Permitting decisions

Variation

We have decided to grant the variation for Runcorn Energy from Waste Facility operated by Viridor Waste Management Limited.

The variation number is EPR/RP3638CG/V005.

We consider in reaching that decision we have taken into account all relevant considerations and legal requirements and that the permit will ensure that the appropriate level of environmental protection is provided.

Purpose of this document

This decision document provides a record of the decision making process. It:

- highlights key issues in the determination
- summarises the decision making process in the decision checklist to show how all relevant factors have been taken into account
- shows how we have considered the consultation responses

Unless the decision document specifies otherwise we have accepted the applicant's proposals.

Read the permitting decisions in conjunction with the environmental permit and the variation notice. The introductory note summarises what the variation covers.

Key issues of the decision

1. Assessment of the installation's emissions to air (air quality, human health and ecological impacts)

A methodology for the risk assessment of point source emissions to air, which we use to assess the risk of applications we receive for permits, is set out in our guidance 'Air emissions risk assessment for your environmental permit' and has the following steps:

- Describe emissions and receptors
- Calculate process contributions
- Screen out insignificant emissions that do not warrant further investigation
- Decide if detailed air modelling is needed
- Assess emissions against relevant standards
- Summarise the effects of emissions

The methodology uses a concept of "process contribution (PC)", which is the estimated concentration of emitted substances after dispersion into the receiving environmental media at the point where the magnitude of the concentration is greatest.

For incineration applications, we normally require the Applicant to submit a full air dispersion model as part of their application. Air dispersion modelling enables the process contribution to be predicted at any environmental receptor that might be impacted by the plant.

Once short-term and long-term PCs have been calculated in this way, they are compared with Environmental Standards (ES).

PCs are considered insignificant if:

- the long-term process contribution is **less than 1%** of the relevant ES; and
- the short-term process contribution is **less than 10%** of the relevant ES.

The long term 1% process contribution insignificance threshold is based on the judgements that:

- It is unlikely that an emission at this level will make a significant contribution to air quality;
- The threshold provides a substantial safety margin to protect health and the environment.

The short term 10% process contribution insignificance threshold is based on the judgements that:

- spatial and temporal conditions mean that short term process contributions are transient and limited in comparison with long term process contributions;
- the threshold provides a substantial safety margin to protect health and the environment.

Where an emission is screened out in this way, we would normally consider that the Applicant's proposals for the prevention and control of the emission to be Best Available Techniques (BAT). That is because if the impact of the emission is already insignificant, it follows that any further reduction in this emission will also be insignificant.

However, where an emission cannot be screened out as insignificant, it does not mean it will necessarily be significant.

For those pollutants which do not screen out as insignificant, we determine whether exceedences of the relevant ES are likely, taking into account existing background concentrations and the overall predicted environmental concentration (PEC). This is done through a detailed audit and review of the Applicant's air dispersion modelling taking background concentrations and modelling uncertainties into account.

1.1 Assessment of impact upon air quality

The Applicant has assessed the Installation's potential emissions to air against the relevant air quality standards, and their potential impact upon local conservation and habitat sites and human health. These assessments predicted the potential effects on local air quality from the Installation's stack emissions using

the AERMOD 6 dispersion model, which is a commonly used computer model for regulatory dispersion modelling. The model used 5 years of meteorological data collected from the weather station at John Lennon (Liverpool) Airport. The impact of the terrain surrounding the site upon plume dispersion was considered in the dispersion modelling.

The air impact assessments, and the dispersion modelling upon which they were based, employed the following assumptions.

First, for the following substances they assumed that the ELVs in the Permit would be the maximum permitted by Article 46(2) and Annex VI of the IED:

- Oxides of nitrogen (NOx), expressed as NO_2
- Total dust
- Carbon monoxide (CO)
- Sulphur dioxide (SO_2)
- Hydrogen chloride (HCl)
- Hydrogen fluoride (HF)
- Metals (Cadmium, Thallium, Mercury, Antimony, Arsenic, Lead, Chromium, Cobalt, Copper, Manganese, Nickel and Vanadium)
- Polychlorinated dibenzo-para-dioxins and polychlorinated dibenzo furans (referred to as dioxins and furans)
- Gaseous and vaporous organic substances, expressed as Total Organic Carbon (TOC)

The assessment assumed that the Installation operates continuously at the relevant long-term or short-term ELVs, i.e. the maximum permitted emission rate.

The model also considered emissions of pollutants not covered by Annex VI of IED, specifically ammonia (NH_3), polycyclic aromatic hydrocarbons (PAH) and Polychlorinated biphenyls (PCBs).

We are in agreement with this approach. The assumptions underpinning the model have been checked and are reasonably precautionary.

We have checked the background pollution data used by the Operator for those pollutants which did not screen out as insignificant. We consider the assumed background concentrations to be appropriate.

The way in which the dispersion models were used, the selection of input data, use of background data and the assumptions made have been reviewed by the Environment Agency's modelling specialists to establish the robustness of the Applicant's air impact assessment.

We have audited and checked the air quality and human health impact assessment provided and agree with the conclusions drawn from them.

1.2 Assessment of Air Dispersion Modelling Outputs

The Applicant's modelling predictions are summarised in the tables below.

The Applicant's modelling predicted peak ground level exposure to pollutants in ambient air. The modelling showed that the relevant environmental standards will not be exceeded by any of the modelled emissions at the point of maximum modelled ground level exposure.

Where the process contribution is demonstrated to be less than 1% of the long term ES and less than 10% of the short term ES (a level below which we consider to indicate insignificant impact), we consider that examination of the PEC and background is not necessary.

