

## AN ASSESSMENT OF CLAIMS MADE BY QAIR FOR THE PROPOSED HORSHAM INCINERATOR ON THEIR DEDICATED WEBSITE

<https://cher.energy>

### **About page**

#### **Qair claim: "the facility will contribute to the UK's drive to reduce CO2 emissions from electricity generation"**

The reality: The facility will in fact progressively undermine and delay the decarbonisation of the UK's electricity generation.

The carbon intensity of any electricity exported to the National Grid by Qair's incinerator will depend on the efficiency of the facility and the ratio of biogenic to non-biogenic waste being burnt, since biogenic waste is considered "carbon neutral". Viridor's Beddington incinerator reported its 2019 carbon intensity as 0.828 kg of CO<sub>2</sub>e per kWh, and this seems a good midrange figure to work from, and typical of the performance one may expect from Qair's incinerator.

The government's policy is to decarbonise grid electricity, starting at 0.233 kg CO<sub>2</sub>e/kWh in 2023 and dropping to 0.0276 kg CO<sub>2</sub>e/kWh by 2047. This means that any incinerator, including Qair's proposed facility, is already in conflict with government policy, and the conflict worsens year on year.

### **Technology page**

**Qair claim the facility will be "cleaner and safer".** Than what??

**Qair claim the facility will "reduce waste by up to 100%".**

The reality: An incinerator increases the volume of waste by adding oxygen. Apart from a small amount of mass converted to energy, everything which goes into an incinerator comes out again, either as gases, airborne particulates, or ashes. Typically one tonne of greenhouse gases is emitted for every tonne of waste burnt, up to two tonnes of greenhouse gases if the waste contains a high proportion of plastic. Around 25% of the waste is left as solid ashes. Thus in fact a typical incinerator increases the waste volume by between 125% and 200%

**Qair claim "emissions are continuously monitored".**

The reality: Only a small proportion of the emissions are continuously monitored, but this monitoring may not happen while the incinerator is being started up and shut down – the very times when it seems excess emissions are mostly likely to occur.

In all UK incinerators operating so far, heavy metals, dioxins and furans are monitored periodically, and the thresholds beyond which emissions must be reported to the Environment Agency are rarely breached. So far, so good. But dioxins build up in the environment and in body tissues over time, and recent studies in mainland Europe, in the vicinity of waste incinerators, show flora contaminated with dioxins and free range hens eggs unfit for human consumption. These studies are not conclusive evidence, but suggest further studies should be done to identify more clearly the pollution sources, and that a precautionary approach should be followed.

Just because emissions are monitored, either continuously or periodically, it does not follow that no harmful emissions will occur. Using the "costs to society" which the UK Treasury Green Book attaches to certain emissions, and recent statistics from a modern working incinerator of similar capacity to that proposed in Horsham, we can estimate the financial damage Qair's facility is likely to cause.

The Kidderminster incinerator began operating in 2018, and in 2021 it burnt 220,000 tonnes of waste. It emitted 165,200 kgs of Nitrogen Oxides (NO<sub>2</sub>), which at a cost to society of £8,148

per tonne, gives an annual cost of £1,344,420. It emitted 1,600kgs of particulates, assumed to be PM2.5 because the Pollution Inventory does not distinguish between PM10 and PM2.5. These PM2.5 particulates, at £74,769 per tonne cost to society, generate an annual cost of £119,624. These emissions fall within what the Environment Agency considers acceptable. They and these costs to society are, in a very rough and ready way, comparable to what we could expect from Qair's incinerator.

## **FAQs page**

### **What is the project?**

#### **Qair claims it will process 230,000 tonnes of "non-recyclable waste" from West Sussex and surrounding areas every year.**

This is likely to be a struggle if the UK government meets its target of halving residual waste by 2042. And the target should be achievable since surveys showed that of total residual waste from household sources in England in 2017, an estimated 53% could be categorised as readily recyclable, 27% as potentially recyclable, 12% as potentially substitutable and 8% as difficult to either recycle or substitute. Surveys of Commercial & Industrial Waste in Wales and North West England in 2019 and 2009 showed between 75% and 97.5% was recyclable.

Industry consultant Tolvic has warned of incinerator over-capacity in the UK; trade publications have speculated that feedstock may be imported from mainland Europe to keep incinerators running, and the UK government has announced it may prioritise the manufacture of fuels from waste over the generation of electricity. Just where is all the waste going to come from? Can we rely on Qair not to import it?

#### **Qair claims: "It will treat household black bin waste after all recycling has taken place, generating low carbon electricity and steam. Without the facility, this waste would probably be exported or end up in landfill."**

We already know the electricity will not be "low carbon" and we can expect waste supplies to be a problem if government policy succeeds. (See above)

But "household black bin waste"? Really?

The original planning application clearly indicated a desire primarily to provide a facility for commercial & industrial waste. Hence these extracts from the applicant's Non Technical Summary of the planning application:

*"3.1.3 There is a clear need for state-of-the-art facilities to allow commercial and industrial waste to be treated, recycled and energy to be recovered in the UK. This would avoid long distance waste travel and export of materials, such as refuse derived fuel, to Europe for energy recovery.*

*3.1.4 In order to meet the challenges facing the UK in terms of lack of landfill capacity and the need for waste treatment, new facilities are required that can treat, recycle and recover energy from commercial and industrial waste."*

And this extract from the Carbon Assessment supporting the planning application:

*4.1. The waste input to the thermal treatment facility is assumed to be based on the capacity of the plant to treat approximately 180,000 tonnes per annum of commercial and industrial (C&I) waste. The additional 50,000 tonnes being recycled from the facility will be ignored, as this would probably take place whether the thermal treatment facility was constructed or not."*

This incinerator is not and never has been intended to treat primarily household waste. While there is a possibility of around 120,000 tonnes of RDF (Refuse Derived Fuel) converted by BIFFA from household waste being available to the incinerator, we can assume the remaining incinerator capacity will be used mainly for Commercial & Industrial waste, sourced from wherever Qair can find it.

