

Hooton Crematorium – Cremator design and emissions

This note provides a summary of the cremator equipment planned for a new crematorium on Waterworks Lane, Hooton along with the existing regulations that tightly control their environmental performance.

These proposals are in line with our previous application for a crematorium on School Lane, Hooton, and a full Air Quality assessment for Waterworks Lane will follow as part of any full application.

It is important to note that, as expected, the Environmental Protection Officer (EPO) for Cheshire West and Chester was satisfied that the equipment would not lead to any significant emissions as confirmed within the Planning officer's report in May 2023:

'6.55 The application has been supported by an AQA (Air Quality assessment) which has been reviewed by the EPO. In terms of the operation of the crematorium, the AQA models predicted emissions from the proposed development utilising a suitably robust methodology. The modelling indicates that emissions will not be at inappropriate levels at the relevant receptors. It should be noted that crematoria cannot operate unless granted a permit by the Environment Agency. If granted, such a permit would specify limits for pollutants in the interests of protecting human health. Subject to a condition in respect of dust management during construction, the proposed development would accord with Policy DM31.'

As the report points out, a separate application would need to be made to DEFRA, regardless of any planning permission, before the crematorium was allowed to operate under the terms of an annual permit. Further information is provided on page 2 but residents can be assured that the local EPO would be able to directly supervise the environmental performance of the crematorium with all emissions continuously monitored and available to public review.

Historic background

Cremation is the main choice for funeral arrangements with the cremation rate @80% in this area.

Historic crematoria, such as Landican, built in 1934, often had imposing chimney designs and were fitted with cremators which, naturally, lacked today's sophisticated filtration processes and may have impacted on local air quality.

The environmental Protection act 1990 introduced new standards for cremation and these standards have been further revised via process guidance updates issued in 1995, 2004, 2012 and 2025.

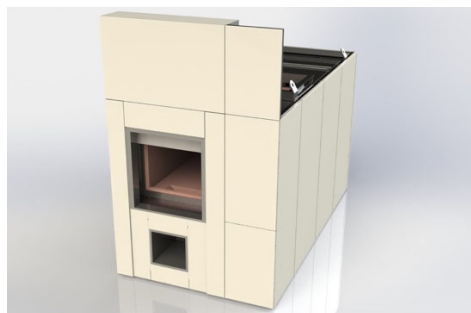
Air quality instruction issued by DEFRA in 2005 required crematoria to install filtration equipment to remove harmful emissions of mercury, dioxins and particulates alongside the introduction of computerised process controls.

Modern cremators, are designed to comfortably meet these much more stringent emission standards. Consequently, harmful emissions have been reduced to insignificant levels with new crematoria not even requiring the traditional tall chimney stack.

More information is provided below along with an accompanying note from our supplier, Facultative Technologies Ltd.

Modern designs and Modern cremation Equipment

The cremation equipment chosen is built in the UK, manufactured in West Yorkshire by Facultative Technologies Ltd (FT), the world leader in this field, and uses the best available technology and control techniques.



The filtration equipment has been refined to exceed the latest standards and the plant is designed to be upgradable in the future as new technologies are introduced.

Modern filtration and fan assisted abatement equipment has also allowed the size of the chimney on new crematoria to be much lower, typically rising only around 1 meter from the roof line, much lower than older crematoria where the chimney could be as much as 10m above the building.

Modern crematorium emissions are governed by an environmental permitting licence which is issued, controlled and audited for compliance by the local environmental health authority.

The operating constraints and permissible emissions forming the basis of a crematorium permit are set out in the DEFRA process guidance note PG5/2, the current version of which was issued in 2025.

<https://www.gov.uk/government/publications/crematoria-process-guidance-note>

The process guidance notes were recently revised (Dec 2025) by DEFRA. This represents a significant tightening of the permissible emissions for existing crematoria and imposes even more stringent requirements for new crematoria.

The plant for Hooton has already been designed to meet the latest standards and will significantly outperform the new limits applicable for new installations under the 2025 guidance.

