

Permit Application Representation

COMMENTS ON DRAFT SWADLINCOTE ERF INCINERATOR PERMIT & DECISION DOCUMENT

Proposed activity:

5.1 A(1) B: Incineration of non-hazardous waste in an incineration plant

Facility Location:

Swadlincote Energy Recovery Facility, Keith Willshee Way,
Swadlincote, DE11 9EN

Applicant:

R&P Clean Power Limited

Permit Number:

EPR/LP3327SK/A001

6TH OCTOBER 2025



As set out below, UKWIN has numerous concerns about the draft Permit and Decision Document that we hope will be taken into account in the determination of this application.

ADOPT SEPA REQUIREMENT FOR PUBLISHING LIVE MONITORING DATA ONLINE

While we welcome the requirement that the operator submit an annual performance report in line with the EA template, as per proposed draft Condition 4.2.2, more can be done to make emissions data available to the public in an accessible and timely manner. This would be in accordance with Article 55(2) of the Industrial Emissions Directive (IED) and with the EA 2030 Strategy which aims that by 2030 “the public is more informed through access to real-time environmental performance data”.

The Swadlincote permit should require the operator to make CEMS data readily available to the public via a website, as per the Scottish Environmental Protection Agency (SEPA) requirements such as those found in the draft permit for the Oldhall incinerator in Irvine.

Article 55(2) of the Industrial Emissions Directive states:

“For waste incineration plants or waste co-incineration plants with a nominal capacity of 2 tonnes or more per hour, the report referred to in Article 72 shall include information on the functioning and monitoring of the plant and give account of the running of the incineration or co-incineration process and the level of emissions into air and water in comparison with the emission limit values. That information shall be made available to the public.” [emphasis added]

In response to Article 55(2) requirements, SEPA states with respect to the draft Oldhall permit (PPC/A/1197167) in their draft decision document that in order to fulfil the requirement:

“Monitoring data is also required to be published on a publicly accessible web page, draft condition 6.1.13. This satisfies the requirements of this Article [of the Industrial Emissions Directive].”

SEPA’s draft Oldhall permit requirement 6.1.13 reads as follows:

“From the date of First Operation, continuous emissions monitoring data shall be made publicly available on a section of the Operators website in a format and at a frequency agreed by SEPA”.

According to the SEPA Decision Document, the condition “requires that emissions data will also be published on a web-based platform accessible via the internet”.

In the interests of transparency and compliance, including compliance with IED Article 55(2), the Environment Agency should follow SEPA’s lead and require the Swadlincote operator to make their monitoring data public via a webpage.

This should include information on the absolute level of pollutants and how they compare to ELV levels. It should cover real-time levels, half-hourly limits, daily limits, total annual emissions, etc.

Given the importance of GHG emissions and their impact with respect to climate change (and indeed their implications for UK ETS costs), such information, including both CO₂ and N₂O, should also be made readily available to the public even if these substances have no ELV limits. The CO₂ data should also differentiate between fossil and biogenic CO₂.

For examples of online emissions reporting conditions being imposed for incinerator permits issued by SEPA see:

- Draft Permit PPC/A/1197167: https://consultation.sepa.org.uk/permits/copy-of-organisation-location-ppc-application/user_uploads/oldhall-energy-recovery-facility---draft-permit-conditions.pdf and https://consultation.sepa.org.uk/permits/copy-of-organisation-location-ppc-application/user_uploads/oldhall-energy-recovery-facility---draft-decision-document-10.pdf
- Permit PPC/A/1186430: https://consultation.sepa.org.uk/permits/ness_efw_facility_ppc_application/results/finalpermit-nessefwfacilityaberdeen.pdf
- Permit PPC/A/1187576: <https://consultation.sepa.org.uk/permits/drumgrey-energy-recovery-centre-ppc-application/results/drumgrayenergyrecoverycentrefinalpermit.pdf>

ADOPT SEPA'S OFFSITE ENVIRONMENTAL MONITORING REQUIREMENTS

The Environment Agency should adopt the approach taken by SEPA in relation to the Draft Oldhall Permit which is to require offsite monitoring for all pollutants not screened out as insignificant as a result of the modelling process.

