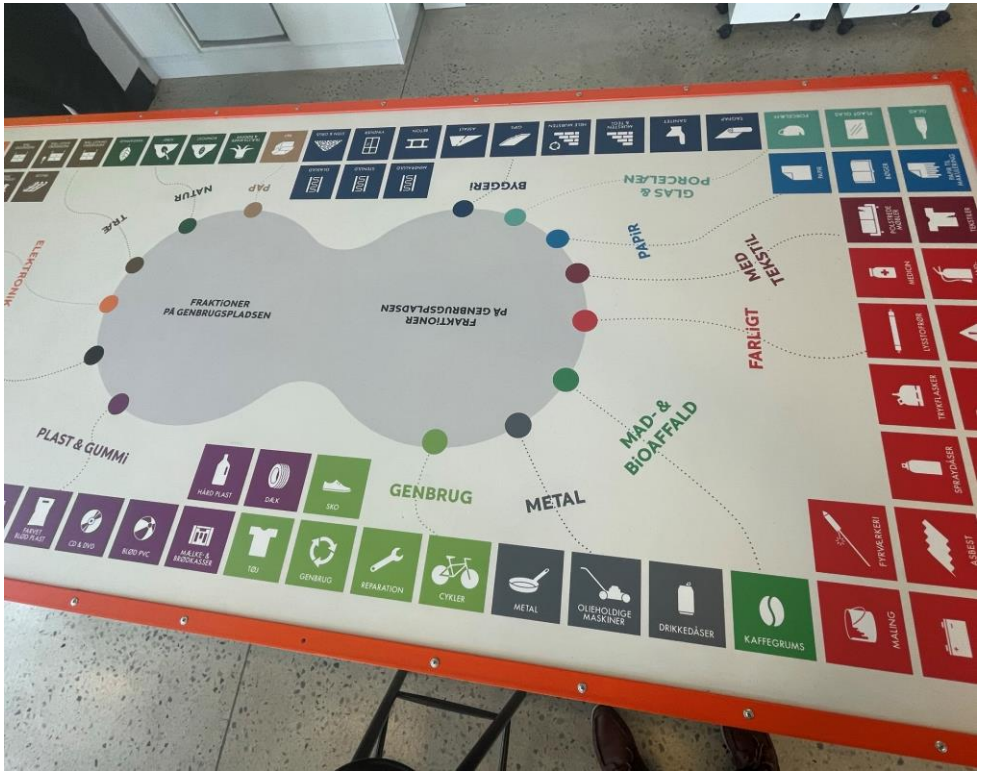
The owners of the Amager facility live in Copenhagen. They DID NOT want to build the facility and have all of the residents of Copenhagen hating them due to impacts.

A famous architect was tasked to design a building to house the facility so that its work would happen – hidden in full view of the city. And attract visitors from all over Europe !



Display table with all the materials the plant deals with…

For the school groups who visit and learn about sustainable reuse of finite resources.



Grid connection to

The city of Copenhagen, and Denmark and EU Nations are connected

Energy resulting from the furnaces burning rubbish that is now longer buried in landfill plays its part in reducing the amount of fossil fuels required to create energy.

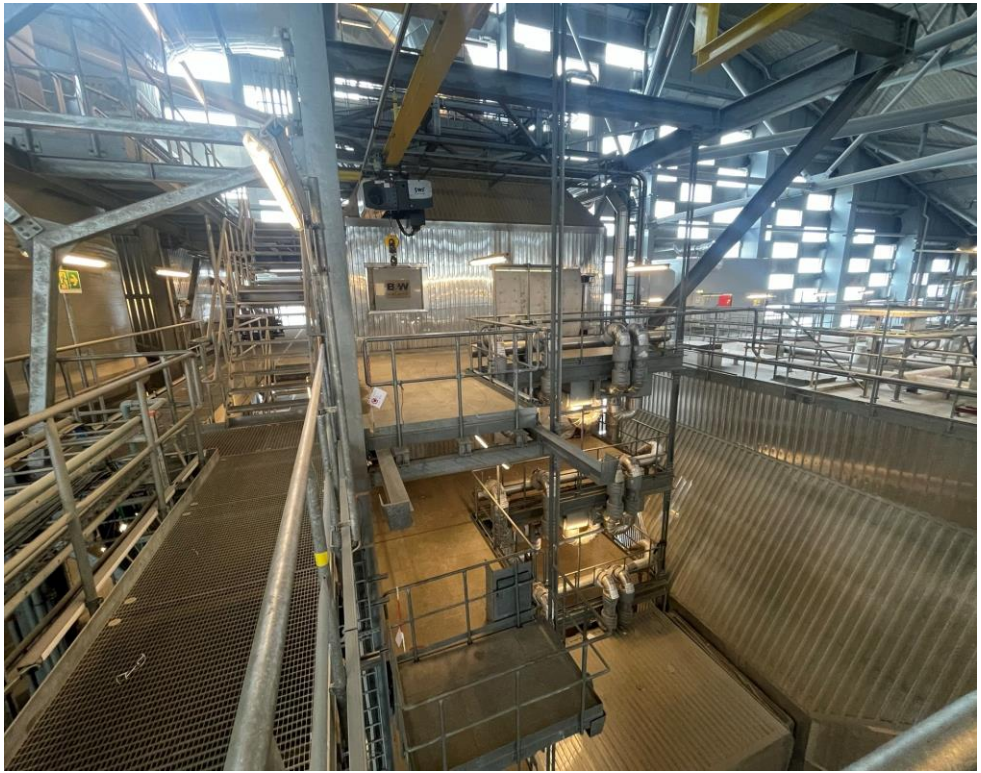
With no rubbish directed to landfill, the methane emissions that result from decomposing organic waste are no longer reaching atmosphere.

Methane has 20 plus times the global warming effect of CO2-e emissions

Inside the building

Building is first class in design and functionality.