### **Why is the facility needed?**

The incinerator is not needed. There is clear evidence of imminent incinerator over-capacity in the UK and of a negative impact on recycling rates. This was clear even before the government announced its intention to halve residual waste by 2042, and before it suggested prioritising making fuel from waste rather than generating high carbon electricity.

**“The process displaces fossil fuel”** - it will increasingly displace lower carbon sources of electricity.

**“EfW contributes towards the UK’s renewable energy targets”** - No. While the burning of biogenic waste may for now be counted renewable energy, the remainder very definitely is not. This is why incineration is planned to be included in the UK Emission Trading Scheme.

### **What are the benefits of CHER?**

**“Create around 40 new skilled operational roles”** - More jobs are created by reuse and recycling.

**“Generate up to 23 megawatts (MW) of sustainable electricity. That’s enough energy to power approximately 47,000 homes.”**

Possibly up to half the electricity may be considered carbon neutral. The remainder will be very high carbon and will undermine the decarbonisation of the grid. Incinerators frequently fail to export as much electricity as promised, and sometimes break down for long periods (eg the 12 month turbine failure at Ardley).

### **What comes out of the chimney stack?**

**Qair states: The main components are water vapour, carbon dioxide, nitrogen and oxygen along with other controlled emissions.**

This is correct – so far as it goes. The CO<sub>2</sub>, NO<sub>2</sub> and particulates all entail considerable costs to society and sustainability, as explained above.

But there are some 495 individual chemical compounds which have been identified in the air emissions of a municipal waste incineration plant, most of which are not monitored. And then there are the compounds which are likely to form as the emissions cool and leave the top of the chimney, which have never been properly investigated.

All this for a facility which is not even needed.

### **How are air emissions managed?**

**Qair states: “Combustion gases are treated before they are released into the atmosphere to remove elements such as nitrogen oxide, dioxins and furans.**

Yes, but the removal is only partial, and as Pollution Inventories and declarations to the Environment Agency show, existing incinerators emit considerable quantities of undesirable gases and particulates into the vicinity. The chimney reaches high into the sky for a reason.

**Qair states: A Continuous Emissions Monitoring System ensures emissions are legally compliant and meet strict air quality standards set out in the facility’s environmental permit.**

“Legally compliant” and “meeting strict air quality standards” do not of themselves guarantee absolute safety. The standards are what the technology is capable of complying with, and only a small proportion of the emissions are continuously monitored. “Continuous” does not necessarily mean during start-up and shut-down phases.

## **Who will regulate the facility?**

If the incinerator is built, and if Qair is seen to comply with the terms of the Environmental Permit, inspections by the Environment Agency will become less frequent, and Qair will be trusted to self-regulate and self-report to a considerable extent.

## **References**

### **Emissions to air**

Identification and quantification of volatile organic components in emissions of waste incineration plants. Jay K. Stieglitz L. (1995) Chemosphere 30 (7) : 1249 -1260.

<https://www.gov.uk/government/publications/assess-the-impact-of-air-quality/air-quality-appraisal-damage-cost-guidance>.

<https://ukwin.org.uk/incinerators/library/Worcestershire/212>

<https://ukwin.org.uk/library/212-AnnualPerformanceReport-2021.xlsx>

<https://ukwin.org.uk/files/particulates/PRG-Particulates-Matter-December-2019.pdf>

<https://ukwin.org.uk/policy/>

<https://ukwin.org.uk/files/pdf/UKWIN-2021-Good-Practice-Guidance-for-Assessing-the-GHG-Impacts-of-Waste%20Incineration.pdf>

<https://ukwin.org.uk/facts/#unpaidcost>

### **Waste availability**

<https://ukwin.org.uk/files/pdf/UKWIN-Incineration-Overcapacity-Briefing.pdf>

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/907029/resources-and-waste-strategy-monitoring-progress.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/907029/resources-and-waste-strategy-monitoring-progress.pdf)

<https://wrapcymru.org.uk/resources/report/composition-analysis-commercial-and-industrial-waste-wales>

<https://webarchive.nationalarchives.gov.uk/20140329075720/http://cdn.environment-agency.gov.uk/genw0410bsjm-e-e.pdf>

<https://www.letsrecycle.com/news/aviation-fuels-could-impact-on-efw-plants-report-says/>

<https://www.endswasteandbioenergy.com/article/1816895/uk-move-waste-import-market-rdf-experts>

### **Studies of possible dioxin build-up in bioreceptors near incinerators**

<https://zerowasteeurope.eu/wp-content/uploads/2023/01/2023-Biomonitoring-report-FULL-REPORT-FINAL.pdf>

<https://www.toxicowatch.org/single-post/biomonitoring-beringen-belgium-2021>

[https://collectif3r.org/wp-content/uploads/2022/02/2022\\_rapport\\_ToxicoWatch\\_traduction\\_fr.pdf](https://collectif3r.org/wp-content/uploads/2022/02/2022_rapport_ToxicoWatch_traduction_fr.pdf)

[https://collectif3r.org/wp-content/uploads/2022/02/2022\\_rapport\\_ToxicoWatch\\_annexe\\_resultats\\_analyses\\_dioxines\\_lab\\_oratoires.pdf](https://collectif3r.org/wp-content/uploads/2022/02/2022_rapport_ToxicoWatch_annexe_resultats_analyses_dioxines_lab_oratoires.pdf)

<https://zerowasteeurope.eu/wp-content/uploads/2018/11/NetherlandsCS-FNL.pdf>