This is based on advice from the Health Board that:

“If SEPA grant this PPC permit, we would advise that SEPA arrange or request for some monitoring of these air pollutants at the site and in the immediate surrounding area at ground level – this would help to provide some assurance that the actual emissions of these air pollutants when the Energy Recovery Facility is operational, are in line with what the detailed modelling analysis has indicated (low risk to health)”.

In response, SEPA noted that:

“Health Board feedback identified NO₂ (oxides of nitrogen, SO₂ (oxides of sulphur), VOCs (volatile organic compounds) and heavy metals for consideration for monitoring in the locale as well as at site. All of the highlighted parameters noted will be monitored at the site in the incineration flue gases: NO₂, SO₂ and VOCs are monitored continuously, heavy metals are monitored periodically therefore the rate of discharge will be monitored. The permit also contains a requirement in Schedule 9.1 for an Environmental Monitoring Plan to be developed and implemented. This monitoring plan includes ‘ambient’ air monitoring in the locale for NO₂, SO₂ and VOCs and also particulate matter, condition 9.1.1 and Table 9.1. Heavy metal emissions to air will continue to be monitored at the source i.e. in the flue gases to ensure permit limits are complied with as well as in soil and vegetation samples from the locale to monitor for any impact from emissions, condition 9.1.1 and Table 9.1. Ambient air concentrations will therefore be measured and assessed”.

This advice ought to similarly be followed for the Swadlincote proposal, where NO₂, SO₂, VOCs, and metals (Arsenic) were similarly not screened out as insignificant.

Oldhall Draft Permit Condition 9.1.1 states:

“By four months prior to the Commencement of Commissioning, the Operator shall prepare, record, maintain and report to SEPA an Environmental Monitoring Programme (“Environmental Monitoring Programme or “EMP”). The EMP shall include proposals for the monitoring of concentrations in soil, vegetation and ambient air for the parameters identified in Table 9.1 and according to the requirements in Table 9.1 prior to the Commencement of Commissioning and following subsequent operation”.

Oldhall Draft Table 9.1 on Environmental Monitoring reads as follows:

Table 9.1: Environmental Monitoring

Required by Condition 9.1.1

Environmental measurement (concentration)	Location Note 1, 2 and 4	Methodology	Number of samples		
			Prior to Commissioning	Year 2 after First Year of Operation	Subsequent years of operation
Dioxins and furans in soil & vegetation	As agreed in writing with SEPA.	Sampling according to ISO 18400-102/104 or as otherwise agreed in writing with SEPA	As agreed in writing with SEPA.	As agreed in writing with SEPA.	As agreed in writing with SEPA.
Heavy metals by species in soil & vegetation. Specific species as agreed in writing with SEPA.	As agreed in writing with SEPA.	Sampling according to ISO 18400-102/104 or as otherwise agreed in writing with SEPA	As agreed in writing with SEPA	As agreed in writing with SEPA.	As agreed in writing with SEPA.
A wind sock and a weather station capable of measurement and recording of wind direction, wind speed and air temperature.	As agreed in writing with SEPA.	According to good practise for selection and siting of weather stations.	Continuously recorded	Continuously recorded	Continuously recorded
Ambient air quality for the following parameters: Oxides of nitrogen, oxides of sulphur, total volatile organic carbon and particulate matter.	As agreed in writing with SEPA.	Latest version of EA Technical Guidance Note (Monitoring) M8 Monitoring Ambient Air or as otherwise agreed by SEPA	Monitors deployed as early as practical, to be agreed in writing with SEPA.	Monitoring in situ from start of commissioning for at least two years, to be agreed in writing with SEPA.	To be agreed in writing with SEPA

The rationale given for Oldhall Draft Table 9.1 in the SEPA Decision Document is: “To gather information on local air quality to verify the Air Quality Assessment modelling predictions”.