Design facilitates good maintenance access to the two furnaces

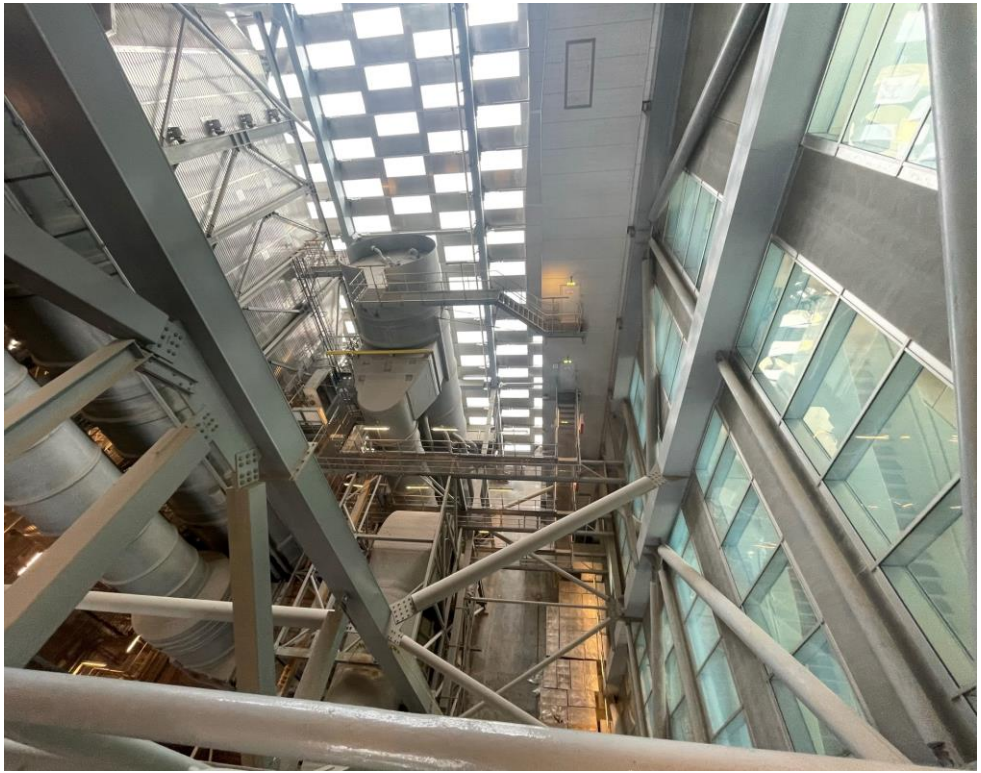


Further inside

Structural steel fabrication of this building is a site to behold. It needs to hold the external surfaces of the building together with sufficient space for main components to operate.

View of Offices

Building makes good use of vertical spaces wherein you can see the administrative offices at the right of this photo.



Look up there

In 2024, have operated for 5 years the facility is in very fine order.

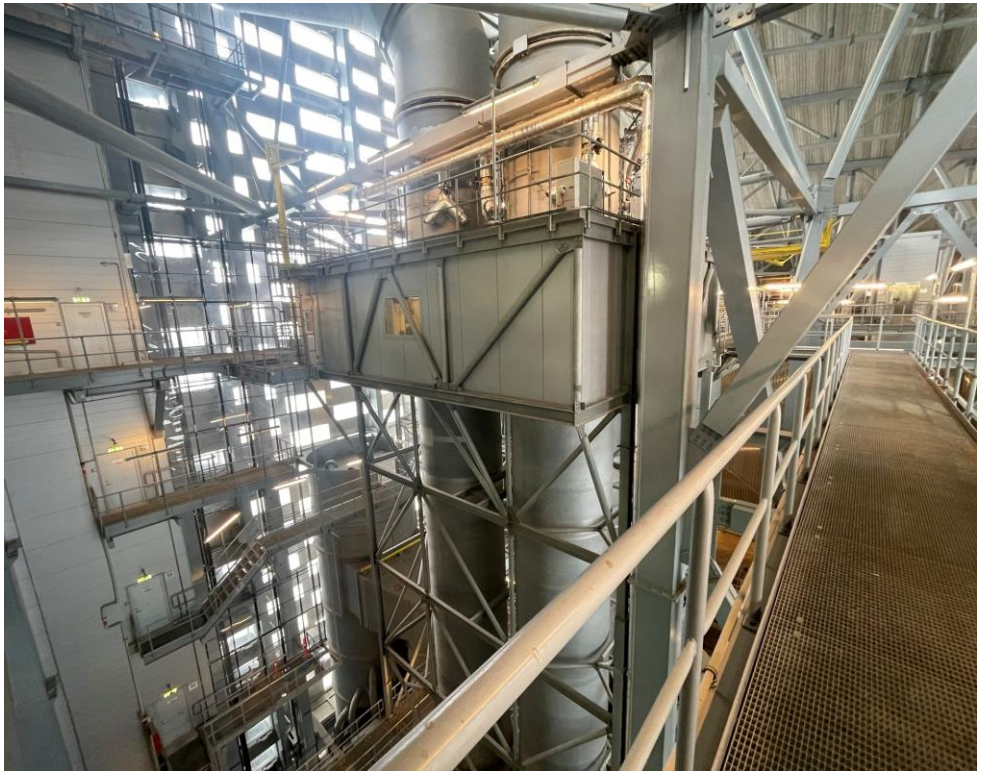
Scale and magnitude of engineering employed here is very impressive.

I can attest that the roof does have a ski slope, refreshment bar, seating for visitors to take in the panoramic views of Copenhagen and the North Sea.

There are no half measures employed here – it is an inspired design done right from the outset.

External walls

Feature sky lights for natural lighting during daylight hours.



My learnings

The purpose of my detour to Copenhagen was so I would be able to judge a modern operational energy from waste plant.

“Kick the tyres of it” as it were, to view the technology in place and how it operated. Having toured the facility, I am able to say I was extremely impressed with the facility.

The people of Copenhagen had need to find a better way for rubbish than filling up land they do not have. I hope our residents and regulators can see the need to achieve this – perhaps even surpass this result.

Thanks to Cleanaway and Ramboll for permitting my access.

