Permitting decisions

Variation and partial surrender

We have decided to grant the variation and partial surrender for Protos Refuse Derived Fuel Plant operated by Covanta Energy Limited.

The variation and partial surrender numbers are EPR/LP3132FX/S005 & EPR/LP3132FX/V006.

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 Operator'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

This variation (and partial surrender) application EPR/LP3132FX/S005 & EPR/LP3132FX/V006 varies an existing permit for a municipal waste incineration plant located near Elton, Cheshire. The waste incineration plant is currently permitted to treat non-hazardous waste, primarily refuse-derived fuels (RDF). The plant has not yet been built or operated.

This variation authorises the following changes:

- Reduction of the annual permitted annual throughput of waste from 850,000 tonnes to 400,000 tonnes.
- Increase in the design net calorific value (NCV) of the waste incinerated at the facility from 10 MJ/kg to 10.5 MJ/kg.
- Reduction of the number of waste incineration lines from 3 to either 2 or 1 incineration lines.
- Replacement of once-through water cooling condenser with an air-cooled condenser.
- Removal of the vehicle washing facility.
- Removal of the discharge of process water to an off-site effluent treatment plant. Process water will be recycled within the process.
- Extension of the site boundary to the south and surrender of an area to the north.
- Addition of an odour abatement system to treat odorous air during periods of shut-down should the final procurement decision on technology providers decide to construct and operate a single incineration line facility.
- Removal of multi-operator conditions as the related permit (EPR/TP3836FC operated by Ballast Phoenix Limited) was surrendered in 2015.

The changes also result in the removal of land from the previous site boundary. The land surrendered covered the previous footprint of the equipment and ancillary pipelines associated with the water cooling system (abstraction and discharge). Construction of the incineration plant and any associated development has never occurred. Therefore, changes introduced as part of this variation amount to changes in the design of the facility prior to commissioning.

As a result of the variation and the subsequent update of the permit to modern conditions, previous emission limits and monitoring have been changed. These changes will provide the same level of environmental protection as in the previous permit.

The sections below summarise the key issues that have been considered during the variation application determination with regards to the changes applied. Aspects of the facility that are not subject to the specific changes applied for through the variation application remain as assessed and permitted under the original permit application determination (and subsequent permit variations).

Number of incineration lines

As a result of the reduction in annual waste throughput, the Operator will operate the facility upon commissioning with either one or two waste incineration lines. The Operator is still in the process of negotiations with incinerator technology providers. This procurement process will mean that operations will commence with one or two incineration lines. The Operator sought advice from the Environment Agency during pre-application discussions, to determine whether it could be appropriate to permit the changes prior to a final decision is made with respect to the number of incineration lines. We advised the Operator that it would be feasible to determine the application provided that the Operator demonstrates that the air quality impacts will not change for each scenario (i.e. operation with one or two incineration lines).

The air quality assessment provided in this variation application is based on a configuration involving one incineration line. The Operator stated that the volumetric flow used within the assessments is a function of the NCV and the volume of the waste combusted. The Operator states that this will not be dependent on the number of incineration lines to be included in the design and will not change through the procurement process.

The air quality assessment submitted in this variation application has considered the impacts from the following two scenarios:

- The Permitted Facility – based on the modelling parameters applied in the air quality assessment submitted with the permit variation granted in 2012 (annual throughput given as 850,000 tonnes); and
- The Proposed Facility – based on the flue gas composition and NCV of the incoming waste (annual throughput given as 400,000 tonnes).

We have accepted this assessment on the basis that a pre-operational condition will be sufficient and appropriate for the Operator to demonstrate that any change in the design to that assessed in the air dispersion model, will require evidence that the conclusions from the assessment remain the same.

In the event that a second incineration line is preferred following the procurement process, we have set pre-operational condition 10 (PO10) in the permit which requires the Operator to:

- Provide evidence that the conclusions of the air quality impact and human health risk assessment has not changed; or
- Provide a revised air quality impact and human health risk assessment.

We have therefore permitted the site as either a one line or a two line waste incineration installation.

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

The methodology for 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 using the Environment Agency's screening tool.
- 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. The methodology provides a simple method of calculating PC primarily for screening purposes and for estimating process contributions where environmental consequences are relatively low. It is based on using dispersion factors. These factors assume worst case dispersion conditions with no allowance made for thermal or momentum plume rise and so the process contributions calculated are likely to be an overestimate of the actual maximum concentrations. More accurate calculation of process

contributions can be achieved by mathematical dispersion models, which take into account relevant parameters of the release and surrounding conditions, including local meteorology.

Air dispersion modelling enables the PC 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; and
- 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; and
- 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 Operator's proposals for the prevention and control of the emission to be acceptable. 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 exceedances of the relevant ES are likely. This is done through detailed audit and review of the Operator's air dispersion modelling, taking background concentrations and modelling uncertainties into account.

Where the PC is greater than these thresholds, the assessment must continue to determine the impact by considering the predicted environmental concentration (PEC). The PEC is the combination of the PC substance to air and the background concentration of the substance which is already present in the environment.

The PECs can be considered 'not significant' if the assessment has shown that both the following apply:

- proposed emissions comply with associated emission levels (AELs) or the equivalent requirements where there is no AEL.
- the resulting PECs will not exceed 100% of the environmental standards

The Operator's air dispersion model used the modelling software, ADMS 5.2, which is a commonly used computer model for regulatory dispersion. There are two assessments; air quality impacts on human receptors and ecological sites and a human health risk assessment. The impacts from the human health risk assessment are discussed later in the decision document. There reports are titled:

- *Covanta Protos Refuse Derived Fuel Plant. Human Health Risk Assessment*. Ref. S2446-0200-0001SMN
- *Covanta Protos Refuse Derived Fuel Plant. Dispersion Modelling Assessment*. Ref. S2446-0200-0002RSF

We have assessed the Operator's assessments and we agree with the Operator's conclusions that impacts will not be significant and there will be no exceedances of the relevant environmental standards. Our consideration of the Operator's assessments is described below.

Assessment of impact upon air quality

The Operator 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. The

Operator is not yet able to confirm that emissions will be emitted from one or two flues as the site is still in detailed design stages.

