

Permitting decisions

Bespoke permit

We have decided to grant the permit for Surface Transforms Liverpool operated by Surface Transforms PLC. The permit number is EPR/WP3439QP

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 summarises the decision making process in the decision checklist to show how all relevant factors have been taken in to account.

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. The introductory note summarises what the permit covers.

Key issues of the decision

The main features of the installation are as follows:

The installation manufactures carbon ceramic brake parts for use in the automotive and aerospace industry. This is undertaken by a number of consecutive steps which fall under Schedule 1 listed activity descriptions in the Environmental Permitting Regulations (EPR) as set out in the section below.

1 Defining the activity

1.1 Listed activities

We determined the most appropriate listed activities under the EPR are:

Section 1.2 Part A(1)(f)(iv) Activities involving the pyrolysis, carbonisation, distillation, partial oxidation or other heat treatment of other carbonaceous material.	Heating and carbonisation of poly-acrylonitrile preform. Full carbonisation in a vacuum furnace (one unit) by pyrolytic heating to create a carbon based disc.
Section 6.2 Part A(1)(a) Producing carbon or hard-burnt coal or electro-graphite by means of incineration or graphitisation.	Deposition of carbon onto carbon based disc and heated to form ceramic/graphite disc. Carbon fibre parts from the carbonisation process are infiltrated with additional carbon using a carbon vapour infiltration (CVI) process in a heated vacuum furnace (three units, CVI 2, CVI 3 and CVI 4).
Section 4.2 Part A(1)(a)(v) Producing inorganic chemicals such as, non-metals, metal oxides, metal carbonyls or other inorganic compounds (for example calcium carbide, silicon, silicon carbide, titanium dioxide).	Infusion of silicon into carbon fibre disc in a furnace (seven units), forming silicon carbide, in a Melt Infiltration process (MIST).

1.2 Coating processes (directly associated activity)

We questioned whether the coating processes were considered to fall under the EPR definition of a Section 6.4 listed activity.

The following information was provided by the Applicant 31 July 2019:

The capacity of the coating processes “fall below the threshold for it to be considered a Part A(2) or Part B process under Section 6.4 of Schedule 1 of the EPR.

- Section 6.4 Part B(iv) – 5 or more tonnes of organic solvents
- Section 6.4 Part A(2)(a) - the threshold is 150 kg/hour of solvent or 200 tonnes/year.

The maximum total quantity of coating material used is 2.24 tonnes/year (0.08 tonnes of overcoat and 2.16 tonnes of undercoat).

We conclude that the coating processes fall under the description of a directly associated activity.

1.3 Thermal oxidiser (directly associated activity)

We also conclude that the thermal oxidiser does not fall under the definition of a medium combustion plant (MCP). The MCP directive applies as follows:

- Article 2 (1) “This Directive shall apply to combustion plants with a rated thermal input **equal to or greater than 1 MW** and less than 50 MW (‘medium combustion plants’), irrespective of the type of fuel they use.”
- Article 2(3) lists a number of exemptions from this which include:
 - heating plant to control odour or VOC emissions.

The purpose of the thermal oxidiser is to control emissions from the process. We conclude that the thermal oxidiser falls under the description of a directly associated activity.

2 Charging scheme

2.1 Scheme calculation

The subsistence charge was set to £9,176 based on the following:

We have tailored our approach as the process is quite simple despite falling under a number of listed activity descriptions.

The whole process takes place inside an industrial unit on an industrial park. This cannot be compared to the scale of a large refinery or chemical plant.

The process is a sequence of three main steps that turns a carbon based textile into a very light hard disc capable of replacing heavy metal discs.

The carbonisation process is carried out in an oven the size of transit van. The carbon vapour infiltration (CVI) process is of a similar size and is similar to carbonisation, again in that it's densifying the component with more carbon. Both these steps are effectively one activity in the charging scheme. The emissions from these steps will be routed to the thermal oxidiser that serves both these steps to begin with, until the energy can be recovered from the CVI waste gas in a Combined Heat and Power (CHP) scheme.

We have deemed this part of the activity to fall within the subsistence charge table that fits this process most aptly. This equates to Fees & Charges table 'Part 3 Refineries table 2.5, section 2.5.6' in that "all the activities under the same permit would fit within this description / charge - i.e. attract one charge for the activities they undertake.

A further step is carried out known as the melt infiltration (MIST) process. This process is more akin to that of a lacquering process, in that it changes the surface characteristics of the disc, turning it into a silicon carbide. This attracts an additional chemical sector charge based on 'Part 3 Chemicals table 2.4, section 2.4.7'. As this MIST step is considered so small scale and low risk compared to that of other chemical processes, we have reduced this charge by 50%.