Emissions to air - Non-metals

Pollutant	EQS / EAL		Back-ground	Process Contribution (PC)		Predicted Environmental Concentration (PEC)	
	µg/m³		µg/m³	µg/m³	% of EAL	µg/m³	% of EAL
NO_2	40	1	18.00	0.56	1.40	18.56	46.40
	200	2		6.36	3.18		
PM_{10}	40	1		0.04	0.10		
	50	3		0.15	0.30		
$PM_{2.5}$	25	1		0.04	0.16		
SO_2	266	4		6.33	2.38		
	350	5		4.39	1.25		
	125	6		1.83	1.46		
HCl	750	7		1.05	0.14		
HF	16	8		0.01	0.06		
	160	7		0.21	0.13		
CO	10000	9		3.65	0.04		
TOC	2.25	1	0.10	0.04	1.78	0.14000	1.82
PAH	0.00025	1	0.00007	0.00004	16.00	0.00011	44.00
NH_3	180	1		0.02	0.01		
	2500	10		0.63	0.03		
PCBs	0.2	1		0.00052	0.26		
	6	10		0.00052	0.01		
Dioxins	NA	11	-	0.4	-		

TOC as 1,3-butadiene

PAH as benzo[a]pyrene

1 Annual Mean
2 99.79th %ile of 1-hour means
3 90.41st %ile of 24-hour means
4 99.9th ile of 15-min means
5 99.73rd %ile of 1-hour means
6 99.18th %ile of 24-hour means
7 1-hour average
8 Monthly average
9 Maximum daily running 8-hour mean
10 1-hour maximum
11 Annual mean in fg/m³

Emissions to air – Metals

Pollutant	EQS / EAL		Back-ground	Process Contribution		Predicted Environmental Concentration	
	µg/m³		µg/m³	µg/m³	% of EAL	µg/m³	% of EAL
Cadmium (Cd)	0.005	1	0.0001	0.0002	4.0	0.00030	6.0
Thallium	1	1		0.0002	0.02		
(Tl)	30	2		0.005	0.02		
Mercury (Hg)	0.25	1		0.0002	0.08		
	7.5	2		0.005	0.07		
Antimony	5	1		0.00004	0.00		
(Sb)	150	2		0.00114	0.00		
Lead (Pb)	0.25	1		0.0002	0.08		
Copper	10	1		0.00016	0.00		
(Cu)	200	2		0.0042	0.00		
Manganese	0.15	1		0.00024	0.16		
(Mn)	1500	2		0.00627	0.00		
Vanadium	5	1		0.00002	0.00		
(V)	1	3		0.00062	0.06		
Arsenic (As)	0.003	1	0.00071	0.0001	3.33	0.00081	27.0
Cobalt	1	1		0.00002	0.00		
(Co)	30	2		0.0007	0.00		
Chromium (II)(III)	5	1		0.00037	0.01		
(Cr II & III)	150	2		0.00962	0.01		
Chromium VI (Cr VI)	0.0002	1		0.0000005	0.25		
Nickel (Ni)	0.02	1	0.00141	0.0009	4.40	0.00229	11.5

1 Annual Mean

2 1-hr Maximum

3 24-hr Maximum

i) Screening out emissions which are insignificant

From the tables above the following emissions can be screened out as insignificant in that the process contribution is < 1% of the long term ES and <10% of the short term ES:

- NO_2 (short term), PM_{10}, $PM_{2.5}$, SO_2, HCL, HF, CO, NH_3, PCBs, Tl, Hg, Sb, Pb, Cu, Mn, V, Co, Cr II & III, Cr VI.

Therefore we consider the Applicant's measures for preventing and minimising the emissions of these substances are BAT for the Installation.

ii) Emissions unlikely to give rise to pollution

Also from the tables above, the following emissions (which were not screened out as insignificant) have been assessed as being unlikely to give rise to significant pollution in that the predicted environmental concentration

is significantly less than 100% of the relevant ES (taking expected modelling uncertainties into account). These are:

- NO_2 (long term), TOC (as 1,3-butadiene), PAH (as benzo[a]pyrene), Cd, As and Ni.

Whilst all emissions cannot be screened out as insignificant, the Applicant's modelling shows that the installation is unlikely to result in a breach of the assessed ES.

The primary and secondary techniques employed for preventing and minimising these emissions from the permitted facility have not changed as a result of this variation and based upon predicted emissions (as assessed above) we consider that the Applicant's measures are BAT for the Installation.

There is no ES for dioxins and furans as the principal exposure route for these substances is by ingestion and the risk to human health is through the accumulation of these substances in the body over an extended period of time. This issue is considered in more detail in section 1.3

1.3 Human Health Risk Assessment (HHRA)

The potential environmental impact of emissions of dioxins were assessed as part of the Human Health Risk Assessment carried out for the facility on the basis of 'predicted maximum intake', as detailed below.

The predicted maximum intake assumes that the person lives at the point of maximum impact and consumes home-grown produce. The risk assessment presented the maximum predicted intake as a percentage of the Committee on Toxicity (COT) Tolerable Daily Intake (TDI) of 2 pg WHO-TEQ/kg(BW)/day, as reported in table 5-4 of the HHRA. For adults they predict an impact of 0.06% of the TDI. For children the maximum impact is predicted to be 0.22% of the TDI. Therefore, the results of the HHRA show that the impact of the EfW facility's emissions of dioxins and furans upon human health are likely to be insignificant.

The assessment methodology has used conservative assumptions to generate scenarios that will lead to overestimations of the risk to human health. We agree that this is an appropriate and conservative approach. We have conducted our own HHRA screening checks using the US EPA HHRAP method and our own dispersion modelling checks. We agree with the conclusions drawn, that there would be no significant risk from the facility to human health.