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.
- Second, they assumed that the Installation operates continuously at the relevant long-term or short-term ELVs, i.e. the maximum permitted emission rate.
- Third, 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 Operator'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.

The Operator's modelling predictions based on the proposed changes are summarised in the tables below.

Table 1 – Predicted impacts to air from the Installation at point of maximum impact (non-metal pollutants).

Pollutant	ES	Background	Process contribution (PC)		Predicted environmental concentration (PEC)	
	µg/m³	µg/m³	µg/m³	% of ES	µg/m³	% of ES
NO_2	[1]40	26.1	0.72	1.79	26.83	67.04
	[2]200	52.2	14.25	7.14	--	--
PM_{10}	[1]40	16.2	0.05	0.13	--	--
	[3]50	32.4	0.18	0.36	--	--
$PM_{2.5}$	[1]25	10.2	0.05	0.2	--	--
SO_2	[4]266	13.2	23.26	8.74	--	--
	[5]350	13.2	20.15	5.76	--	--
	[6]125	13.2	2.23	1.79	--	--
HCl	[7]750	1.42	1.7	0.23	--	--
HF	[8]16	4.7	0.01	0.03	--	--
	[7]160	4.7	0.68	0.42	--	--
CO	[9]10,000	712	4.99	0.05	--	--
VOC[1]	[1]2.25	0.2	0.05	2.28	0.25	11.16

VOC[2]	[1]5	1.1	0.05	1.02	1.15	23.02
	[7]195	2.2	3.39	1.74	--	--
PAH	[1]0.00025	0.00015	5.4E-7	0.22	--	--
NH_3	[1]180	3.5	0.05	0.03	--	--
	[10]2500	7	1.7	0.07	--	--
PCBs	[1]0.2	0.000119	3E-5	0.01	--	--
	[10]6	0.000238	0.085	0.01	--	--
Dioxins		3.3E-8	5.4E-10		--	

Notes

VOC[1] as 1, 3 butadiene

VOC[2] as benzene

PAH as benzo[a]pyrene

[1] Annual mean

[2] 99.79th percentile of 1 hour means

[3] 90.41st percentile of 24 hour means

[4] 99.9th percentile of 15 minute means

[5] 99.73rd percentile of 1 hour means

[6] 99.18th percentile of 24 hour means

[7] 1 hour average

[8] monthly average

[9] maximum daily running 8 hour mean

[10] 1 hour maximum

Table 2 – Predicted impacts to air from the Installation at point of maximum impact (metal pollutants).						
Pollutant	**ES**	**Background**	**Process contribution (PC)**		**Predicted environmental concentration (PEC)**	
	µg/m³	**µg/m³**	**µg/m³**	**% of ES**	**µg/m³**	**% of ES**
Cd (and Tl)	[1]0.005	0.00013	0.00026	5.12	0.00039	7.72
Hg	[1]0.25 [2]7.5	0.02409 0.04818	0.000256 0.00849	0.10 0.11	-- --	-- --
Sb	[1]5 [2]150	0.00062 0.00124	5.999E-5 0.00195	0.0012 0.0013	-- --	-- --
Pb	[1]0.25	0.0069	0.00025	0.10	--	--
Co		0.00024	--		--	
Cu	[1]10 [2]200	0.00605 0.0121	0.00015 0.005	0.0015 0.0025	-- --	-- --
Mn	[1]0.15 [2]1500	0.00424 0.00848	0.0003 0.0105	0.20 0.0007	-- --	-- --
V	[1]5 [3]1	0.0017 0.0034	3.05E-5 0.001	0.00061 0.10	-- --	-- --
As	[1]0.003	0.00021	0.0001281	4.27	0.0008379	27.93
Cr (II)(III)	[1]5 [2]150	0.00507 0.01014	0.0004499 0.015	0.009 0.010	-- --	--
Cr (VI)	[1]0.0002	0.00101	6.6E-7	0.33	--	--
Ni	[1]0.02	0.0017	0.001126	5.63	--	--

Notes

[1]Annual mean

[2]1 hour maximum

[3]24 hour maximum

The Operator'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.

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 (99.79th percentile of 1 hour means), PM_{10}, $PM_{2.5}$, SO_2, HCl, HF, CO, TOC, PAH, NH_3 and PCBs. It should be noted that the applicant's assessment did not present the PC for cobalt. However, our audit of the assessment shows that impacts from cobalt is predicted to be less than 1% of the environmental standard.

- All metals with the exception of As (annual mean) and Cd (annual mean).

We consider that the Operator's proposals for preventing and minimising the emissions of the substances remain BAT for this Installation.

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 less than 100% (taking expected modelling uncertainties into account) of both the long term and short term ES. These are:

- NO_2 (annual mean), VOC (1, 3 butadiene – annual mean), VOC (benzene – annual mean), Cd and Tl (annual mean) and As (annual mean).

While all emissions cannot be screened out as insignificant, the Operator's modelling shows that the installation is unlikely to result in a breach of the assessed environmental standard. The Operator also showed in their assessment, the impact from these pollutants at the nearest sensitive receptors (Tables 8.8, 8.9, 8.10 and 8.11 of the Operator's report). While the impacts at some receptors could not be screened out as insignificant (impacts ranging from 1% to 3.4% of the environmental standard), the predicted environmental concentration at these locations were significantly less than the environmental standard.

It should also be highlighted that the above predictions represent an improvement on the previous incinerator permit application configuration. As a result of the reduction in annual throughput of waste, the configuration in this variation application shows reduced process contributions across all modelled pollutants.

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 Operator's proposals are (and remain) BAT for the Installation. The secondary control measure for the minimising of nitrogen oxides will remain as selective non-catalytic reduction (SNCR).

The Operator may install flue gas recirculation (FGR), however, this is dependent on the requirements of the selected technology provider of the incinerator plant technology. This technique reduces the consumption of reagents for secondary NO_x control and can increase overall energy recovery, although in some applications there can be corrosion problems. The Operator stated that some suppliers of the furnace have designed their combustion systems to operate with FGR and these suppliers can gain benefits of reduced NO_x generation from the use of FGR. Other suppliers have focused on reducing NO_x generation through the control of primary and secondary air and the furnace design, and these suppliers gain little if any benefit from the use of FGR. The Operator stated that the decision of whether to use FGR would be made at the design stage. We are satisfied with this because both methods can be BAT. We are satisfied with the Operator's proposal because both methods are regarded as BAT for the Waste Incineration sector.