Deep dive: Air quality, emissions, monitoring and human health

Katestone:
Natalie Shaw, Air Quality Team Leader Approvals

Enrisks:
Therese Manning, Toxicologist / Risk Assessor

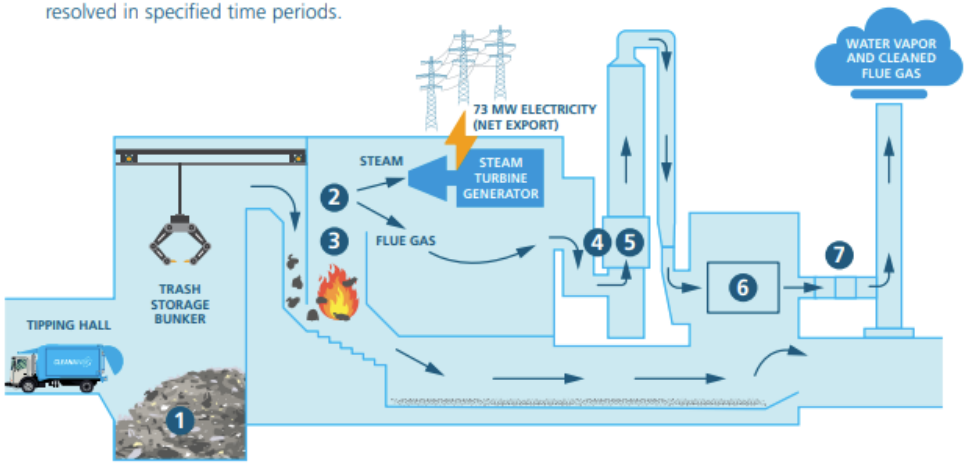
How emissions are controlled

What will come out of the stack:

- 80% of the flue gas in components of normal air including nitrogen (65%), oxygen (6%) and carbon dioxide (9%)
- Just under 20% is water vapour (steam), which may be visible during certain weather conditions
- Less than 0.1% of the flue gas are compounds that need to be monitored against health guidelines to ensure they don't exceed human health safety limits.

How EfW pollution control systems work:

1. Waste delivered to the facility is mixed in the waste bunker before combustion. This ensures the waste burns consistently and efficiently, reducing the formation of pollutants.
2. The amount of air used in the combustion process is carefully controlled to minimise nitrogen oxide (NOx) formation while preventing excessive carbon monoxide (CO). The system maintains flue gas temperatures above 850°C for at least two seconds, which destroys harmful compounds such as volatile organic compounds (VOCs), dioxins and furans.
3. A chemical solution of ammonia or urea is injected into the hot flue gas, converting the majority of NOx that may be present into nitrogen and water.
4. Lime injection neutralises acid gases such as hydrogen chloride (HCl), hydrogen fluoride (HF), and sulphur dioxide (SO_2).
5. Activated carbon adsorbs heavy metals (e.g., mercury) and dioxins and furans.
6. The baghouse filter, which consists of a series of fabric bags with very small pores, captures particulate matter, acid gas neutralisation reaction products and adsorbed pollutants from the flue gas before it is released from the stack.
7. Continuous emissions monitoring systems (CEMS) measure pollutant concentrations directly in stacks in real time including NOx, CO, particulates, TOC, HCl, HF, NH_3 and SO_2. The CEMS provide alerts about spikes (that can happen when combusting different types of waste) and action is immediately taken to rectify. There are strict shutdown procedures for issues that cannot be resolved in specified time periods.



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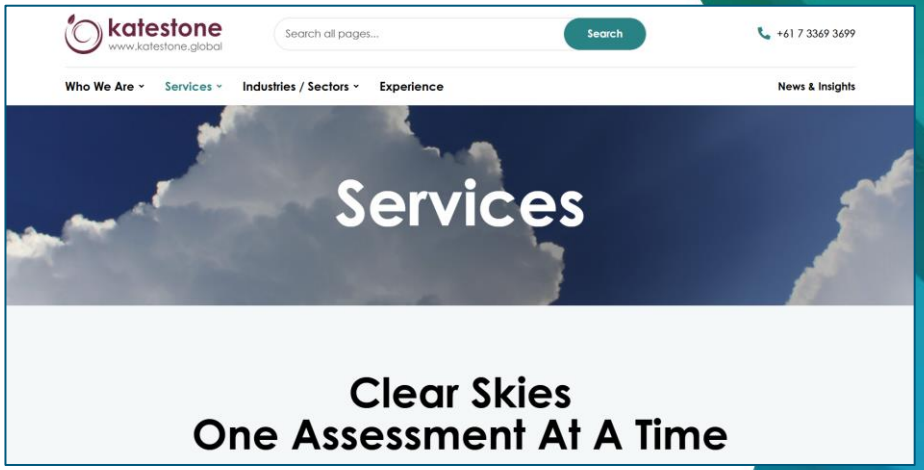
Natalie Shaw, Katestone

- Katestone's expertise lies in assessing the impacts of emissions to air (including air quality, odour and greenhouse gases) and analysing the effects of climate and climate change on projects and facilities.
- Katestone’s fit-for-purpose studies have been instrumental in supporting numerous developments, enhancing operations, and mitigating risks across various sectors of the economy.



katestone
www.katestone.global

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A recap from September 2025 SRG meeting

Air quality assessment methodology explained:

Modelling Air Quality at the BERC Facility

The assessment utilises DETSI-approved modelling to simulate how emissions disperse around the BERC facility. By combining site-specific environmental data with conservative "worst-case" operating assumptions, the study ensures local air quality remains within safe limits.

Precision Modelling Inputs

Site-Specific Data Integration

Models use local meteorological, terrain, and land-use data for realistic dispersion simulations.

DETSI Approved Model

Computer software predicts how emissions behave under real-world weather conditions.

Conservative Assessment

Worst-Case Scenario Planning

Assessment assumes the facility operates at maximum allowable emission limits.

Cumulative Impact Analysis

Results include background levels of air pollutants from nearby industries, vehicles, and urban activity.