Based on the above, the charge is a combination of refineries @ £4,352 + additional charge of 50% for chemicals @ £4,824. The subsistence charge is therefore £9,176.

Activity	Charge Table	Charge
Section 1.2 Part A(1(f)(iv)	2.5.3	£21,710
Section 6.2 Part A(1)(a)	2.5.6	£4,352
Section 4.2 Part A(1)(a)(v)	2.4.7	£9,648 (50% £4,824)

3 Assessment of emissions to air

3.1 Application of Environment Agency guidance 'risk assessments for your environmental permit'

A 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 (PC)
- 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 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 PCs 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 PCs calculated are likely to be an overestimate of the actual maximum concentrations.

More accurate calculation of PCs can be achieved by mathematical dispersion models, which take into account relevant parameters of the release and surrounding conditions, including local meteorology. The Applicant's assessment is based on dispersion modelling as described in their 'Emissions Modelling Assessment' report, reference 4013-2467-B, dated 15 November 2019.

3.2 Use of air dispersion modelling

Once short-term and long-term PCs have been calculated in this way, they are compared with Environmental Standards (ES). ES include Environment Assessment Levels (EALs) and Environmental Quality Standards (EQS).

PCs are screened out as **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 Technique (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. This is done through detailed audit and review of the Applicant's air dispersion modelling taking background concentrations and modelling uncertainties into account. We also take into account local factors (for example, particularly sensitive habitats receptors).

3.3 Assessment of impact on air quality

The Applicant's assessment of the impact on air quality is set out in the updated 'Emissions Modelling Assessment' report, reference 4013-2467-B, dated 15 November 2019.

The Applicant has assessed the installation's potential emissions to air against the relevant ESs, and the potential impact upon local conservation sites and human health.

The conservation sites within the relevant screening distances are set out in Section 3.8.2 of this document.

These assessments predict the potential effects on local air quality from the Installation's emissions using the AERMOD MPI 19191 dispersion model, which is a commonly used computer model for regulatory dispersion modelling. The model used five years of meteorological data collected from the weather station at John Lennon Airport between 2013 and 2017. This is located approximately 16km to the south of the site. The Applicant confirmed that previous DEFRA guidance stated that meteorological stations within 30km of a study site are suitable for use in dispersion modelling assessments. Although Crosby meteorological station (14km to the west) is marginally closer, it was considered to be in a more exposed coastal location than Liverpool Airport and therefore was not considered to be as representative of the site, which is much further inland. The impact of the terrain surrounding the site upon plume dispersion was considered in the dispersion modelling.

3.4 Emission point sources

Initial phase of operation

In the initial phase of the operation, CVI 2 will continue to vent to atmosphere at emission point A1.

Later operational phases

Emissions from the proposed CVI 3 will be abated by the thermal oxidiser which will vent at emission point A10.

The thermal oxidiser will also be used to abate emissions from the carbonisation process. This operation is possible as the CVI and carbonisation processes are not operated simultaneously.

At a later stage, a further CVI 4 will be installed. At this point it is anticipated that exhaust gases from CVI 2, 3 and 4 will all be used as a fuel for the genset.

A stand-by dispersion stack, 30m in height, venting at emission point A15, will be installed. This is required to ensure that in the event of a failure of the thermal oxidiser, emissions from the carbonisation process can be safely vented to atmosphere. The stand-by dispersion stack will be fitted with a carbon filter to provide abatement. The use of the stand-by dispersion stack is expected to be very limited in terms of duration of each use and frequency of use. Refer to BAT section below.

3.5 Environmental standards-human health

These were provided in the Applicant's emissions modelling report as follows:

Table 2.1 – Air Quality Limit Values

Pollutant	Measured As	Purpose	Air Quality Limit Values
NO ₂	1-hour mean	Protection of human health	200 µg.m ⁻³ (not to be exceeded more than 18 times per calendar year)
	Annual mean	Protection of human health	40 µg.m ⁻³
Particulate matter less than 10 micrometers in aerodynamic diameter (PM ₁₀)	24-hour mean	Protection of human health	50 µg.m ⁻³ (not to be exceeded more than 35 times per calendar year)
	Annual mean	Protection of human health	40 µg.m ⁻³
PM ₂₅	Annual mean	Protection of human health	25 µg.m ⁻³
Benzene	Annual mean	Protection of human health	5 µg.m ⁻³
Carbon Monoxide (CO)	8-hour running mean	Protection of human health	10,000 µg.m ⁻³