A pre-operational condition is included in the permit to ensure that prior to commissioning, plans for the final NOx abatement systems are submitted to the Environment Agency.

The Operator has not yet confirmed the type of reagent to be used in the NO_x abatement system (either ammonia or urea), however both are considered to be BAT. We have set pre-operational condition 11 (PO11) in the permit which requires the Operator to justify the use of the chosen reagent prior to commissioning.

Impacts on Habitats sites, Sites of Special Scientific Interest and non-statutory conservation sites

There are a number of protected conservation sites within the relevant screening distances from the installation. These include the following (with proximity to the installation):

- Mersey Estuary – Special Protection Area (SPA) and Ramsar (896 m)
- Midland Meres and Mosses Phase 1 – Ramsar (9,247 m)
- Midland Meres and Mosses Phase 2 – Ramsar (9,862 m)
- Mersey Estuary – Site of Special Scientific Interest (SSSI) (578 m)
- Frodsham and Helsby and Ince Marshes – Local Wildlife Site (0 m situated within the site boundary)

The primary impacts from this installation will be from the combustion emissions to the SSSIs, SPAs Ramsars and non-statutory sites. These pollutants include NO_x, NH_3, HF and SO_2 ambient concentrations and deposition from nutrient nitrogen and acidification. The assessment was also audited by the Environment Agency's air quality specialists. We agree with the Operator's conclusions that there will be no exceedances of the relevant critical loads and levels at any protected conservation site. The Operator's results are presented below.

As part of this audit, we identified that the Operator did not assess the impact of acidification on the relevant habitat type of the SPA and Ramsar sites. We have considered the designation and the location of each habitat type and agree that the impact from acidification is not likely to be significant.

Predicted impacts at Mersey Estuary SPA and Ramsar

Table 3 – Maximum modelled ambient concentrations of NO_X, SO_2, HF and NH_3 at Mersey Estuary SPA and Ramsar sites						
Pollutant	**Critical level**	**Background**	**Process Contribution (PC)**		**Predicted Environmental Concentration (PEC)**	
Unit	**µg/m³**	**µg/m³**	**µg/m³**	**% of Critical level**	**µg/m³**	**PEC% of Critical level**
NO_x annual mean	30	23.19	0.96	3.2	24.15	80.5
NO_x 24 hour mean	75	46.38	8.58	11.4	54.96	73.3
SO_2 annual mean	10	4.77	0.24	1.2	5.01	25.0
NH_3 annual mean	3	1.89	0.05	1.6	1.94	64.6
HF 24 hour mean	5	--	0.0429	0.9	--	--
HF weekly mean	0.5	--	0.0173	3.5	--	--

From the results presented above, when compared with the assessment criteria, the impacts from hydrogen fluoride are less than 10% of the relevant short term critical level. The potential impacts from hydrogen fluoride can be considered to be insignificant. The process contributions from NOx, SO_2 and ammonia are greater than 1% (for long term impacts) and 10% (for short term impacts) of the relevant critical levels. The effects of these pollutants cannot be ruled out as insignificant. When the modelled impacts are considered with the relevant background concentrations, the predicted process environmental impacts both the short and long term impacts are less than 100% of the critical levels. We can therefore consider the impacts from NOx, SO_2 and ammonia emissions as not significant.

Table 3 – Maximum modelled nutrient nitrogen deposition at Mersey Estuary SPA and Ramsar sites					
Critical load (kgN/ha/yr)	**Baseline deposition rates (kgN/ha/yr)**	**PC (kgN/ha/yr)**	**PC% of Critical load**	**PEC (kgN/ha/yr)**	**PEC% of Critical load**
20 – 30 littoral sediments	15.12	0.345	1.73	15.465	77.33

In the case of nutrient nitrogen deposition at the Mersey Estuary SPA and Ramsar, the predicted process contribution is 1.73% of the specified critical load (littoral sediments) and cannot be considered *insignificant*. When the modelled impacts are considered with the relevant background concentrations, the predicted environmental concentration is less than 100% of the critical load. The Operator considers the impacts from nutrient nitrogen deposition to be *not significant*. The PEC is now less than the existing permitted facility (a reduction in 0.83%).

Predicted impacts at Midland Meres and Mosses Phase 1 and 2 Ramsar

Table 5 – Maximum modelled ambient concentrations of NO_X, SO_2, HF and NH_3 at Midland Meres and Mosses Phase 1 Ramsar sites.						
Pollutant	**Critical level**	**Background**	**Process Contribution (PC)**		**Predicted Environmental Concentration (PEC)**	
Unit	**µg/m³**	**µg/m³**	**µg/m³**	**% of Critical level**	**µg/m³**	**PEC % of Critical level**
NO_x annual mean	30	--	0.09	0.3	--	--
NO_x 24 hour mean	75	--	1.3	1.7	--	--
SO_2 annual mean	10	--	0.02	0.1	--	--
NH_3 annual mean	3	--	0.00466	0.2	--	--
HF 24 hour mean	5	--	0.00649	0.1	--	--
HF weekly mean	0.5	--	0.0019	0.4	--	--

Table 6 – Maximum modelled ambient concentrations of NO_X, SO_2, HF and NH_3 at Midland Meres and Mosses Phase 2 Ramsar sites						
Pollutant	**Critical level**	**Background**	**Process Contribution (PC)**		**Predicted Environmental Concentration (PEC)**	
Unit	**µg/m³**	**µg/m³**	**µg/m³**	**% of Critical level**	**µg/m³**	**PEC % of Critical level**
NO_x annual mean	30	--	0.08	0.3	--	--
NO_x 24 hour mean	75	--	1.16	1.5	--	--
SO_2 annual mean	10	--	0.02	0.1	--	--
NH_3 annual mean	3	--	0.0037	0.1	--	--
HF 24 hour mean	5	--	0.00578	0.1	--	--
HF weekly mean	0.5	--	0.00195	0.4	--	--

Table 5 and 6 above show the modelled potential impacts from airborne pollutants on the Ramsar sites. When compared with the assessment criteria defined in the start of this section (above), the impacts from hydrogen fluoride and NOx are less than 10% of the relevant short term environmental standard and can be considered insignificant. The process contributions from annual NOx, SO_2 and ammonia are less than 1% and can also be considered to be insignificant.