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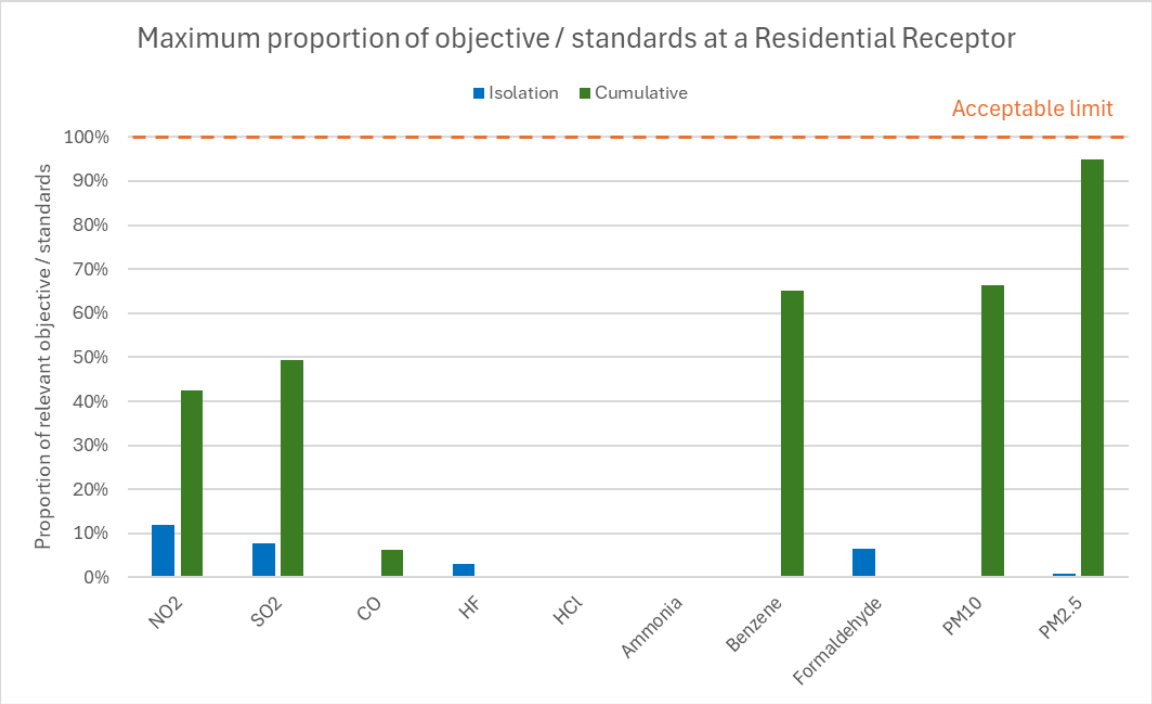
Air quality assessment summary

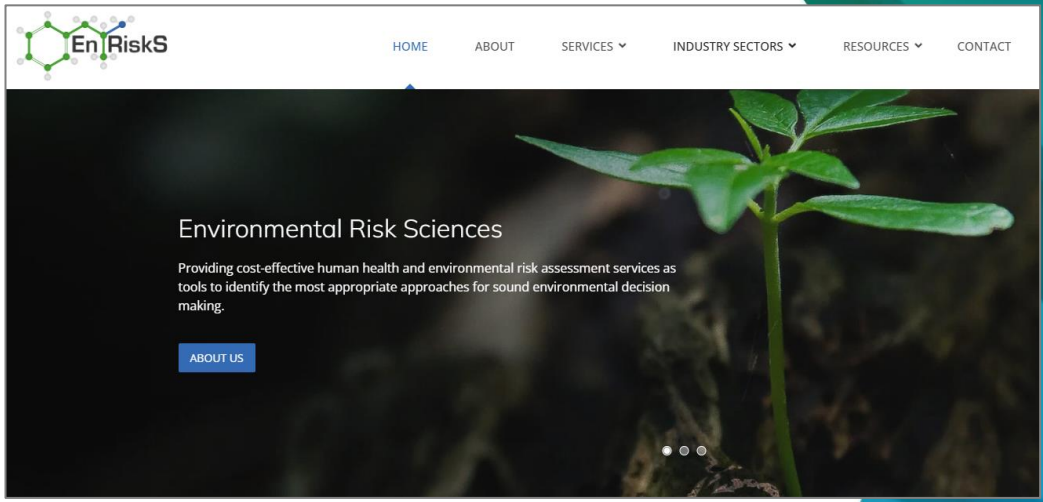
The assessment found that, under maximum worst-case modelling scenarios, the project will **not significantly change air quality.**



Levels are well under acceptable levels set by DETSI in Environmental Protection (Air) Policy 2019 and Environmental Protection (Air) Amendment Policy 2024

Therese Manning, Enrisks

- Environmental Risk Sciences (Enrisks) is a dedicated toxicology / risk assessment consulting company
- Enrisks provide human health and environmental toxicology and risk assessment services for sound environmental decision making
- Providers of expert technical advice on chemicals in all environmental media including soil, sediment, air (including particulates), water and solid materials (e.g. food products or materials proposed for beneficial re-use)