1.4 Impact on Habitat sites, SSSIs and non-statutory conservation sites

The habitats assessment considered 4 ecological receptors that are within the relevant distance criteria from the site (within 10km for European designated Habitat sites (SAC/SPA) and 2km for nationally/locally designated conservation sites (SSSIs, local wildlife sites (LWS)):

1. Mersey Estuary SPA/RAMSAR Site (which includes Upper Mersey Estuary LWS) (ER1)
2. Mersey Estuary SSSI (Frodsham Lagoons) (ER2)
3. Runcorn Hill LWS (ER3)
4. Pickering Pasture LWS (ER4)

The dispersion modelling and ecological impact assessment provided by the Operator considered the potential impact from emissions of oxides of nitrogen, sulphur dioxide, ammonia and hydrogen fluoride; nitrogen deposition and acid deposition associated with the facility's emission of combustion gases to air.

The assessments provided a conservative, worst-case assessment, on the basis that the maximum predicted process contributions referred to below are the maximum predicted concentrations modelled anywhere within the habitat/conservation sites, based upon worst-case meteorological conditions taken from 5 years of data and assumes the continuous operation of the facility at the permitted emission limit values.

The ecological assessment concludes that the predicted impact on designated sensitive habitats from the EfW stack emissions will cause 'no adverse effects' for European sites, 'no likely damage' for SSSI's and 'no significant pollution' for other sites.

The dispersion modelling and assessment has been reviewed and checked by the Environment Agency's air quality modelling specialists and we agree with the conclusions drawn; that the Installation and changes permitted by the variation are not likely to damage the interest features of the sites in question.

Critical level (CLe) assessment results for the EfW facility are reported in tables 5-15 and 5-16 of the Air Emissions Risk Assessment. The assessment predicts PCs that are either insignificant or PECs that are below 100% of the CLe.

Acid and nutrient nitrogen deposition predictions have been made following AQTAG06 guidelines. Nutrient nitrogen and acid deposition predictions are reported in tables 5-17 to 5-20 of the Air Emissions Risk Assessment. The assessment predicts that PCs are insignificant at all ecological sites. We have checked the critical levels and critical loads (CLo) used against those detailed on the Air Pollution Information System (APIS) website to ensure that the predictions are accurate.

1.4.1 Assessment of impact upon Statutory Habitat Sites (SPA, RAMSAR & SSSIs)

The results of the assessment are summarised in the tables below.

The assessment provided by the Operator showed that the predicted PCs for the following emissions at both statutory habitat sites can be considered insignificant, on the basis that they are less than 1% of the long term critical level/load or less than 10% of the short term critical level/load: SO_2, NH_3, NOx (short term), HF, Nitrogen Deposition and Acid Deposition.

Process contributions (PC) for emissions of NOx (long term) did not screen out at habitat site ER1 (Mersey Estuary SPA/RAMSAR Site), however emissions are only marginally above the 1% insignificance threshold (being 1.17% of the critical level). Predicted NOx emissions at this receptor, associated with the operation of the facility at the higher annual throughput applied for, are modelled as being only 0.02% of the critical level (or 0.01 µg/m3) higher than those associated with current permitted operations (i.e. at the current, lower annual throughput). The NOx critical load (30 µg/m3) is not exceeded at the habitat site by the predicted environmental concentration (PC plus existing background concentration = 28.78 µg/m3), which is dominated by the background concentration (representing 98.8% of the total predicted environmental concentration). The assessed emissions from the facility are conservative and have assumed that the plant is operating continuously at permitted emission limits and during worst-case meteorological conditions. On this basis we are satisfied that the modelled long term NOx emissions from the facility are unlikely to damage the interest features of the habitat site.

Assessment of emissions against relevant critical levels (long term):

Site	SO_2 PC	PC as % CLe	NO_x PC	PC as % CLe	NH_3 PC	PC as % CLe
ER1	0.09	0.44	0.35	1.17	0.01	0.35
ER2	0.05	0.26	0.21	0.70	0.01	0.21

Assessment of emissions against relevant critical levels (short term):

Site	NO_x PC	PC as % CLe	HF (daily) PC	PC as % CLe	HF (weeky) PC	PC as % CLe
ER1	6.79	9.05	0.07	1.36	0.04	8.01
ER2	3.63	4.84	0.04	0.73	0.02	4.28

Assessment of emissions against relevant critical loads:

Site	Nitrogen CLo	PC N (kg/ha/yr)	PC as % CLo	Acid deposition CLo	PC (keq/ha/yr)	PC as % CLe
ER1	20	0.090	0.45	NA1	0.021	NA1
ER2	20	0.054	0.27	NA1	0.018	NA1

[1] According to the APIS website the features of the habitat site are not sensitive to this emission.

1.4.2 Assessment of impact upon other conservation sites

The assessment provided by the Operator showed that the predicted PCs for all assessed pollutants are below the relevant critical levels and loads at each of the non-statutory conservation sites considered. Therefore, in line with our guidance, we have concluded that the Installation and proposed changes permitted by this variation will not cause significant pollution at these conservation sites. The results of the assessment are summarised in the tables below.

Assessment of emissions against relevant critical levels (CLe) (long term):

Site	SO_2 PC	PC as % CLe	NO_x PC	PC as % CLe	NH_3 PC	PC as % CLe
ER3	0.20	1.00	0.80	2.66	0.02	0.80
ER4	0.09	0.43	0.35	1.16	0.01	0.35

Assessment of emissions against relevant critical levels (CLe) (short term):

Site	NO_x PC	PC as % CLe	HF (daily) PC	PC as % CLe	HF (weeky) PC	PC as % CLe
ER3	5.98	7.97	0.06	1.20	0.04	7.05
ER4	4.12	5.49	0.04	0.82	0.02	4.86

Assessment of emissions against relevant critical loads (CLo):

Site	Nitrogen CLo	PC N (kg/ha/yr)	PC as % CLo	Acid deposition CLo	PC (keq/ha/yr)	PC as % CLe
ER3	10	0.197	1.97	0.892	0.045	5.2
ER4	20	0.086	0.43	NA[1]	0.02	NA1

[1] According to the APIS website the features of the habitat site are not sensitive to this emission.