Table 7 – Maximum modelled nutrient nitrogen deposition at Midland Meres and Mosses Phase 1 Ramsar sites					
Critical load (kgN/ha/yr)	**Baseline deposition rates (kgN/ha/yr)**	**PC (kgN/ha/yr)**	**PC% of Critical load**	**PEC (kgN/ha/yr)**	**PEC% of Critical load**
15 – 30 Fen, marsh and swamp	20.02	0.0336	0.22	--	--

Table 8 – Maximum modelled nutrient nitrogen deposition at Midland Meres and Mosses Phase 2 Ramsar sites					
Critical load (kgN/ha/yr)	**Baseline deposition rates (kgN/ha/yr)**	**PC (kgN/ha/yr)**	**PC% of Critical load**	**PEC (kgN/ha/yr)**	**PEC% of Critical load**
15 – 30 Fen, marsh and swamp	20.02	0.0272	0.18	--	--

Unlike other protected European Habitats sites (SACs and SPAs), APIS does not specify site specific critical loads for the relevant ecological interest features of the designated site. Therefore, for Midland Meres and Mosses Phases 1 and 2, the Operator has chosen surrogate critical loads from SSSI designations which fall within the footprint of the Ramsar sites. For the Phase 1, Hatchmere SSSI was chosen. For the Phase 2, Limmer SSSI was chosen. The Environment Agency agrees that the choice of these designations to assess the impact on the Ramsar sites is an appropriate approach.

In the case of nutrient nitrogen deposition at both Midland Meres and Mosses Phases 1 & 2 Ramsar sites, the process contribution is 0.22% and 0.18% respectively of the specified critical load (fen, marsh and swamp) and can be considered insignificant. No further assessment is necessary.

Predicted impacts at Mersey Estuary (SSSI)

Table 9 – Maximum modelled ambient concentrations of NO_x, SO_2, HF and NH_3 at Mersey Estuary SSSI site						
Pollutant	**Critical level**	**Background**	**Process Contribution (PC)**		**Predicted Environmental Concentration (PEC)**	
Unit	**µg/m³**	**µg/m³**	**µg/m³**	**% of Critical level**	**µg/m³**	**% of Critical level**
NO_x annual mean	30	23.19	0.96	3.2	24.15	80.5
NO_x 24 hour mean	75	46.38	8.58	11.4	54.96	73.3
SO_2 annual mean	10	4.77	0.24	1.2	5.01	25.0
NH_3 annual mean	3	1.89	0.05	1.6	1.94	64.6
HF 24 hour mean	5	--	0.0429	0.9	--	--
HF weekly mean	0.5	--	0.0173	3.5	--	--

From the results presented above, when compared with the assessment criteria (above), the impacts from hydrogen fluoride are less than 10% of the relevant short term critical level. The potential impacts from hydrogen fluoride could be considered to be insignificant. The process contributions from NO_x, SO_2 and ammonia are greater than 1% (for long term impacts) and 10% (for short term impacts) of the relevant critical levels. The effects of these pollutants cannot be ruled out as insignificant. When the modelled impacts are considered with the relevant background concentrations, the predicted environmental concentration for both the short and long term impacts are less than 100% of the critical level. We can therefore consider the impacts from NO_x, SO_2 and ammonia emissions as not significant.

Table 10 – Maximum modelled nutrient nitrogen deposition at Mersey Estuary SSSI site					
Critical load (kgN/ha/yr)	**Baseline deposition rates (kgN/ha/yr)**	**PC (kgN/ha/yr)**	**PC% of Critical load**	**PEC (kgN/ha/yr)**	**PEC% of Critical load**
20 – 30	15.12	0.345	1.73	15.465	77.33
15 – 30	15.12	0.345	2.3	15.465	103.1

In the case of nutrient nitrogen deposition, the predicted process contribution is 1.73% of the specified critical load (littoral sediments) and cannot be considered insignificant. When the modelled impacts are considered with the relevant background concentrations, the predicted environmental concentration is less than 100% of the critical load. The Operator considers the impacts from nutrient nitrogen deposition to be not significant.

Despite this, APIS identifies a more sensitive habitat of rich fens with a critical load range of 15 – 30 kgN/ha/yr. The Operator did not compare the predicted process contributions of nutrient nitrogen against this feature. Table 10 above shows that the predicted process contribution is 2.3% of the critical load. When the modelled impacts are considered with the relevant background concentrations, the predicted process environmental impacts are greater than 100% of the critical load (103.1%).

Despite the impact being greater than the critical load when considered with the background deposition concentrations, the proposed changes to the facility show a reduction in impact. When applying the process contribution from the permitted site to the more sensitive critical load (15 – 30 kgN/ha/yr), the impact is 3.4% of the critical load. The proposed change would account provide an environmental improvement of 1%. Due to the high levels of existing background nitrogen deposition concentrations, any process contributions greater than 1% would exceed the critical load.

Despite this, the Environment Agency is minded to accept the proposal for the following reasons:

- The process contributions and our check modelling are based on the installation operating throughout the year. It assumes that the facility is operating at the IED emission limits for 8,700 hours per year and at the plausible abnormal emission levels for 60 hours per year. In reality, the facility will operate for less than the given operating hours due to periods of shut down and/or maintenance.
- There are uncertainties inherent to air quality modelling, these were acknowledged by our detailed audit of the model. We can therefore assume that the process contributions are likely to be less than presented by the Operator.
- The insignificance threshold of the process contribution is breached by only 1.3%. The impacts from this proposal can be considered to be very small and well within modelling uncertainties.
- The permit will include BAT limits for pollutants as set out in the Environment Agency's technical guidance, *The incineration of Waste (EPR 5.01)*.
- Our modelling checks are based on conservative assumptions with impacts likely to be less than the worst-case predictions.

We consulted with Natural England on the conclusions we drew and they agreed with our reasoning.