This same rationale justifies an approach to be required by the permit for Swadlincote which is at least as comprehensive.

NEED FOR ENHANCED DIOXIN MONITORING, INCLUDING ENHANCED BIOMONITORING

Page 43 of the Draft Decision Document for Swadlincote states:

“Some pollutants, such as dioxins, furans and dioxin like PCBs, have human health impacts at lower ingestion levels than lend themselves to setting an air quality standard to control against”.

Given the lack of an air quality standard, these emissions cannot be screened out as insignificant and as such - in line with the SEPA approach for other pollutants which cannot be screened out as insignificant - the EA ought to require the Swadlincote operator to monitor these emissions through biomonitoring as a permit requirement.

While a HHRA is provided, the cited assessment is based on modelling, and all modelling is subject to uncertainty.

No assessment is made as to the extent to which HHRA modelling is consistent with the various studies that have been carried out which found high levels of dioxins around incinerators.

As such, further consideration should be given to studies showing high levels of dioxins around incinerators found through actual monitoring. In line with this we request that the most robust approach be adopted, and that monitoring of chicken eggs and breast milk be required by the permit to be carried out by independent professionals funded by the Swadlincote operator.

We specifically draw attention to the following studies which highlight either high levels of dioxins or adverse health outcomes around incinerators, some of which specifically call for (and all of which serve to justify) enhanced environmental monitoring and human biomonitoring around incinerators:

1. Parkes B, Hansell AL, Douglas P, Fecht D, Wellesley D, Kurinczuk J J, Rankin J, Hoogh Kd, Fuller GW, Elliott P, Toledano MB. ‘Risk of congenital anomalies near municipal waste incinerators in England and Scotland: Retrospective population-based cohort study’. Environment International, 134, 104845, 2020

This study found small increased risks (2 to 7%) for congenital anomalies around municipal waste incinerators (MWIs), and concludes that: “...further monitoring of exposures and health outcomes near MWIs appears warranted.”

2. Parsons, R. E., Douglas, P., Ashworth, D., Hansell, A. L., Sepai, O., Chadeau-Hyam, M., & Toledano, M. B. (2025). Polychlorinated dibenzo-dioxin/furan and polychlorinated biphenyl concentrations in the human milk of individuals living near municipal waste incinerators in the UK: Findings from the Breast milk, Environment, Early-life, and development (BEED) human biomonitoring study. *Environmental Research*, 267, Article 120588.

This study found elevated levels of toxins in breast milk around municipal waste incinerators and notes: "The results from this study suggest that MWI emissions may make a small contribution to the body burden of toxic PCDD/F and PCB mixtures. Enhanced environmental monitoring and human biomonitoring of PCDD/Fs and PCBs near MWIs would be needed to investigate this further."

3. García-Pérez J, Fernández-Navarro P, Castelló A, López-Cima MF, Ramis R, Boldo E, López-Abente G. 'Cancer mortality in towns in the vicinity of incinerators and installations for the recovery or disposal of hazardous waste'. *Environment International*, 51:31-44, 2013.

This study states: "Our results support the hypothesis of a statistically significant higher risk, among men and women alike, of dying from all cancers in towns situated near incinerators and hazardous waste treatment plants, and specifically, a higher excess risk in respect of tumors of the stomach, liver, pleura, kidney, and ovary."

4. Romanelli AM, Bianchi F, Curzio O, Minichilli F. 'Mortality and Morbidity in a Population Exposed to Emission from a Municipal Waste Incinerator. A Retrospective Cohort Study'. *International Journal of Environmental Research and Public Health*. 10,16(16):2863, 2019.