1.5 Impact of abnormal emissions

Article 50(4)(c) of IED requires that waste incineration plants shall operate an automatic system to prevent waste feed whenever any of the continuous emission monitors show that an emission limit value (ELV) is exceeded due to disturbances or failures of the purification devices. Notwithstanding this, Article 46(6) allows for the continued incineration and co-incineration of waste under such conditions provided that this period does not (in any circumstances) exceed 4 hours uninterrupted continuous operation or the cumulative period of operation does not exceed 60 hours in a calendar year. This is a recognition that the emissions during transient states (e.g. start-up and shut-down) are higher than during steady-state operation, and the overall environmental impact of continued operation with a limited exceedance of an ELV may be less than that of a partial shut-down and re-start.

For incineration plant, IED sets backstop limits for particulates, CO and TOC which must continue to be met at all times. The CO and TOC limits are the same as for normal operation, and are intended to ensure that good combustion conditions are maintained. The backstop limit for particulates is 150 mg/m^3 (as a half hourly average) which is five times the limit in normal operation.

Article 45(1)(f) requires that the permit shall specify the maximum permissible period of any technically unavoidable stoppages, disturbances, or failures of the purification devices or the measurement devices, during which the concentrations in the discharges into the air may exceed the prescribed emission limit values. In this case, we have decided to set the time limit at 4 hours, which is the maximum period prescribed by Article 46(6) of the IED.

These abnormal operations are limited to no more than a period of 4 hours continuous operation and no more than 60 hour aggregated operation in any calendar year. This is less than 1% of total operating hours and so abnormal operating conditions are not expected to have any significant long term environmental impact unless the background conditions were already close to, or exceeding, an ES. For the most part therefore consideration of abnormal operations is limited to consideration of its impact on short term ESs.

This is a worst case scenario in that these abnormal conditions include a number of different equipment failures not all of which will necessarily result in an adverse impact on the environment (e.g. a failure of a monitoring instrument does not necessarily mean that the incinerator or abatement plant is malfunctioning). This analysis assumes that any failure of any equipment results in all the negative impacts set out above occurring simultaneously.

The result on the Applicant's short-term environmental impact is summarised in the table below.

Where the process contribution is demonstrated to be less than 10% of the short term ES (a level below which we consider to indicate insignificant impact), we consider that examination of the PEC and background is not necessary.

From the table below, the emissions of the following substances can be considered insignificant, in that the PC is <10% of the short-term ES:

- NO_2, PM_{10}, HCl, HF, Hg, Sb, Cu, Mn, PCBs and Cr (II)(III)

Also, from the table below emissions of the remaining pollutant (which was not screened out as insignificant) has been assessed as being unlikely to give rise to significant pollution in that the predicted environmental concentration is less than 100% of short term ES:

- SO_2

We are therefore satisfied that it is not necessary to further constrain the conditions and duration of the periods of abnormal operation beyond those permitted under Chapter IV of the IED.

We have not assessed the impact of abnormal operations against long term ESs for the reasons set out above.

Pollutant	EQS / EAL		Back-ground	Process Contribution (PC)		Predicted Environmental Concentration (PEC)	
	µg/m³		µg/m³	µg/m³	% of EAL	µg/m³	% of EAL
NO_2	200	2		19.07	9.5		
PM_{10}	50	3		2.24	4.48		
SO_2	266	4	10.8	63.32	23.8	74.12	27.9
	350	5	10.8	43.91	12.55	54.71	15.6
HCl	750	6		0.38	0.05		
HF	160	6		9.41	5.88		
Hg	7.5	1		0.523	6.97		
Sb	150	1		0.018	0.01		
Cu	200	1		0.0627	0.03		
Mn	1500	1		0.0941	0.01		
PCBs	6	1		0.05	0.83		
Cr (II)(III)	150	1		0.152	0.10		
Dioxins	NA	7	-	1.0	-	-	-

1 1-hr Maximum
2 99.79th %ile of 1-hour means
3 90.41st %ile of 24-hour means
4 99.9th ile of 15-min means
5 99.73rd %ile of 1-hour means
6 1-hour average
7 fg/m^3

2. Energy Efficiency

Having considered the information submitted in the Application, we are satisfied that appropriate measures will be in place to ensure that energy is used efficiently within the Installation.

The Application states that the specific energy consumption, a measure of total energy consumed per unit of waste processed, will be 99.8 kWh/tonne. The installation capacity is 1,040,000 t/a.

Data from the BREF for Municipal Waste Incinerators shows that the range of specific energy consumptions is as in the table below.

MSWI plant size range (t/yr)	**Process energy demand (kWh/t waste input)**
Up to 150,000	300 – 700
150,000 – 250,000	150 – 500
More than 250,000	60 – 200

The BREF says that it is BAT to reduce the average installation electrical demand to generally below 150 kWh/tonne of waste with an LCV of 10.4 MJ/kg. The LCV in this case is expected to be 11 MJ/kg. Taking account of the difference in LCV, the specific energy consumption in the Application is in line with that set out above.

Generation of energy within the Installation - Compliance with Article 50(5) of the IED

Article 50(5) of the IED requires that *"the heat generated during the incineration and co-incineration process is recovered as far as practicable*".

Our CHP Ready Guidance - February 2013 considers that BAT for energy efficiency for Energy from Waste (EfW) plant is the use of CHP in circumstances where there are technically and economically viable opportunities for the supply of heat from the outset.