Acidification

As part of our overall assessment, we identified that the Operator did not assess the impact of acidification on several of the habitats sites including:

- Mersey Estuary – Special Protection Area (SPA) and Ramsar
- Midland Meres and Mosses Phase 1 – Ramsar
- Midland Meres and Mosses Phase 2 – Ramsar
- Mersey Estuary – Site of Special Scientific Interest (SSSI)

The Operator stated that there are no comparable critical loads at all of the habitats sites. Our detailed audit of the model and further investigation of the habitats show that this approach is appropriate. We agree that this approach is acceptable.

Predicted impacts at Frodsham and Helsby and Ince Marshes (Local Wildlife Site)

Table 11 – Maximum modelled ambient concentrations of NO_X, SO_2, HF and NH_3 at Frodsham and Helsby and Ince Marshes (Local Wildlife Sites)						
Pollutant	**Critical level**	**Background**	**Process Contribution (PC)**		**Predicted Environmental Concentration (PEC)**	
Unit	**µg/m³**	**µg/m³**	**µg/m³**	**% of Critical level**	**µg/m³**	**% of Critical level**
NO_x annual mean	30	9.33	1.02	3.4	--	--
NO_x 24 hour mean	75	18.66	15.26	20.3	--	--
SO_2 annual mean	10	0.34	0.26	1.3	--	--
NH_3 annual mean	3	3.31	0.0512	1.7	--	--
HF 24 hour mean	5	--	0.0762	1.5	--	--
HF weekly mean	0.5	--	0	0	--	--

Table 12 – Maximum modelled nutrient nitrogen deposition at Frodsham and Helsby and Ince Marshes (Local Wildlife Sites)					
Critical load (kgN/ha/yr)	**Baseline deposition rates (kgN/ha/yr)**	**PC (kgN/ha/yr)**	**PC% of Critical load**	**PEC (kgN/ha/yr)**	**PEC% of Critical load**
20 – 30 Pioneer, low mid, mid-upper saltmarshes	15.12	0.37	1.85	--	--

The assessment provided by the Operator (using detailed dispersion modelling reviewed and assessed by the Environment Agency's technical specialists) showed that the predicted process contributions for all 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 process contributions are less than 100% of the relevant critical level or critical load. Acidification was not considered as the APIS database for this habitat at this location does not have a comparable acid critical

load class. Our air quality technical specialists agree that it is not appropriate to consider the impacts from acid deposition.

Human Health Risk Assessment

Comparing the results of air dispersion modelling as part of the Environmental Impact assessment against European and national air quality standards effectively makes a health risk assessment for those pollutants for which a standard has been derived. These air quality standards have been developed primarily in order to protect human health via known intake mechanisms, such as inhalation and ingestion. 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. For these pollutants, a different human health risk model is required which better reflects the level of dioxin intake.

Models are available to predict the dioxin, furan and dioxin-like PCBs intake for comparison with the Tolerable Daily Intake (TDI) recommended by the Committee on Toxicity of Chemicals in Food, Consumer Products and the Environment, known as COT. These include the HHRAP model. The Human Health Risk Assessment Protocol (HHRAP) has been developed by the US EPA to calculate the human body intake of a range of carcinogenic pollutants and to determine the mathematic quantitative risk in probabilistic terms. In the UK, in common with other European Countries, we consider a threshold dose below which the likelihood of an adverse effect is regarded as being very low or effectively zero.

The TDI is the amount of a substance that can be ingested daily over a lifetime without appreciable health risk. It is expressed in relation to bodyweight in order to allow for different body size, such as for children of different ages. In the UK, the COT has set a TDI for dioxins, furans and dioxin-like PCBs of 2 picograms I-TEQ/Kg-body weight/day (N.B. a picogram is a million millionths (10^{-12}) of a gram).

In addition to an assessment of risk from dioxins, furans and dioxin-like PCBs, the HHRAP model enables a risk assessment from human intake of a range of heavy metals. In principle, the respective ES for these metals are protective of human health. It is not therefore necessary to model the human body intake.

For dioxins, furans and dioxin-like PCBs, the principal exposure route is through ingestion, usually through the food chain, and the main risk to health is through accumulation in the body over a period of time. The human health risk assessment calculates the dose of dioxins and furans that would be received by local receptors if their food and water were sourced from the locality where the deposition of dioxins, furans and dioxin like PCBs is predicted to be the highest. This is then assessed against the TDI levels established by the COT of 2 picograms I-TEQ / Kg bodyweight/ day.

The assessment undertaken by the Operator showed that the predicted daily intake of dioxins, furans and dioxin-like PCBs at all receptors, resulting from emissions from the proposed facility, were significantly below the recommended TDI levels (and are all below 1%). We agree with this assessment.

Impacts from 'abnormal operations'

Article 50(4)(c) of IED requires that waste incineration and co-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 plants, 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 emission 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.

In making an assessment of abnormal operations, the following worst case scenario has been assumed:

- Dioxin emissions of 10 ng/m^3 (100 x normal)
- Mercury emissions are 15 times those of normal operation
- NOx emissions of 550 mg/m^3 (1.375 x normal)
- Particulate emissions of 150 mg/m^3 (5 x normal)
- Metal emissions other than mercury are 15 times those of normal operation
- SO2 emissions of 450 mg/m^3 (2.25 x normal)
- HCl emissions of 90 mg/m^3 (22.5 x normal)

It should be noted that the Operator has not considered the impacts from unabated emissions from PCBs. We have performed our own checks of PCB emissions. Our sensitivity checks show that abnormal emissions of dioxins furans and dioxin-like PCBs are likely to be less than 10% of the COT-TDI.

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 Operator's short-term environmental impact is summarised in the table below.