EnRiskS

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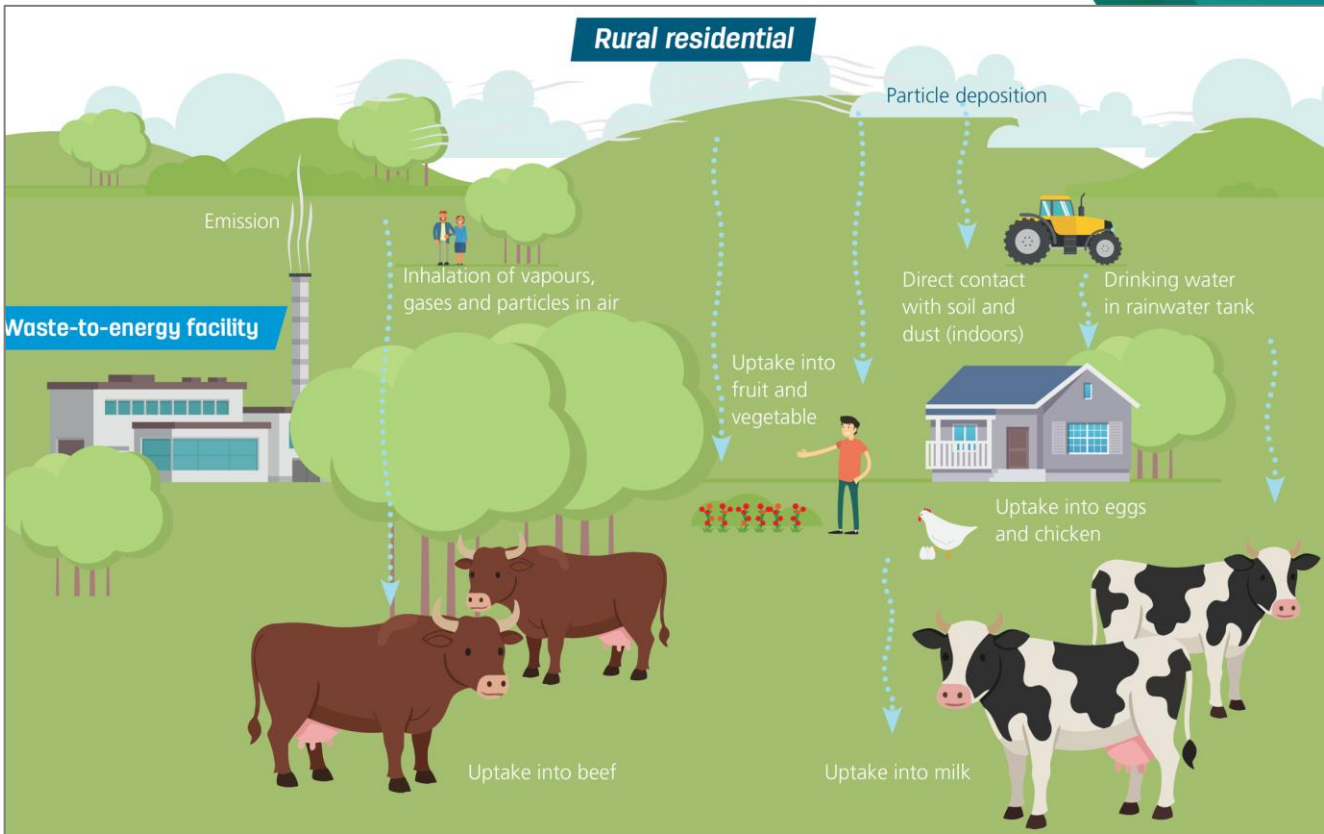
Human health risk assessment (HHRA)

- Methodology adopted is in line with enHealth guidance and the same as used in Human Health Risk Assessment for energy from waste projects in NSW, VIC and other locations in QLD
- Risks due to potential changes in air quality have been assessed using air quality modelling data and exposure scenarios relevant for the project area
- Human Health Risk Assessment focuses in on the human health based guidelines to further demonstrate that the project will not impact on human health

Conceptual site model

The assessment included evaluating exposure of people in the area surrounding the facility via inhalation, deposition of particles onto soil, roofs and into household rainwater tanks



Methodology

- Exposure scenarios include:
  - Residential – inhalation plus exposure via deposition to soil and uptake into fruit and vegetables and eggs plus deposition to roofs that may impact rainwater tanks
  - Commercial/industrial – inhalation plus exposure via deposition to soil
  - Possible farm – as per residential plus uptake into meat and milk that is consumed on farm
  - Worker at education centre on the site
- These exposure scenarios have been considered for:
  - maximum location anywhere in the air quality modelling grid
  - maximum residential location (including if such locations could be a farm)
  - maximum commercial/industrial location (including if such locations could be changed to residential in the future)
  - maximum location on the site

Other matters

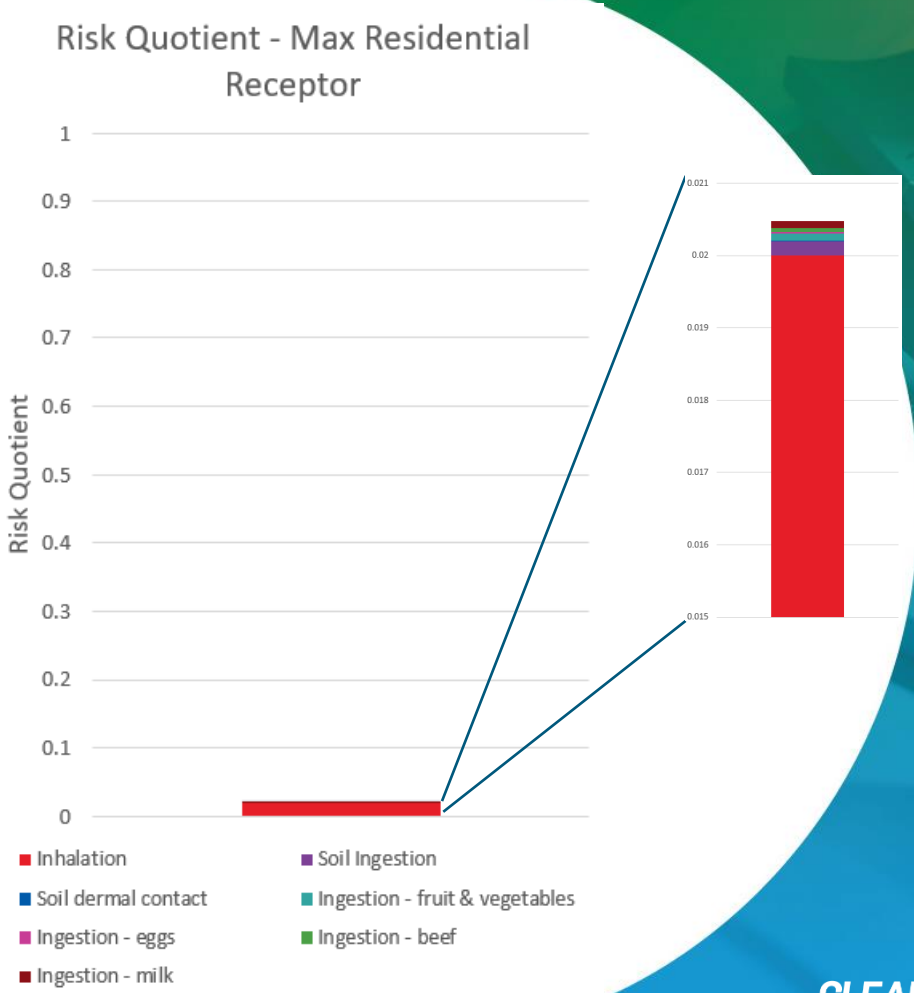
- Other aspects of this development that have potential to impact on community health in the off-site area have also been considered including:
  - Noise
  - Water quality (surface and groundwater)
  - Soil contamination
  - Dangerous goods storage