The term CHP in this context represents a plant which also provides a supply of heat from the electrical power generation process to either a district heating network or to an industrial / commercial building or process.

The Installation will generate electricity and will also recovery and provide heat in the form of steam to other local processes and customers. The plant therefore uses CHP.

The BREF says that where a plant generates electricity only, it is BAT to recover 0.4 – 0.65 MWh/tonne of waste (based on LCV of 10.4 MJ/kg) for raw waste inputs or 0.6 – 1.0 MWh/tonne of waste (based on LCV of 15.2 MJ/kg) for pre-treated wastes. Our technical guidance note, SGN EPR S5.01, states that where electricity only is generated, 5-9 MW of electricity should be recoverable per 100,000 tonnes/annum of waste (which equates to 0.4 – 0.72 MWh/tonne of waste).

The revised energy balance diagram provided as part of the variation application shows 73.54 MW of electricity will be produced for an annual burn of 1,040,000 tonnes, which represents approximately 7 MW per 100,000 tonnes/year of waste burned, or 0.619 MWh per tonne of waste (assuming 8,760 operating hours). Taking into account the LCV of the waste, the Installation is therefore within the indicative BAT range for electricity generated.

As well as the energy recovered in the form of electricity, the facility also recovers and sends heat (in the form of steam) to an adjacent chemical works, exported at a rate of approximately 64 tonnes/hr. The amount of energy recovered as steam and sent to the works is approximately 0.448 MWh per tonne.

Having considered the information submitted in the Application, we are satisfied that appropriate measures will be in place to ensure that energy is recovered efficiently and as far as practicable from the incineration process through the use of CHP.

3. Amenity impact

3.1 Noise

The noise modelling and assessment provided with the original permit application assumed there would be up to 200 HGVs accessing the site (between the hours of 7:00 and 19:00), which equates to 400 movements (in and out of the site). The Operator has confirmed that there will be no additional vehicle movements on site from those considered and assessed in the original application. In addition, the Operator has confirmed that there will be no additional deliveries made to the site by rail. No changes will be made to the design or operation of the facility as a result of the permit variation. On this basis, we are satisfied that the facility will not pose an additional noise risk as a result of the proposed changes.

No substantiated noise complaints have been received relating to the operation of the facility following completion of commissioning.

Based upon this, we are satisfied that appropriate measures are in place to prevent and minimise emissions of noise and vibration from the facility and that they will not cause pollution.

The permit contains conditions (3.4.1 and 3.4.2) to ensure that emissions of noise and vibrations shall not cause pollution.

3.2 Odour

The Operator has confirmed that there will be no additional vehicle movements on site from those considered and assessed in the original application. In addition, the Operator has confirmed that there will be no additional deliveries made to the site by rail. No changes will be made to the design or operation of the facility as a result of the permit variation. The variation does not change the types of waste that can be accepted at the facility or the amount of waste that can be stored on-site at any one time, or the duration that the waste can be stored. Deliveries of waste to the facility will be covered/enclosed. Air from the waste delivery hall and bunker building will be contained and drawn into the combustion chamber of the incineration plant, for use as combustion air, before passing through the air emissions abatement system.

No substantiated odour complaints have been received relating to the operation of the facility following completion of commissioning.

On this basis, we are satisfied that the facility will not pose an additional odour risk as a result of the proposed changes. We are satisfied that appropriate measures are in place to prevent and minimise odour emissions from the facility and that they will not cause pollution.

The permit contains conditions (3.3.1 and 3.3.2) to ensure that odour emissions shall not cause pollution.

3.3 Dust

The Operator has confirmed that there will be no additional vehicle movements on site from those considered and assessed in the original application. In addition, the Operator has confirmed that there will be no additional deliveries made to the site by rail. No changes will be made to the design or operation of the facility as a result of the permit variation. The variation does not change the types of waste that can be accepted at the facility or the amount of waste that can be stored on-site at any one time, or the duration that the waste can be stored.

All vehicles delivering or removing waste are sheeted and road ways cleaned and maintained to prevent the generation of dust. Air from the waste delivery hall and bunker building will be contained and drawn into the combustion chamber of the incineration plant, for use as combustion air, before being passed through the air emissions abatement system, which includes fabric filters for the removal of particulates. Bottom ash will be

quenched on-site and stored in a dedicated bunker, where it will be dampened to prevent dust. Air pollution control residues will be handled and stored at the facility in contained systems.

No substantiated dust complaints have been received relating to the operation of the facility following completion of commissioning.

On this basis, we are satisfied that the facility will not pose an additional risk with respect to fugitive emissions of dust as a result of the proposed changes. We are satisfied that appropriate measures are in place at the facility to prevent dust.

The permit contains conditions (3.2.1 and 3.2.2) to ensure that emissions of substances not controlled by emission limits (including fugitive emissions of dust) shall not cause pollution.

4. Fire Prevention Plan

Although the fire risk associated with the facility will not increase as a result of the proposed variation (as the facility will continue to be permitted to accept and store the same quantity and types of waste on-site), the Operator submitted a fire prevention plan as part of the substantial variation application.

We have reviewed the fire prevention plan and we are satisfied that the facility has appropriate measures in place to prevent, detect and extinguish a fire, and to contain fire waters generated. Some of the key fire prevention/control measures are summarised below:

The facility is secured with security fences and manned gates. The site is also covered by a CCTV system. The site is subject to regular site inspections, which include fire watches. The site is operated, manned and monitored continuously 24 hours per day, 7 days a week.

The facility operates a waste acceptance procedure, which includes the inspection of waste to identify and manage any hot loads.

The waste received will be tipped and stored in the facility's reinforced concrete waste bunker located in the tipping hall building. The bunker has a capacity of 42,500m^3 but typically holds 12,765m^3 of waste. Expected waste turn-over time is 24-28 hours and well within the maximum storage times set out in the fire prevention plan guidance.