Table 13 – Proposed changes to the incineration facility. Abnormal operations results

Pollutant	ES	Background	Process contribution (PC)		Predicted environmental concentration (PEC)	
	µg/m³	µg/m³	µg/m³	% of ES	µg/m³	% of ES
NO_2	[2]200	52.2	20.6	10.3	72.77	36.4
PM_{10}	[3]50	32.4	2.7	5.4	--	--
SO_2	[4]266	13.2	54.2	20.4	67.36	25.3
	[5]350	13.2	48.4	13.8	61.58	17.6
	[6]125	13.2	5.2	4.1	--	--
HCl	[7]750	1.42	152.7	20.4	154.12	20.5
HF	[7]160	4.7	15.3	9.6	--	--
Hg	[10]7.5	0.04818	0.12735	1.7	--	--
Sb	[10]150	0.00124	0.02928	0.020	--	--
Cu	[10]200	0.0121	0.07383	0.037	--	--
Mn	[10]1,500	0.00848	0.15275	0.010	--	--
Cr (II)(III)	[10]150	0.01014	0.23421	0.156	--	--
V	[1]1	0.0034	0.01527	1.527	--	--
PCBs	[10]6	--	--	--	--	--
Dioxins			5.1E-10			

Notes

[1] 24 hour maximum

[2] 99.79th percentile of 1 hour means

[3] 90.41st percentile of 24 hour means

[4] 99.9th percentile of 15 minute means

[5] 99.73rd percentile of 1 hour means

[6] 99.18th percentile of 24 hour means

[7] 1 hour average

[10] 1 hour maximum

The result on the Operator's short-term abnormal environmental impact is summarised in the table above. From the table above, the emissions of the following substances can be considered insignificant, in that the PC is <10% of the short-term ES:

- PM_{10}, HF, PCBs and metals (Hg, Sb, Cu, Mn, Cr and V).

Also, from the table above, emissions of the remaining pollutants (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 less than 100% of short term ES:

- NO_2, SO_2 and HCl.

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.

Fugitive emissions – impact from noise

Impacts from noise pollution have previously been assessed under the original permit application. However, due to the change in site design, in particular the installation of an air-cooled condenser, the nature of the risk from noise has changed. The Operator has therefore submitted a revised detailed noise impact assessment.

Based upon the information in noise impact assessment, we are satisfied that the appropriate mitigation measures will be in place to prevent or where that is not practicable to minimise noise and vibration from causing annoyance outside the site. The Operator has committed to implementing the recommended noise reduction techniques contained within table 3.75 of the Draft BREF for Waste Incineration (2017).

The application contained a noise impact assessment which identified local noise-sensitive receptors, potential sources of noise at the proposed plant and noise attenuation measures (as identified in the Draft BREF for Waste Incineration 2017). Measurements were taken of the prevailing ambient noise levels to produce a baseline noise survey and an assessment was carried out in accordance with BS 4142:2014 to compare the predicted plant rating noise levels with the established background levels.

The assessment concluded that predicted noise levels using typical plant operating with appropriate noise mitigation would be well within sleep disturbance criteria, guidance levels within BS 8233:2014, WHO guidelines for community noise and amenity, and produce a low impact magnitude in accordance with BS 4142:2014 (i.e. rating levels less than the background sound level). We audited this assessment and we agree with the Operator's conclusions. As a result of this, we expect that the site will likely have a low impact at nearby sensitive receptors.

The assessment carried out by the Operator was based on equipment that has not yet been installed and in buildings that have not yet been built. From information supplied within the Application, we consider that the proposed Installation will not cause an additional noise impact at the nearest sensitive receptors. We have set pre-operational condition 12 (PO12) in the Permit requiring the submission of a programme of monitoring at the Installation and in the surrounding environment to establish noise levels during plant commissioning and operation as specified in the Application. This will ensure that any potential impact can be identified and rectified at the earliest opportunity.

Impact from odour emissions

During normal operations at municipal waste incinerators, point source and fugitive emissions are maintained at a minimal level. Incineration plants have the potential to cause odour from the reception area including the waste bunker. However odour is not usually a major issue for this sector with the usual control measures being highly effective in preventing odour nuisance at receptors. The key measures normally used are as follows:

- Combustion air creates a negative pressure in the waste reception area. Air is pulled through this area and into the furnace where odours are destroyed.
- Fast acting self-closing doors that are kept closed between waste deliveries.
- The waste is only stored for a shot time in the bunker before being incinerated.

Odour impacts are more likely to occur during periods of shut down of an incineration line at the site. For the previously permitted configuration of three incineration lines, negative pressure would still achieved by the

operation of the other two lines during the shutdown of an incineration line. As the Operator will be permitted to operate either one or two incineration lines, there could be an increase in odour pollution risk. With only one incineration line, there will be no negative pressure to extract and destroy odorous compounds during the incineration process in the event of a shut down scenario. The Operator's submissions indicated that shut down could last up to 6 weeks. Therefore, we requested that the Operator demonstrate how they will perform procedures which ensure odour problems can be minimised during shut down.

The Operator's initial proposals to mitigate against generation of significant odour pollution was through methods which could not be considered BAT on the level of information we received. The proposal put forward of applying a micronutrient agent to biologically treat odorous compounds on the surface of the waste cannot at this point be considered to be an effective odour control method during shut down. Without evidence collected under controlled conditions that demonstrate the method and technology are effective, we could not accept this proposal as BAT.

The information provided makes claims to its effectiveness but was not backed up by credible evidence. For instance, it was claimed that applying the spray to the surface will prevent subsurface generation of anaerobic conditions. The Operator did not provide evidence to support this claim given that waste could be stored in the bunker for up to 6 weeks.

We therefore requested (via an information notice) that the Operator revise their proposals for odour emissions management alongside a demonstration that the method was capable of meeting best available techniques (BAT) for odour management during periods of shut down. We also gave the Operator the option of proposing a more recognised odour abatement and extraction system.

In response to the information notice, the Operator revised their odour control approach, proposing to extract the odorous air and treat it via adsorption (carbon filtration) and particulate filtration. Adsorption is the process of surface attraction common to all substances. Gas molecules are physically trapped by pore openings in the filter media and accumulate over time until the media is saturated and cannot hold any more pollutants. The Operator was unable to provide detailed operating parameters in order to justify that this system could be considered to be BAT for odour control. As stated previously in this document, the incineration plant is still yet to be subject to full detailed design. We therefore, requested that the Operator show how the expected odorous compounds generated in the bunker will be able to be controlled by the carbon filtration system.

The Operator provided additional information on 14 December 2018. We requested additional explanation on the following points:

- The temperature of the odorous air stream. Higher air stream temperatures (greater than 48°C) mean that adsorption of particles into the media pores is unlikely to be effective.
- The relative humidity (RH) of the odorous air stream. The carbon filter media bed will become saturated with water if the relative humidity is greater than 50%. This will mean that the media will be unable to adsorb more odorous compounds.
- The type of monitoring the Operator will implement to demonstrate that the carbon filter media is working effectively.
- The likely type of carbon filter proposed. This was requested to determine whether the type of filter would be capable of adsorbing the likely odorous compounds present in a municipal waste incinerator bunker.