The Permitted emissions limits from 2026 onwards are :

Substance	Permitted limits prior to 2026	Permitted limit (new cremators from Jan 26)	Typical emissions from a filtered FTIV cremator.
Particulates	20mg/Nm ³	5mg/Nm ³	< 5 mg/Nm ³
Hydrogen Chloride (HCl)	30mg/Nm ³	20mg/Nm ³	< 10 mg/Nm ³
Organic Compounds	20mg/Nm ³	10Mg/Nm ³	< 1 mg/Nm ³
NO _x	No limit	200mg/Nm ³	80-150 mg/Nm ³
Mercury	50ug/Nm ³	30 µg/Nm ³	<20 ug/Nm ³
Carbon monoxide	100mg/Nm ³	100mg/Nm ³	<15 mg/Nm ³
PCD/Flourans	0.1ng/Nm ³	0.1ng/Nm ³	<0.02ng/Nm ³

We describe the process as being effectively clean to air as the activated carbon filtration system built into the cremator plant ensures that harmful emissions are removed by the equipment within the building. This filter system not only removes substances like mercury and dioxins but it strictly controls particulates and also moderates the acidic content of the flue gasses.

In addition to the main filtration system, NO_x reduction equipment will be fitted, beyond the legal requirement, to further improve the air quality and we will be utilising both pre-carbon offset gas and carbon free electric suppliers to further reduce our carbon footprint.

The cremator will be controlled by means of closed loop emissions sampling and be subject to regular independent extractive testing reported to the council EHO team to ensure the permit conditions are met for every cremation.

The activated carbon is recycled to remove the pollutants before sensitive disposal.

Metals and orthopaedic parts are sensitively handled and recycled through a national approved scheme with the proceeds donated to local bereavement charities.

A heat exchanger is also included in the plant design to allow for energy from the heat of the process to be recovered and used within the building. This is now a common practice for new crematoria and is one way in which the environmental impact can be kept to a minimum.

Dispersion & Dilution assessment

The environmental permitting regulations require us to undertake and submit a full dispersion report which analyses the effects on human health of the potential pollutants and the dispersion of them into the environment.

This full assessment will be in line with the Institute of Air Quality Management (IAQM) land use planning and development control guidance.

Dispersion modelling is undertaken on an absolute worst-case basis assuming that the plant is operating at the maximum limit of the environmental permit for each and every cremation. In reality the cremation process will be operating well within the environmental permit levels and as such the modelling presents a deliberate overstatement of the pollution. It is however important for us to understand the maximum impact.

Human Health impacts of proposed crematorium:

- *For NO₂, particulates and VOCs-the maximum change in annual average concentration is expected to be classed as **negligible**.*
- *For mercury, the expected maximum change in annual average concentration at all locations is predicted to be classed as **negligible**.*
- *There are no annual average AQALs for SO₂, HCl or CO. However, the impact of short-term concentrations predicted for all of these pollutants, can be classed as having an **insignificant effect**.*
- *At the sensitive receptors (nearby buildings), the maximum predicted change in concentration for all pollutants is at a level considered as **Negligible**.*

- *The maximum predicted daily intake of dioxins due to inhalation is expected to be below 0.5% of the Tolerable Daily Intake (TDI).*

Ecological Impacts

The study will also consider impacts on designated conservation areas within 10Km of the site including Mersey and Dee estuaries, Liverpool Bay, Rivacre valley and Plymyard Dale

It is expected that :

- *The annual average process contributions to NOx and SO2 at all the conservation areas will be low enough such that they will be screened out.*
- *The daily average process contributions to NOx compared to the critical levels will also be low enough to be screened out*
- *Process contributions to Nitrogen and acid deposition rates at all the designated conservation areas will be low enough to also be screened out.*
- *The local ecology, including any Great Crested newts or Bats, will not be adversely affected by emissions.*

Experience and Dedication

The Directors of Hooton Crematorium have overseen the development of 22 new crematoria across the UK.

They have unrivalled experience in operating crematoria and fully understand the concerns of the public and the significant responsibility that comes with ensuring compliance with environmental legislation.

A failure to meet the regulations and abide by the permit would put the operation of the crematorium at risk, and emphasises the importance placed on the environmental performance of the crematorium.

All staff are trained in both environmental and ethical standards, operating at all times within the environmental Permit conditions and the FBCA code of conduct for crematoria staff.

Ultimately, the operation will be reviewed by the local Environmental Health Officer with the benefit of approved continuous monitoring equipment which analyse the environmental performance of each cremation can be analysed.

In addition to regular visits and inspections from environmental health officers, the cremator equipment will be managed under a dedicated maintenance programme which ensures the correct operation and the system will be independently tested on an annual basis to ensure Permit compliance levels are fully maintained.