The facility has an automatic fire detection and alarm system, linked to the control room, comprising of smoke and heat detectors, infra-red and ultra violet detection systems and thermal imaging cameras.

Crane grabs are used to mix the waste and feed it into the incineration plant. Infra-red cameras are used to scan the waste bunker in order to identify hot spots. If a hot spot is identified, the cranes are used to lift and cool the material. The bunker is provided with 5 water cannons that can be used to dampen/cool the waste and extinguish any fires in the waste bunker. The cannons and cranes are operated from the control room.

The facility also includes water sprinkler and deluge systems and a foam suppression system. The facility has a 1,500 m^3 water storage tank, which supplies water to the water suppression systems. The facility's switch rooms are provided with an automatic gaseous fire suppression system. Manual fire extinguishers are also located around the facility and on vehicles. The fire detection and suppression systems meet the requirements of the relevant building regulations and insurers fire prevention standards.

Fire water will primarily be directed to and contained in the waste bunker, which can contain up to 17,000m^3 of water. If needed, mobile bunds can be constructed within the waste tipping hall to provide further fire water containment. The penstock valve serving the site surface water drainage system would also be closed to prevent the discharge of firewater off-site.

Decision checklist

Aspect considered	Decision
Receipt of application	
Confidential information	A claim for commercial or industrial confidentiality has not been made.
Identifying confidential information	We have not identified information provided as part of the application that we consider to be confidential.
Consultation/Engagement	
Consultation	The consultation requirements were identified in accordance with the Environmental Permitting Regulations and our public participation statement. The application was publicised on the GOV.UK website. We consulted the following organisations: • Food Standards Agency • Health & Safety Executive • Public Health England • Director of Public Health • Halton Borough Council (Development Control and Public Health) The comments and our responses are summarised in the consultation section. In accordance with our Working Together Agreement, we informed Natural England of the results of our assessment of the impact of the installation on designated Habitats sites.
The facility	
The regulated facility	We considered the extent and nature of the facility at the site in accordance with RGN2 'Understanding the meaning of regulated facility', Appendix 2 of RGN 2 'Defining the scope of the installation', Appendix 1 of RGN 2 'Interpretation of Schedule 1', guidance on waste recovery plans and permits. The extent of the facility is defined in the site plan and in the permit. The activities are defined in table S1.1 of the permit.
The site	
Biodiversity, heritage, landscape and nature conservation	The application is within the relevant distance criteria of a site of heritage, landscape or nature conservation, and/or protected species or habitat. We have assessed the application and its potential to affect all known sites of nature conservation, landscape and heritage and/or protected species or habitats identified in the nature conservation screening report as part of the permitting process. We consider that the application will not affect any sites of nature conservation, landscape and heritage, and/or protected species or habitats identified.

Aspect considered	Decision
Environmental risk assessment	
Environmental risk	We have reviewed the Operator's assessment of the environmental risk from the facility. The Operator's risk assessment is satisfactory. We have reviewed the Operator's assessment of the environmental risk from the facility. The Operator's risk assessment is satisfactory. Further information regarding the environmental risk assessment has been provided in the Key Issues section (item 1).
Operating techniques	
General operating techniques	We have reviewed the techniques used by the Operator and compared these with the relevant guidance notes and we consider them to represent appropriate techniques for the facility. The operating techniques that the applicant must use are specified in table S1.2 in the environmental permit.
Operating techniques for emissions that do not screen out as insignificant	As detailed in item 1 of the Key Issues section, certain emissions cannot be screened out as insignificant. We have assessed whether the proposed techniques are BAT. The proposed techniques/emission levels for emissions that do not screen out as insignificant are in line with the techniques and benchmark levels contained in the technical guidance and we consider them to represent appropriate techniques for the facility. The permit conditions ensure compliance with relevant BREFs and technical guidance, and the ELVs deliver compliance with the relevant emission limits set in the Industrial Emissions Directive.
Operating techniques for emissions that screen out as insignificant	For emissions that have been screened out as insignificant (as detailed in the Key Issues section (item 1)), we agree that the applicant's proposed techniques are BAT for the installation.
Odour management	We consider that the changes subject to the variation application will not significantly affect potential odour emissions from those assessed during the original permit determination and therefore odour emissions from the facility have not been considered further through this variation determination and the conclusions of the original determination remain valid.
Noise management	We consider that the changes subject to the variation application will not significantly affect potential noise emissions from those assessed during the original permit determination and therefore noise emissions from the facility have not been considered further through this variation determination and the conclusions of the original determination remain valid.
Fire prevention plan	We have assessed the fire prevention plan and are satisfied that it meets the measures and objectives set out in the Fire Prevention Plan guidance.