The Operator provided a response to the above questions. The Operator confirmed that the airstream will be similar to ambient temperatures in the building, approximately 30°C and that relative humidity will also be at ambient levels. They do however indicate that some suppliers of the filter media have claimed that RH of up to 70% can be effectively treated. However, they acknowledge that additional detailed information will be submitted to the Environment Agency when they select the specific supplier of carbon filter media. The Operator highlighted the key odorous compounds that need abating in ambient municipal waste bunkers as hydrogen sulphide, mercaptans and organic acids. We agree that carbon adsorption of these odorous compounds would be effective. The Operator was unable to specify the monitoring regime that will likely be employed but committed to undertaking monitoring in line with the system supplier's recommendations.

This level of information supplied in isolation does not satisfy the Environment Agency that the Operator is at present able to readily demonstrate that they are able to abate odorous compounds during periods of shut down. Despite this, the Environment Agency is minded to accept the Operator's proposal for the following reasons:

- The Operator has proposed an odour abatement technique which is recognised in general as BAT at municipal waste incinerators as stated in Section 3.3 of the Environment Agency's technical guidance, *The incineration of Waste (EPR 5.01)*.
- The abatement technique is for the purpose of minimising odour impacts as a contingency measure during periods of shut down. It is not the primary odour control method during normal operations.
- We have set an improvement condition and pre-operational measure (IC9 and PO13) in the permit to be complied with within 15 months of first receipt of waste at the site. This requires the Operator to demonstrate that the key aspects of the abatement system are in place as part of the detailed design of the plant. This includes the submission of a written report, detailing the following:

    a. The chemical composition of the odorous air generated within the areas of waste storage (the bunker and reception halls).
    b. The suitability of the proposed odour abatement (inlet dust filters and carbon filters) for treating all expected odours from the facility.
    c. Any improvements necessary along with timescales for implementation should additional abatement be required.
    d. A monitoring procedure, outlining how the following parameters will be sampled: inlet and outlet VOC concentrations, bed operating temperatures, inlet gas temperatures, gas flow rate, pressure differential and gas moisture content.

The improvement condition and pre-operational condition (IC9 and PO13) allows the Environment Agency to confirm the assumptions made by the Operator – that the carbon adsorption technique will be BAT for this installation.

Changes to turbine steam cooling system

As part of this variation, the previous cooling system of 'once-through cooling' using abstracted fresh water via the Manchester Ship Canal has been removed and the associated land 'surrendered'. This permit allows a replacement cooling method using an 'air-cooled condenser'.

This process works as follows: the steam will be exhausted at low pressure from the turbine into an air-cooled condenser which will condense the steam from the boiler back into water. The water will then be pumped back into the boiler to be recirculated to produce more steam. The heat lost by the steam when it condenses will be transferred to the air. The air-cooled condenser will not generate emissions of particulate matter or water vapour that are common to a cooling tower. The air-cooled condenser will not produce a visible plume.

The air-cooled condenser will not require any water to be drawn from, and discharged back to, the Manchester Ship Canal (as per the previous cooling system). This will eliminate any impact of abstracting water or discharging water back into the Canal. The air-cooled condenser fans will be equipped with variable frequency drive devices which can deliver similar levels of energy efficiency to the previously proposed hybrid cooling towers. The energy efficiency of the installation, inclusive of the air-cooled condenser is approximately 30%, and the installation will achieve the relevant benchmarks within the BREF and BAT guidance for waste incineration. As demonstrated within the noise assessment (see section above), there would be no significant impacts associated with noise emissions from the installation. Taking the above into consideration, it is considered that the use of air-cooled condensers is considered BAT for the installation.

Changes to permit conditions

As a result of the variation application, the following key changes to the permit have implemented:

- This varied permit is presented with modern conditions as per the Environment Agency's latest permit templates and conditions relevant to the incineration of waste. This includes standard conditions which cover fire prevention and management of pests.

- We have removed the multi-operator permit conditions. The permit was linked via a 'multi-operator' arrangement in which the incinerator bottom ash (IBA) was transferred to and treated by a neighbouring site, Ince Marshes IBA Aggregate Facility (operated by Ballast Phoenix Limited). This associated permit was surrendered in 2015, consequently terminating the technical connection between the two installations. Subsequently, this variation confirms that there will be no treatment of IBA on site; IBA will be stored temporarily on site prior to despatch off-site for recovery.

- We have removed the cooling water discharge emission limit values and the associated emission points. Only uncontaminated roof water will be discharged to surface waters via emission point W1. There are no emission limits associated with this discharge.

- The previous permit authorised the transfer of all foul and process water drainage to an effluent treatment plant (ETP). This ETP was not included in the environmental permit but was a standalone activity which would have served a number of activities at the Ince Resource Recovery Park. As these activities have never commenced, the plans for the process effluent generated by this incineration plant have changed. Blowdown and any contaminated surface waters (wash-down and effluent from the demineralisation plant) will be reused by the ash quench system. Prior to use in the ash quench, the water will be collected in a wastewater tank and settling basin. There will be no discharge of process water off-site. It should be noted that emissions to foul sewer from office facilities will be subject to a separate application for a package effluent treatment plant.

- The previous permit also contained emissions limit values for pollutants to air which have either been removed or replaced by more up-to-date limits and monitoring requirements. In particular, periodic monitoring requirements and associated limits for the following pollutants have been removed: particulate matter, total organic carbon, carbon monoxide, sulphur dioxide and oxides of nitrogen. These were included in the permit before effective continuous emissions monitoring systems (CEMS) were accredited by MCERTS. Emission limits in the permit are daily averages based upon continuous monitoring during the period of operation. These limits were in the existing permit and are based on the requirements of the Industrial Emissions Directive (Annex VI).

- We have amended the emission limit for carbon monoxide to reflect the revised air dispersion assessment for this variation application. Carbon monoxide was previously permitted at a half-hourly limit of 100 mg/m^3. However, we have amended this emission limit to 150 mg/m^3 (as 95% of all 10-minute averages in any 24-hour period). Both emission limit values are considered appropriate under Annex VI of the IED.