This study states: "The present study shows associations between exposure to MWI [municipal waste incineration] emissions and an increased mortality trend among males for general and natural causes (trend + 2% and + 3%, respectively), tumor of the lymphohematopoietic system (trend + 23%), in particular NHL (+ 29%), cardiovascular diseases (+ 6%); acute respiratory diseases among females (+ 19%); and leukemia in both genders (M + 26%, F + 39%). In addition, an increasing HR trend was confirmed for hospitalization due to tumor of the lymphohematopoietic system in males (+ 14%), in particular for NHL (+ 21%) and leukemia (+ 21%)."

5. The Environment Agency's 2007 UK Soil and Herbage Pollutant Survey (UKSHS Report No 10).

This study notes: "significant elevations in dioxin concentrations compared with rural herbage" around UK incinerators.

6. Arkenbout, A., Bouman, K. J. & Esbensen, K. H. (2025). Introduction of Innovative Sampling Media for Biomonitoring of Environmental Loads of Persistent Organic Pollutants (POPs). *Sampling Science & Technology*, April 2025(3), 2-25. <https://www.sst-magazine.info/issues/sst-003/article/introduction-of-innovative-sampling-media-for-biomonitoring-of-environmental-loads-of-persistent-organic-pollutants-pops/>

As set out in the Abstract to this peer reviewed article: "Combustion-related industry activity inevitably results in emissions of toxic substances, such as dioxins, PFAS, PAH, also called persistent organic pollutants (POPs) and heavy metals, with a key focus on to what degree this is accompanied by unacceptable pollution in the surrounding environments. Measurements of the environmental load of these and other industrial emissions are today limited in terms of relevant time frame, frequency and target POPs. A comprehensive systematic monitoring is critically needed to support endangered surrounding environments and the health of local populations. Here we present selected studies from the last decade developing a science-backed basis for improving monitoring of industrial emission deposition loads of hazardous POP substances with a special focus on the use of both conventional as well as innovative sampling media: soil, water, sediments, sheep's wool, eggshells of wildlife birds, mosses (Bryophytes), pine needles (*Picea abies*; *Pinus sylvestris*), evergreen tree leaves (*Olea europaea*; *Quercus ilex*), liver (from dead wildlife animals), even mother's milk".

MODELLING OF THE IMPACTS OF DIOXIN EMISSIONS IN RELATION TO BREAST MILK SAFETY

While some historic modelling of infant exposure through breast milk has been conducted for Swadlincote, this has not been updated to take into account the potential of impacts in line with the BEED (Breast milk, Environment, Early-life, and Development) study by Parsons et al (see above).

The supplementary information for the BEED study states that using the 2022 WHO-TEFs rather than the 2005 WHO-TEFs takes them from saying "After adjustment or confounders, a doubling in modelled PM₁₀ was significantly associated with an average increase of 9.71% (95% CI: 2.91%–16.5%) in Σ TEQ₂₀₀₅-PCDD/Fs + PCB, 9.14% (95% CI: 1.79%–16.5%) in Σ TEQ₂₀₀₅-PCDD/Fs and 9.02% (CI:1.57%–16.5%) in Σ TEQ₂₀₀₅-PCBs" to saying "After adjustment or confounders, a doubling in modelled PM₁₀ was significantly associated with an average increase of 10.46% (95% CI: 3.38% to 17.75%) in Σ TEQ₂₀₂₂-PCDD/Fs + PCB and 10.41% (95% CI: 2.76% to 18.06%) in Σ TEQ₂₀₂₂-PCDD/Fs".

Key parameters/findings of the study include:

- Human-milk dioxin-like toxicity (TEQ) in mothers living near 3 English municipal waste incinerators (MWIs).
- Key baseline: 50% (75/150) of milk samples exceeded EFSA's infant guidance value of 5.9 pg TEQ₂₀₀₅/g lipid; all samples exceeded the WHO-UNEP 0.1–1 pg WHO₂₀₀₅-TEQ/g range.
- The cohort's total TEQ (PCDD/Fs + PCBs, WHO-2005 TEFs) followed a lognormal distribution with geometric mean 5.81 pg/g and GSD 1.64.
- Exposure proxy: modelled PM₁₀ from the nearest MWI. A doubling of this proxy was associated with ~9.7% higher TEQ using WHO-2005 TEFs, and ~10.5% using WHO-2022 TEFs (supplement). Proximity by distance showed no association.