BERC and human health

$$Risk\ quotient\ (RQ) = \frac{exposure\ concentration}{health\ based\ criterion\ adjusted\ for\ background\ levels}$$

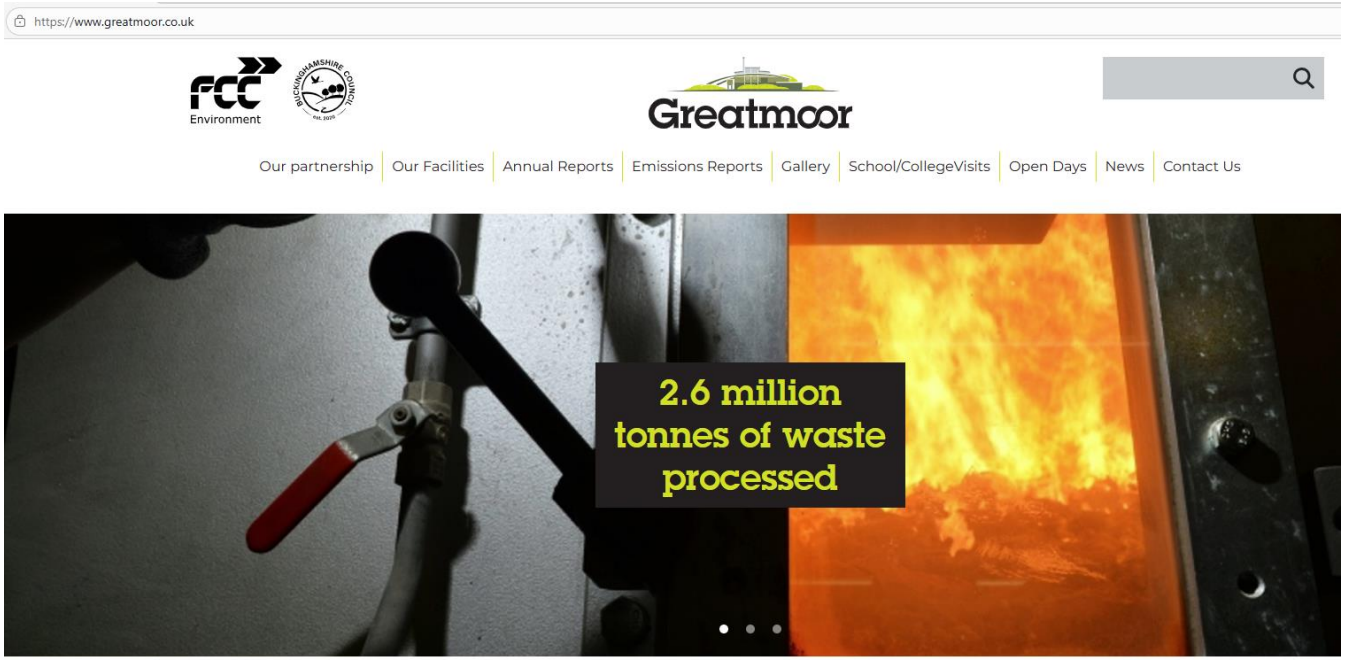
- This graph shows the predicted maximum exposure to emissions
- The limit of 1 represents the maximum acceptable risk – anything below 1 indicates no expected health risk
- The graph shows the calculated risks are well within acceptable limits

- The facility will not cause adverse impacts on community health. Concentrations of chemicals will **be well below human health risk limits.**



Questions?

Reference EfW facility: Greatmoor, UK



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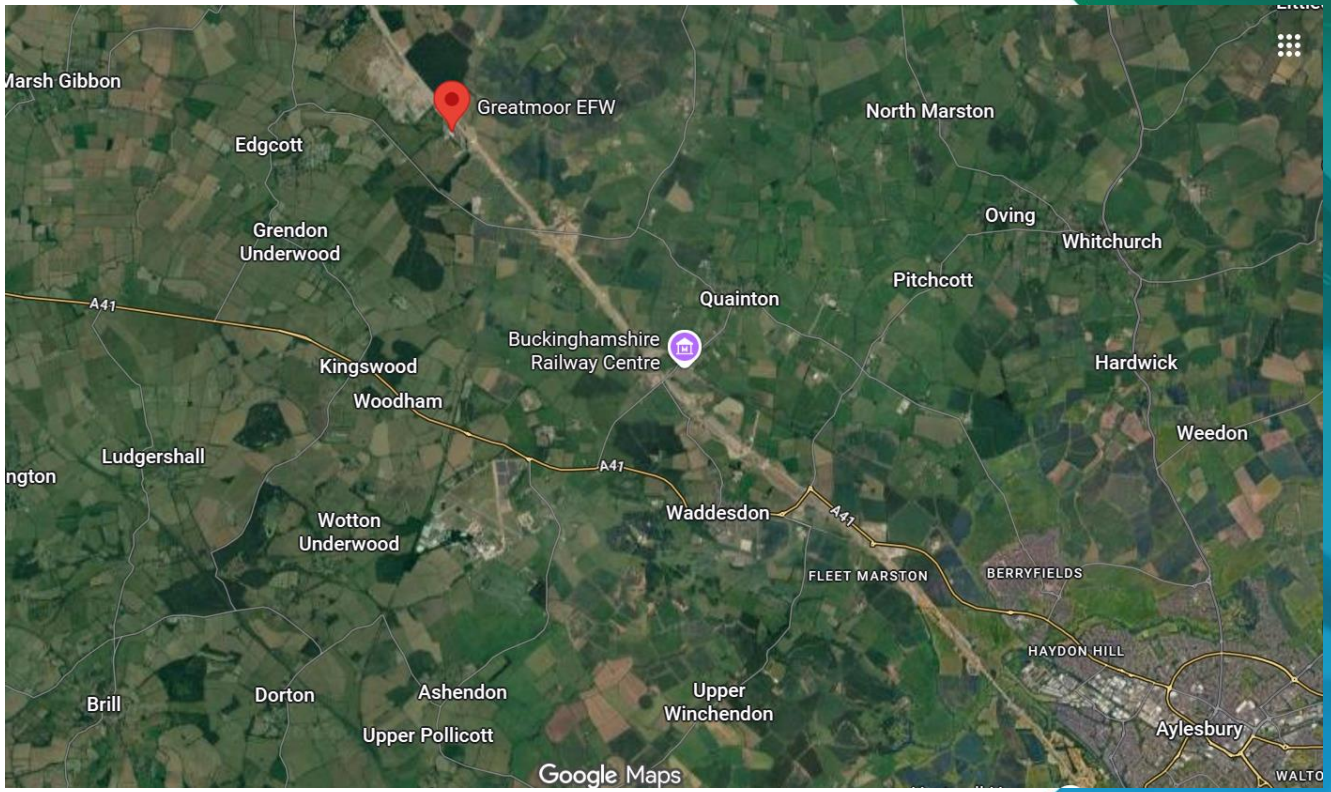
Greatmoor, UK