Aspect considered	Decision
	The plan sets out alternative measures that we consider meet the objectives of the Fire Prevention Plan guidance.
Permit conditions	
Updating permit conditions during consolidation	We have updated permit conditions to those in the current permit template for Energy from Waste facilities as part of permit consolidation. The conditions will provide the same level of protection as those in the previous permits.
Waste types	Only the waste annual throughput of the facility has been changed as a result of this variation. No changes have been made to the waste types that the facility is permitted to accept.
Emission limits	The ELV has been amended for the following pollutant: • Carbon monoxide (CO). The CO limit has been changed from the 100mg/m^3 half hour average to the 150mg/m^3 10 minute average. Both limits and averaging periods are acceptable for demonstrating compliance with the requirements of the Industrial Emissions Directive. As detailed in the Key Issues section, emissions of CO have been assessed at the higher concentration of 150mg/m^3 and are considered to have an insignificant environmental impact.
Monitoring	We have amended the monitoring requirements for the following pollutant: • Carbon monoxide (CO). The amendment has been made as a result of the change made to the CO emission limit as detailed above, so that monitoring results are based upon the 10 minute average, as required by the IED.
Operator competence	
Management system	There is no known reason to consider that the Operator will not have the management system to enable it to comply with the permit conditions.
Growth Duty	
Section 108 Deregulation Act 2015 – Growth duty	We have considered our duty to have regard to the desirability of promoting economic growth set out in section 108(1) of the Deregulation Act 2015 and the guidance issued under section 110 of that Act in deciding whether to grant this permit. Paragraph 1.3 of the guidance says: "The primary role of regulators, in delivering regulation, is to achieve the regulatory outcomes for which they are responsible. For a number of regulators, these regulatory outcomes include an explicit reference to development or growth. The growth duty establishes economic growth as a factor that all specified regulators should have regard to, alongside the delivery of the protections set out in the relevant legislation."

Aspect considered	Decision
	We have addressed the legislative requirements and environmental standards to be set for this operation in the body of the decision document above. The guidance is clear at paragraph 1.5 that the growth duty does not legitimise non-compliance and its purpose is not to achieve or pursue economic growth at the expense of necessary protections. We consider the requirements and standards we have set in this permit are reasonable and necessary to avoid a risk of an unacceptable level of pollution. This also promotes growth amongst legitimate operators because the standards applied to the Operator are consistent across businesses in this sector and have been set to achieve the required legislative standards.

Consultation

The following summarises the responses to consultation with other organisations and our notice on GOV.UK for the public, and the way in which we have considered these in the determination process.

Responses from organisations listed in the consultation section

Response received from
Public Health England
Brief summary of issues raised
Emissions from the installation have been modelled and compared with air quality standards and are stated to be considered not significant in terms of their potential impact on health. Assessment of the process emissions, in line with appropriate guidance, indicates that there will be no significant impacts on public health associated with the proposed variation. Based solely on the information contained in the application provided, PHE has no significant concerns regarding risk to health of the local population from this proposed activity, providing that the applicant takes all appropriate measures to prevent or control pollution, in accordance with the relevant sector technical guidance or industry best practice.
Summary of actions taken or show how this has been covered
We are satisfied that all appropriate measures will be taken to prevent and control pollution and that the permit requires the Operator to implement appropriate measures and comply with the relevant air emission limits and associated monitoring requirements.

Representations from community and other organisations

Response received from
United Kingdom Without Incineration Network
Brief summary of issues raised
Long standing and regular noise and odour complaints concerning the plant, particularly noise from rail movements and deliveries during night hours. Measures must be taken to fully contain these noises or forbidden rail movements between 23:00 and 07:00, and identify sources of odour complaints.
Summary of actions taken or show how this has been covered
Amenity impacts (including odour, noise and dust) associated with the changes that have been applied for through the variation application EPR/RP3638CG/V005 have been considered and a summary of these issues is provided in Section 3 of this document. We are satisfied that the changes proposed through the variation will not significantly increase the amenity risks associated with the facility, through emissions of odour, noise or dust, and that appropriate measures are in place to prevent and control such emissions. The permit includes conditions that require the Operator to prevent these emissions from causing pollution and enable the Environment Agency to require the Operator to implement additional measures (including the development of management plans) should pollution be perceived/substantiated by an Environment Agency officer.

Representations from individual members of the public

Brief summary of issues raised	Summary of actions taken or show how this has been covered
The company should not be allowed to take any more waste as the company is incapable of containing the amount of material they already have.	We are satisfied that appropriate measures are in place to contain and manage the waste materials received at the facility using the existing infrastructure (e.g. the contained tipping hall and waste bunker building) and prevent and control emissions from its operation (including point source emission to air and fugitive emissions, such as dust, odour, noise, steam and litter).
Concerns about pollution (noxious fumes) for current and future generations.	We have reviewed the updated air quality assessment submitted as part of the variation application, as detailed in Section 1 of this document. We are satisfied that the emissions to air from the facility are either insignificant or are unlikely to cause pollution and that appropriate measures are in place at the facility to prevent, control and monitor such emissions.
Adverse effects of traffic, noise, smell and emissions that this plant has on local and extended environment, including litter.	Amenity impacts (including odour, noise and dust) associated with the changes that have been applied for through the variation application (EPR/RP3638CG/V005) have been considered and a summary of this provided in Section 3 of this document. We are satisfied that the changes proposed through the variation will not significantly increase the amenity risk associated with the facility, through emissions of steam, odour, noise, dust or litter, and that appropriate measures are in place to prevent and control such fugitive emissions. The permit includes conditions requiring that these emissions do not cause pollution and that enable the Environment Agency to take appropriate action (including requiring the Operator to implement additional control measures) should any pollution be perceived or substantiated by an Environment Agency officer. No substantiated complaints have been received regarding the operation of the facility following plant commissioning.
Local residents suffer from the noise and environmental disturbances (vibrations, squeaks, rumbling) increased traffic, including heavy freight on rail line. Trains delivering waste run close to properties and often break permitted delivery times (before 6am and after 11pm). Disturbance to sleep and enjoyment of outdoor areas. Local residents have to put up with smells and noise from lorries, continual nuisance and destroys quality of life.	
Local residents suffer from foul odour and steam, cannot open windows some days.	
Failure to control odour largely due to lack of regulatory controls and no definition of what RDF is. The nature of the fuel is radically different to that described in original planning consent. Concerns that raw municipal waste will be transported and used as a fuel. The plant was not built and therefore not suitable for raw waste.	
Dust/ash/residues on residents washing, vehicles and window, plus associated health effects.	
Concerns regarding higher Carbon Monoxide emissions and health effects.	Emissions of Carbon Monoxide have been considered and assessed as part of the permit variation determination (see Section 1 of this document). We are satisfied that the emissions are insignificant and therefore are unlikely to cause any pollution or associated health effects.
Concerns regarding safety of other road users due to waste deliveries – experiences of waste items/litter dropping from trucks on to public roads, collisions of delivery vehicles with fences near site entrance.	These issues are matters relevant to the local planning authority and not within the remit of the Environmental Permitting Regulations. Our determination is limited to the operation of the facility and movement of vehicles within the defined installation boundary.