Because the study reports the **shape of the TEQ distribution** (GM 5.81; GSD 1.64) and the **per-doubling effect**, we can estimate how many additional mothers are pushed over EFSA's 5.9 pg/g threshold when exposure rises:

- **One doubling (~+10.46%):** values in the 5.34–5.9 pg/g band would cross the line. Under the reported lognormal, that band contains **~8% of the cohort** ⇒ **~8 percentage-point (pp)** additional exceedances.
- **Two doublings (~+22%):** the 4.84–5.9 pg/g band moves over the line, containing **~16%** ⇒ **~16 pp** additional exceedances.

- **Uncertainty:** carrying the study's **95% CI per doubling ($\approx +3.4\%$ to $+17.8\%$)** through the same calculation gives roughly **$\sim 3\text{--}13$ pp per doubling**.

As such, the BEED study indicates that even modest MWI-related increments can **meaningfully increase the prevalence of exceedance** in nearby populations.

The relevance of these findings to the Swadlincote proposal, and to the method that infant exposure through breast milk ought to be considered in an updated HHRA for Swadlincote and indeed for all future HHRA's for other incinerator proposals, and these should be assessed in collaboration with the FSA and UKHSA to identify the potential impact of the development on pushing breast milk over (or further over) relevant established safety thresholds.

MODELLING OF THE IMPACTS OF DIOXIN EMISSIONS IN RELATION TO EGG AND SHEEP SAFETY

The HHRA for Swadlincote appears to consider just two agricultural receptor locations, not all of the nearby agricultural land. Other locations could have higher dioxin levels than the two modelled locations.

We request that worst-case predictions for dioxins in eggs should be made for all agricultural land (not just the two agricultural receptors defined) and that these dioxin levels should be compared to the limit set for dioxins in eggs for human consumption.

We also request for the predicted level of dioxins in sheep to be compared with human food safety limits, not least because of the 'fatty' nature of meat from sheep and the storage of dioxins in fatty tissue.

The results of this analysis should be shared with FSA for comment to allow for an informed consideration of the likely and potential worse case impacts of this facility on the extent to which it could result in eggs or sheep-based foods going over (or further over) limits set for dioxins associated with human consumption.

LACK OF EXPLANATION OF HOW AQMAU COMMENTS ON FISH RECEPTORS WERE HANDLED

The AQMAU response dated 28th March 2025 states:

“Direct inhalation and ingestion of soil, home grown produce, drinking water, eggs from home reared chickens, home grown poultry, beef, pork, cow’s milk, locally caught fish and consumption of breast milk for infants are the pathways that have been considered. The consultant has included the ingestion of locally caught fish as a potential pathway only for the ‘fisher’ receptor. They have assumed that this receptor has the likelihood of sourcing a large proportion of their diet from a fishery. **However, they have excluded this pathway for other receptors (farmer and resident) even though there are relevant receptors within 10 km of the stack.**” (emphasis added)

No explanation is given in the decision document of how this concern was addressed, and we do not see any updated response from AQMAU.

This concern raised by AQMAU should be fully and transparently addressed prior to the determination of the permit application.

LACK OF EXPLANATION OF HOW AQMAU COMMENTS ON LONG TERM PROCESS CONTRIBUTIONS WERE HANDLED

The AQMAU response dated 28th March 2025 states:

“The consultant reported ST PCs and PECs in tables 43-47 of the AQA. We Observe: ...We note that the LT PCs for abnormal emissions of dioxins and furans are **incorrectly assessed** against the ES instead of including them in the Human Health Risk Assessment (HHRA).” (**emphasis added**)

We do not see any update to the HHRA to address this mistake.