- located in Aylesbury, Buckinghamshire (north of Oxford)
- Historic country town of around 100,000 people
- Agricultural area: dairies, specialty farms and produce



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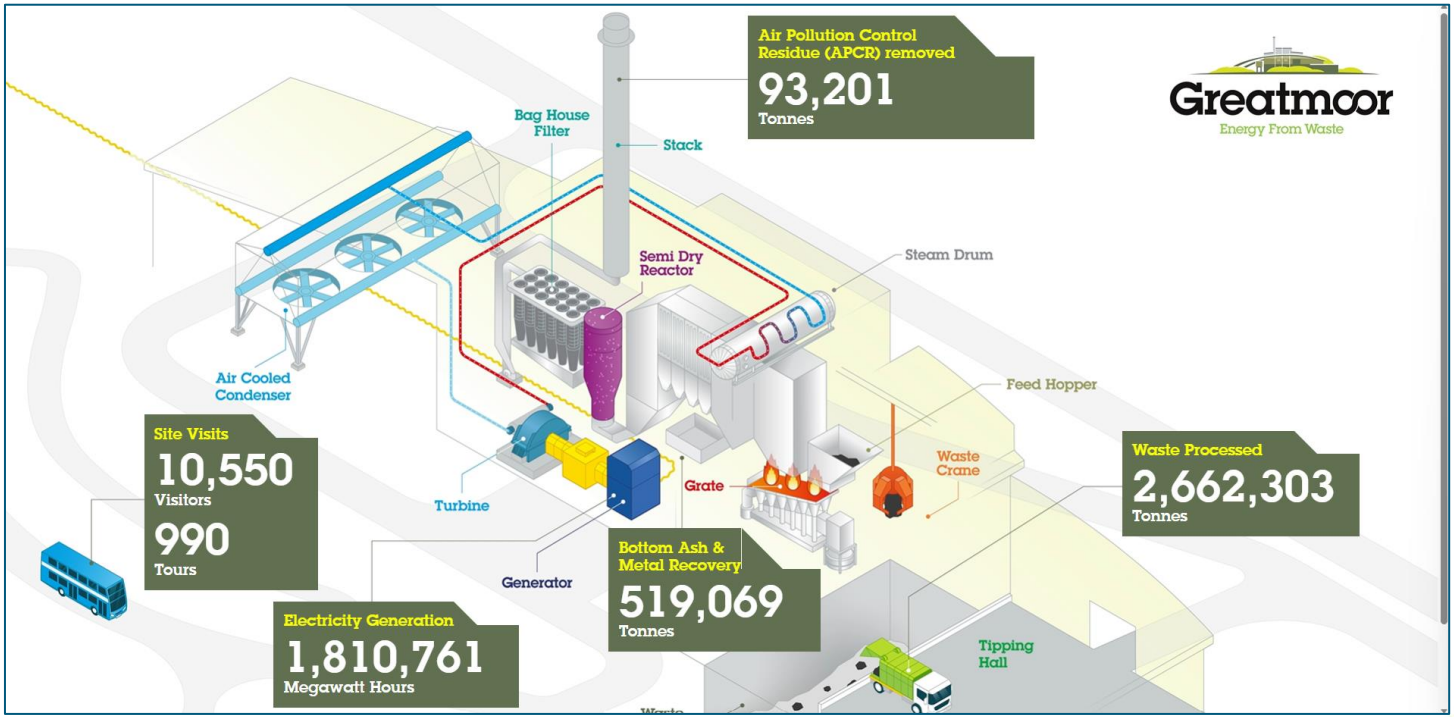


Emissions Reports

Our environment, our responsibility

Emissions Monitoring

Operations at Greatmoor EfW, are controlled by the requirements of a permit regulated by the Environment Agency.

Greatmoor EFW incorporates modern, reliable and well understood combustion and pollution abatement technology. The plant has been designed in accordance with the requirements of the Industrial Emissions Directive 2010 (IED) and will employ The BAT (Best Available Techniques) Reference Document (BREF).

Environmental Permits contain conditions which must be complied with including a range of emissions limit values (ELV). They also include requirements for continuous emissions monitoring of a range of substances alongside testing being undertaken by an independent 3rd party organisation certified by the Environment Agency. All emission data and other exchanges of information are submitted to the Environment Agency for assessment.

BREF was updated in 2019 with lower ELV limits. The Environment Agency then varied the Environmental Permit for most EFW plants to incorporate the new ELVs which must be complied with from 3rd December 2023 onwards. Testing has shown that Greatmoor EFW is able to comply with all the new ELVs

The table on the right shows the ELV (Emissions Limit Values) in mg/m³ for daily and half hourly periods

The graphs represent the average half hour and daily emissions calculated at Greatmoor. The bars show the maximum value recorded for the month as a percentage of the emission limit value allowed within the Permit.

The data presented on these graphs covers periods of normal operation only.