- We have removed the emission limit for ammonia from the permit. It was assigned in the previous permit for the control of ammonia slip as part of the NOx SNCR abatement system. The limit was derived from an internal Environment Agency which has now been discontinued. Under our current guidance, *The incineration of Waste (EPR 5.01)*, a limit for ammonia is not necessary unless impacts from ammonia are predicted to impact nearby sensitive habitat sites. Our review of the Operator's air dispersion modelling predicts that there will be no significant impacts from ammonia at the nearby habitats sites.

Pre-operational measures and improvement conditions

The permit includes a number of pre-operational (PO) conditions. As the site has never been commissioned and no permitted activities have taken place, the previously set PO conditions were never implemented. We have inserted revised PO conditions to require the Operator to confirm that the details and measures proposed in the Application have been adopted or implemented prior to the operation of the Installation. These conditions have been derived from the Environment Agency's permit template for the incineration of waste and are considered as standard for the industry sector. These 'standard' pre-operational measures are numbered PO1 to PO9. We have discussed PO10 to PO13 in the sections above.

The improvement conditions in the permit are also set to represent modern permit conditions. These have also been derived from a standard set of actions which we require the Operator to discharge within a specified timeframe. These 'standard' ICs are numbered IC1 to IC8. We have discussed IC9 in the odour section above.

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.
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 facility is no longer a multi-operator installation.
The site	
Extent of the site of the facility	The operator has provided plans which we consider to be satisfactory, showing the extent of the site of the facility. The plan is included in the permit.
Site condition report	The operator has provided a description of the condition of the site, which we consider is satisfactory. The decision was taken in accordance with our guidance on site condition reports and baseline reporting under the Industrial Emissions Directive. Permitted operations at the site have never commenced. We are satisfied that there has never been a source of potential ground and groundwater contamination from this process. No baseline data was submitted with the application. We have advised the operator what measures they need to take to improve the site condition report. Pre-operational condition PO7 requires the operator to submit a revised baseline report to determine the state of soil and groundwater prior to commissioning the installation.
Extent of the surrender application	The operator has provided a plan showing the extent of the site of the facility that is to be surrendered. We consider this plan to be satisfactory.
Pollution risk	We are satisfied that the necessary measures have been taken to avoid a pollution risk resulting from the operation of the regulated facility. The area of land removed under this surrender application has never been developed as permitted operations have never commenced. The land is still considered to be green agricultural land.
Satisfactory state	We are satisfied that the necessary measures have been taken to return the site of the regulated facility to a satisfactory state.

Aspect considered	Decision
	In coming to this decision we have had regard to the state of the site before the facility was put into operation. The area of land removed under this surrender application has never been developed as permitted operations have never commenced. The land is still considered to be green agricultural land.
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. The Operator has demonstrated an environmental improvement and reduction in emissions from the installation than that previously permitted through their detailed air dispersion assessment. See key issues for further details.
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. See key issues for further details.
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 Operator must use are specified in table S1.2 in the environmental permit.
Operating techniques for emissions that do not screen out as insignificant	Emissions of nitrogen dioxide (long term impacts), VOCs (long term impacts as 1, 3-butadiene), VOCs (long term impacts as benzene) cadmium (long term impacts) 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 BAT Conclusions and ELVs deliver compliance with BAT-AELs. See key issues for further details.

Aspect considered	Decision
Operating techniques for emissions that screen out as insignificant	All other emissions of point source air pollutants have been screened out as insignificant, and so we agree that the Operator's proposed techniques are BAT for the installation. We consider that the emission limits included in the installation permit reflect the BAT for the sector. See key issues for further details.
Odour management	Based upon the information in the application we are satisfied that the appropriate measures will be in place to prevent or where that is not practicable to minimise odour and to prevent pollution from odour. See key issues for further details.
Noise management	Based upon the information in the application we are satisfied that the appropriate measures will be in place to prevent or where that is not practicable to minimise noise and vibration and to prevent pollution from noise and vibration outside the site. See key issues for further details.
Permit conditions	
Updating permit conditions during consolidation	We have updated permit conditions to those in the current generic permit template as part of permit consolidation. The conditions will provide the same level of protection as those in the previous permit(s).
Raw materials	We have specified limits and controls on the use of raw materials and fuels. Fuel oils should contain less than 0.1% of sulphur as required by the Sulphur Content of Liquid Fuels (England and Wales) (Amendment) Regulations 2014.
Pre-operational conditions	Based on the information in the application, we consider that we need to impose pre-operational conditions. See key issues for further details.
Improvement programme	Based on the information on the application, we consider that we need to impose an improvement programme. See key issues for further details.
Emission limits	ELVs and/or equivalent parameters or technical measures based on BAT have been amended for the previously permitted periodic monitoring emission limits. These include particulate matter, total organic carbon, hydrogen chloride, carbon monoxide, sulphur dioxide and oxides of nitrogen. These limits are not relevant as the Operator modelled their impacts based on the ELVs prescribed within Annex VI Part 3 of the IED. These limits are reflected within the permit.
Monitoring	We have decided that monitoring should be amended. This is outlined within the key issues section above.
Reporting	We have amended reporting substances which require periodic monitoring to quarterly for the first year of operations. After one year, this monitoring frequency is reduced to bi-annually. This reflects modern permit conditions. The substances with revised reporting frequencies are: • Hydrogen fluoride • Mercury

Aspect considered	Decision
	• Cadmium & thallium and their compounds (total) • Sb, As, Pb, Cr, Co, Cu, Mn, Ni and V and their compounds (total) • Dioxins / furans (I-TEQ) • Dioxins / furans (WHO-TEQ Humans / Mammals) • Dioxins / furans (WHO-TEQ Fish) • Dioxins / furans (WHO-TEQ Birds) • Dioxin-like PCBs (WHO-TEQ Humans / Mammals) • Dioxin-like PCBs (WHO-TEQ Fish) • Dioxin-like PCBs (WHO-TEQ Birds) • Specific individual poly-cyclic aromatic hydrocarbons (PAHs)
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.
Relevant convictions	The Case Management System and National Enforcement Database has been checked to ensure that all relevant convictions have been declared.
Financial competence	There is no known reason to consider that the operator will not be financially able 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." 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.