This concern raised by AQMAU should be fully and transparently addressed prior to the determination of the permit application.

IMPACT OF N DEPOSITION ON CALKE PARK SSSI AND RIVER MEASE SAC

The Air Quality Assessment states:

“No critical loads for nutrient nitrogen or acid deposition have been assigned for the River Mease SAC or Calke Park SSSI, and no critical loads for acid deposition have been assigned for the Castle Gresley Wetland LWS or Netherseal Colliery LWS”.

It is unclear why no effort is being made to determine an indicative critical load for these sites given their potential sensitivity to deposition to allow for at least some level of assessment of the impact on these sites.

For example, the APIS entry for Calke Park SSSI states that the site is vulnerable to N and that a decision is to be taken at a site specific level. It is unclear what attempts there were to arrive at a site specific decision or if any such attempt has been made at all.

In our understanding Calke Park is ancient wood-pasture/parkland with veteran trees and associated grasslands. For these common habitat types at Calke, APIS gives the following empirical nutrient-N critical load ranges based on the UNECE 2022 review and revision of empirical loads of nitrogen for Europe:

- Broadleaved deciduous woodland: 10-15 kg N ha⁻¹ year⁻¹.
Source: <https://www.apis.ac.uk/nitrogen-deposition-broadleaved-deciduous-forest>
- Neutral grassland / low & medium altitude hay meadows: 10-20 kg N ha⁻¹ year⁻¹. Source: <https://www.apis.ac.uk/nitrogen-deposition-neutral-grassland>
- Acid grassland (where present in units): 6-10 kg N ha⁻¹ year⁻¹.
Source: <https://www.apis.ac.uk/nitrogen-deposition-acid-grassland>

As such, at the very least, the impact should be assessed against these load ranges and an explanation should be given for what efforts were made to arrive at a site specific level.

If the Environment Agency does not understand the impact then they are not in a position to conclude that this impact is acceptable.

RECORD OF ENERGY RECOVERY DOWNTIME

In line with the waste hierarchy (which places D10 plants below R1 plants) and the principle of Best Available Techniques (including BAT 2 and BAT 20 on gross electrical efficiency), the instances where the facility is operating without energy being generated and exported should be minimised.

SEPA's Condition 5.2.5 for Oldhall requires the operator to maintain a record of all periods when the incineration plant is operating but where the facility's energy recovery system (power or heat export) is not being utilized.

This transparency measure links efficiency and operations, obliging the operator to track and to explain any suboptimal energy usage (for example, if the turbine is bypassed or if a heat customer is offline, causing steam to be vented). The draft Swadlincote permit does not include an equivalent explicit requirement.

SEPA's condition 5.2.5 states:

"A record shall be kept of all times when the incineration plant is operating and the power and/or heat recovery system is not utilised with the reason for the non-utilisation. The record shall be submitted annually in the report required under Condition 2.4.3."

And Condition 2.4.3 reads as follows:

"The Operator shall complete an Annual Performance Report ("the Annual Performance Report") on the waste incineration plant in the excel spreadsheet supplied by SEPA. Said report shall be completed by the 31 January each year (or other date agreed in writing by SEPA) for the previous calendar year".

The EA could adopt a similar record-keeping condition, which would complement the energy efficiency requirements. Such a condition could be worded as follows:

"The operator shall record all instances where the incinerator is operational and generated heat is not recovered for energy production (electricity or heat export), noting the duration and reason for such instances. These records shall be available for inspection and included in the Annual Performance Report".

Such a condition supports accountability and further incentivises the operator to minimise downtime of energy recovery systems, aligning with the spirit of IED Article 50(5) which states:

"Any heat generated by waste incineration plants or waste co-incineration plants shall be recovered as far as practicable".