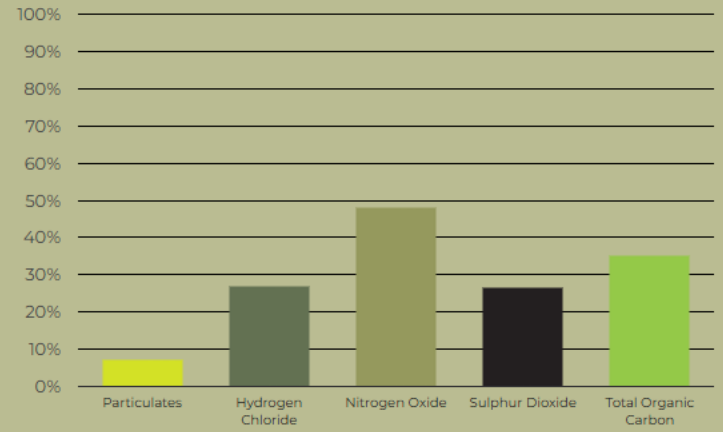
Download Greatmoor's Environmental Permit

Substance	1/2 hour average (mg/m³)	Daily Average (mg/m³) until 2/12/2023	Daily Average (mg/m³) from 3/12/2023
Dust	30	10	5
HCl	60	10	8
NOx	400	200	180
SO2	200	50	40
TOC	20	10	10
NH3	none	none	15

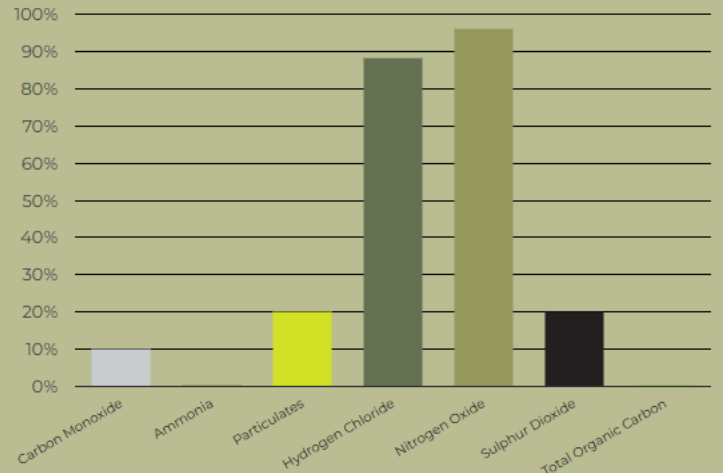
Substance	10 min average	Daily Average	Daily Average
CO	150	50	50

Continuous Emissions Data March 2026

Maximum Emission as % of ½ hour ELV March 2026



Maximum Emission as % of daily ELV March 2026



CONTINUOUS EMISSIONS DATA ARCHIVE

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Other Emissions

Other emissions including Dioxins, Furans and Heavy Metals are monitored on a six monthly basis.

The table on the right shows the monitoring results since Greatmoor opened, expressed as percentages of the limits as set in the permit.

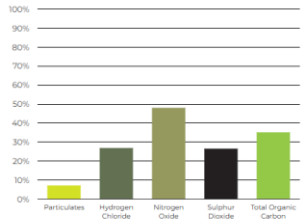
BREF was updated in 2019 with lower ELV limits. The Environment Agency then varied the Environmental Permit for most EFW plants to incorporate the new ELVs which must be complied with from 3rd December 2023 onwards. Testing has shown that Greatmoor EFW is able to comply with all the new ELVs

Substance	ELV trigger until 2/12/2023	ELV trigger from 3/12/2023
Cadmium & Thallium	0.05mg/m3	0.02mg/m3
Heavy Metals	0.5mg/m3	0.3mg/m3
Hydrogen Fluoride	2mg/m3	1mg/m3
Mercury	0.05mg/m3	0.02mg/m3
Dioxins & Furans	0.1ng/m3	0.06ng/m3

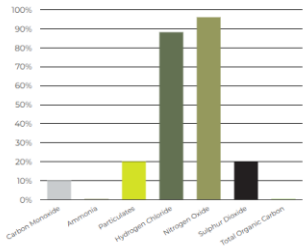
Date	Dioxins & Furans	Cadmium & Thallium	Heavy Metals	Mercury	Hydrogen Fluoride
August 2016	2%	2%	45%	2%	2%
November 2016	19%	1%	2%	8%	1%
January 2017	8%	1%	4%	3%	2%
April 2017	2%	1%	4%	2%	1%
October 2017	9.8%	1.2%	3.78%	1.74%	0.65%
January 2018	6.9%	2.2%	5.36%	2.2%	1.5%
October 2018	12.74%	1.0%	11.38%	2.4%	8.5%
April 2019	7.7%	8%	5%	1.6%	0.5%

March 2026

Maximum Emission as % of ½ hour ELV March 2026



Maximum Emission as % of daily ELV March 2026

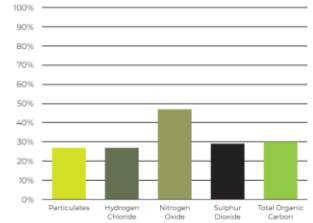


Archives

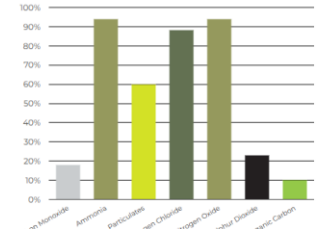
2026
2025
2024
2023
2022
2021
2020
2019
2018
2017
2016

February 2026

Maximum Emission as % of ½ hour ELV February 2026

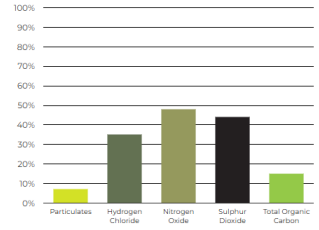


Maximum Emission as % of daily ELV February 2026

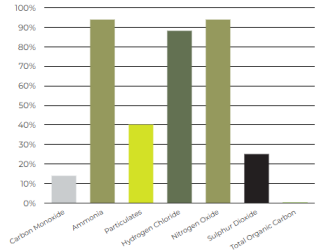


January 2026

Maximum Emission as % of ½ hour ELV January 2026



Maximum Emission as % of daily ELV January 2026



Clear, easy to navigate website
Includes archives and comparisons
Includes explanations and reporting

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2026 SRG topics and engagement suggestions

Upcoming communication and engagement:

- Ads – newspapers, Facebook
- Letterbox drop project flyer
- Updated website
- Online information session 28 May
- Boonah Show 29/30 May
- In person information session 13 June
- From late July – technical reports available: website, ads, info sessions

Comms & engagement suggestions always welcome!

Next SRG meeting: technical report focus

Other future topics?

Actions and close

- Summarise actions / topics for future sessions
- Meeting minutes distributed and on website
- Next meeting: July TBC