Table 2.2 – Environmental Assessment Levels

Substance	EALs	
	Long Term Annual Limit (µg.m ⁻³)	Short Term Hourly Limit (µg.m ⁻³)
Butane	14,500	181,000
Acrylonitrile	8.8	264
Benzene	-	195
Benzo-alpha-Pyrene (BaP)	0.00025	-
Hydrogen Cyanide	-	220
Napthalene	530	8,000
Ammonia	180	2,500
Formaldehyde	5	100

3.6 Critical levels-local conservation sites

These were provided in the Applicant's emissions modelling report as follows:

Pollutant	EALs	
	Concentration ($\mu\text{g.m}^{-3}$)	Measured As
NO _x	30	Annual mean
	75	Daily mean
Ammonia	1 (Worst Case)	Annual Mean

3.7 Critical loads-local conservation sites

For statutory sites, the Air Pollution Information System (APIS) website provides specific critical loads for each site. Such information is not available on a site specific basis for non-statutory ecological sites. As such, conservative, worst case critical loads were assigned as follows:

Nitrogen deposition	Acid deposition
3 Kg N.ha-1.year-1	0.1 Keq.ha-1.year-1

The assumptions underpinning the model have been checked and are reasonably precautionary.

The way in which the Applicant used dispersion models, its selection of input data, use of background data and the assumptions it made have been reviewed by the Environment Agency's modelling specialists to establish the robustness of the Applicant's air impact assessment. The output from the model has then been used to inform further assessment of health impacts and impact on conservation sites.

Our review of the Applicant's assessment leads us to agree with the Applicant's conclusions that the facility is unlikely to cause exceedances of any ES set for the protection of human health and ecosystems.

We also carried out some basic tests around the scenario of the use of the stand-by stack without the proposed carbon filter in place. This scenario screened out as low risk of pollution at receptors and therefore as a result of these checks our conclusions do not change.

The Applicant's modelling predictions are summarised in the following sections.

3.8 Assessment of air dispersion modelling outputs

The Applicant's modelling predictions at the most impacted receptor are summarised in the tables below. Calculation of the Predicted Environmental Concentration (PEC) is only included where the PCs don't screen out as insignificant. The PEC is the PC + background concentration.

Whilst we have used the Applicant's modelling predictions, we have made our own simple verification calculation of the percentage PC and PEC. These are the numbers shown in the tables below and so may be very slightly different to those shown in the Application. Any such minor discrepancies do not materially impact on our conclusions.

3.8.1 Assessment of emissions to air-human health

Pollutant	EQS / EAL		Back-ground	Process Contribution (PC)		Predicted Environmental Concentration		Operational scenario
	µg/m ³			µg/m ³	% of EAL	µg/m ³	% of EAL	
NO ₂	40	1	26.3	0.48	1.20	27.4	68.45	Thermal oxidiser serving carbonisation process and genset serving CVI units
	200	2	53.8	17.54	8.8	71.34	35.67	
NO ₂	40	1	26.3	0.62	1.55	27.5	68.80	Thermal oxidiser serving CVI3
	200	2	53.8	16.47	8.2	70.27	35.14	
PM ₁₀	40	1	-	0.01	0.03	-	-	
	50	3	-	0.03	0.06	-	-	
PM _{2.5}	25	1	-	0.01	0.04	-	-	
Carbon monoxide	10000	5	-	16.38	0.17	-	-	Thermal oxidiser serving CVI3
Carbon monoxide	10000	5	-	36.47	0.36	-	-	Genset serving CVI3
	5	1	1.02	0.22	4.40	1.24	24.80	
Benzene	195	2	2.04	21.33	10.94	23.37	11.98	Fume booths and genset
BaP	0.00025	1	-	1E-06	0.41	-	-	
	530	1	-	0.00035	0.0001	-	-	
Naphthalene	8000	2	-	0.04	0.001	-	-	
	5	1	2	0.11	2.12	2.11	42.12	
Formaldehyde	100	2	4	6.66	6.66	10.66	10.66	Thermal oxidiser serving CVI3
	5	1	2	0.07	1.40	2.07	41.40	
Formaldehyde	100	2	4	7.89	7.89	11.89	11.89	Genset serving CVI3
Hydrogen cyanide	220	2	no data available	0.33	0.42	-	-	Thermal oxidiser serving carbonisation process
Hydrogen cyanide	220	2	no data available	20.34	9.25	-	-	Stand-by dispersion stack
Acrylonitrile	8.8	1	no data available	0.05	0.55	-	-	Thermal oxidiser serving carbonisation process
	264	2		3.04	1.15	-	-	
Acrylonitrile	264	2	available	18.52	7.02	-	-	Stand-by dispersion stack
Butane	14500	1	-	1.05	0.01	-	-	
	181000		-	201.86	0.11	-	-	
NH ₃	180	1	-	0.006	0.003	-	-	Thermal oxidiser serving carbonisation process
	2500	4	-	0.33	0.02	-	-	
BaP-benzo[a]pyrene								
1 Annual Mean								
2 33.73 rd %ile of 1-hour means								
3 30.41 st %ile of 24-hour means								
4 1-hour maximum								
5 8-hour running mean								