Increase in traffic and effect on house prices.	These issues are matters relevant to the local planning authority and not within the remit of the Environmental Permitting Regulations.
Changing application of emission limit values from the individual stacks to across the windshield would affect the conclusions of the monitoring and it would be harder to identify failings.	This aspect of the application was withdrawn by the Operator and has not been considered further or authorised through the permit variation.
Concerns regarding flies and maggots in residents' bins.	These issues are matters relevant to the local planning authority and not within the remit of the Environmental Permitting Regulations. Our determination is limited to the operation of the facility and movement of vehicles within the defined installation boundary.
The permit should not be varied to enable the plant to burn a different fuel, the plant should be required to burn the fuel of a type noted within the application.	The permit variation has not enabled the plant to burn any additional wastes or fuels to those previously permitted.
Increased deliveries will mean that the tipping hall doors are open more often, increasing emissions of dust and odour.	The Operator has confirmed that deliveries to the facility will not increase beyond those considered and assessed through the original permit determination. We are satisfied that appropriate measures are in place for the prevention and control of emissions of dust and odour, as summarised in Section 3.
Questions regarding composition of feedstock, temperature of moving grate, frequency when external heat is applied to the grates, efficiency/ operation of the scrubbing systems.	The variation application does not involve any changes to waste feedstock composition or changes to the design or operation of the incineration plant from those considered through the original permit determination, including the heating of the incinerator furnace/moving grate and design/operation of the emissions abatement systems. We are satisfied that the emissions to air from the facility are either insignificant or are unlikely to cause pollution and that appropriate measures are in place at the facility to prevent, control and monitor such emissions.
Proposed changes (in terms of type of permit variation application, variation fee, application content and risk assessments) already agreed by the EA prior to the application in order to avoid comments from the public.	The proposed changes have been considered and assessed based upon the application made to Environment Agency, which was duly made on 17/08/2018. We have consulted the public on the application in accordance with Environment Agency policies and procedures.
Residential area already with poor air quality and one of the highest cancer death rates.	We have considered the impact associated with the emissions from the facility, including air quality and human health impacts, as detailed in Section 1 of this document. We are satisfied that the emissions to air from the facility are either insignificant or are unlikely to cause pollution and that appropriate measures are in place at the facility to prevent, control and monitor such emissions. We consulted Public Health England during this determination and they have not raised any concerns with respect to health impacts (see their comments above).
The EA does not have the authority to override the legislation (the EPR) and change the CO limit or the way ELVs are applied to the stacks.	For waste incinerator plant, the legislation (specifically Annex VI, Part 8 of the Industrial Emissions Directive) allows compliance with the emission limit for carbon monoxide to be achieved by either emitting a maximum concentration of 100mg/m^3 based upon half-hourly averages or (as has been applied for and permitted through this variation) emitting a maximum concentration

	of 150mg/m^3 based upon 95% of all 10-minute averages in any 24 hour period. As detailed in Section 1 of this document, we have assessed emissions of carbon monoxide from the facility (which assume that the facility operates continuously at the permitted emission limit) and concluded that the emissions are insignificant. The variation to the permit has not changed the way that the permit emissions limits are applied to the stacks. This aspect of the variation application was withdrawn by the Operator.
Concerns that the company have already exceeded permitted waste limit and what would happen if they exceed the increased permitted limit.	The Operator is required to report to the Environment Agency the quantity of waste incinerated at the plant. The permitted waste types and quantities of the incinerator plant are stated in Table S2.2 of the permit. If the Operator was found to have exceeded the maximum permitted waste quantity then they would be in breach of the permit conditions and could then be subject to compliance or enforcement action taken against them by the Environment Agency.
Under no circumstances, in particular given the poor reporting history, should emissions levels from the 4 lines be averaged such as to bring the level below the ELV. They should be monitored independently in respect of all pollutants and their ELVs.	This aspect of the application (proposals regarding averaging emission levels across the flues) was withdrawn by the Operation and has not been considered further or authorised through this permit variation.
Concerns/questions regarding who monitors the emissions from the facility.	The permit variation does not change any requirements regarding emissions monitoring (in terms of monitoring methods/personnel employed etc.). The Operator will be responsible for monitoring emissions from the facility in accordance with the permit conditions. The Operator's monitoring will have either MCERTS certification or MCERTS accreditation as appropriate. MCERTS is the Environment Agency's Monitoring Certification Scheme. If monitoring complies with MCERTS we can have confidence in the monitoring of emissions. In addition we will carry out audits of the Operator's monitoring. If we find problems with the monitoring we will take action to put this right.
Concerns regarding accuracy of PM_{10} and $PM_{2.5}$ measurement.	The permit variation does not change any requirements regarding the monitoring of particulate emissions. There is currently no validated, commercially available equipment for continuously monitoring PM_{10} and $PM_{2.5}$ emissions from EfW plants. Instead, plants are required to continuously measure total particulate matter, which includes particulates of all sizes including PM_{10}, $PM_{2.5}$, PM_1 etc. as well as ultrafine particles. We have assessed emissions of particulates from the facility (as detailed in Section 1) and concluded that they are insignificant. The assessment assumed that the plant operates continuously at the permitted emission limit for total particulate matter.