We can conclude that with the exception of NO₂, benzene and formaldehyde, impacts at the most impacted human health receptor are predicted to be insignificant since the modelled PC is <1% of the long-term ES; and <10% of the short-term ES.

For NO₂, the PC is only marginally above the insignificance criteria, at 1.2 and 1.55% of the ES.

We are satisfied that impacts are not of concern given the conservative basis of the assessment.

3.8.2 Assessment of emissions to air ecological

There are a number of non-statutory local nature reserves and local wildlife sites located within the screening distance of 2km from the installation:

Nature and heritage conservation sites

Local Nature Reserve (LNR)
Acornfield Plantation

Screening distance (km)

2

Local Wildlife Sites (LWS)
Knowsley Park
Acornfield Plantation
Charley Wood
Mosslands, w of Johnson's Cottage, Kirkby
Mossborough Moss woodlands and land
Northwood Forest Hills
Kirkby Brook, Northwood
Moss Plantation and Brown Birches
Brown Birches
Otis Meadow

2

Pollutant	EQS / EAL		Back-ground	Process Contribution (PC)		Predicted Environmental Concentration (PEC)		Operational scenario
	$\mu\text{g}/\text{m}^3$			$\mu\text{g}/\text{m}^3$	% of EAL	$\mu\text{g}/\text{m}^3$	% of EAL	
NO ₂	30	1	22.6	1.07	3.57	23.7	78.90	Thermal oxidiser serving carbonisation process and genset serving CVIs
	75	2	26.68	20.51	27.3	47.193	62.92	
NO ₂	30	1	22.6	1.49	4.97	24.1	80.30	Thermal oxidiser serving CVI3
	75	2	26.68	32.61	43.5	59.293	79.06	
NH ₃	1	3	-	0.01	1.00	-	-	Thermal oxidiser serving carbonisation process
		1	Annual Mean					
		2	Daily					
		3	Annual					

We can conclude that the impacts at the most impacted ecological receptor are not predicted to be significant for NO₂ with the PC <100% of the ES. Based on the conservative assumptions, emissions of ammonia are insignificant with the PC at 1% of the worst case ES.

3.8.3 Assessment of nitrogen deposition-ecological

The Applicant's assessment of the total nitrogen deposition arising at each receptor from ammonia and NO₂ has been summed and presented in the table below.

Table 5.35 - Calculated Annual Nitrogen Deposition at Ecological Receptors

Receptor	Calculated PC to Annual Nitrogen Deposition (Kg N.ha ⁻¹ .Year ⁻¹) Based on Maximum Modelled Annual Mean NO ₂ Concentration	Calculated PC to Annual Nitrogen Deposition (Kg N.ha ⁻¹ .Year ⁻¹) Based on Maximum Modelled Annual Mean NH ₃ Concentration	Total Nitrogen Deposition (Kg N.ha ⁻¹ .Year ⁻¹)	Percentage Contribution to Worst Case Critical Load for Annual Nitrogen Deposition (%)
R24	0.0148	0.0271	0.042	1.40
R25	0.0122	0.0223	0.034	1.15
R26	0.0081	0.0147	0.023	0.76
R27	0.0814	0.1483	0.230	7.66
R28	0.0054	0.0099	0.015	0.51
R29	0.0116	0.0231	0.035	1.15
R30	0.0123	0.0226	0.035	1.16
R31	0.0049	0.0089	0.014	0.46
R32	0.0090	0.0164	0.025	0.85
R33	0.0040	0.0072	0.011	0.37

We can conclude that the impacts at all ecological receptors are not predicted to be significant with all modelled loads <100% of the worst case critical load.

3.8.4 Assessment of acid deposition-ecological

The Applicant's assessment of the acid deposition arising at each receptor is presented in the table below.

Table 5.36 - Calculated Annual Acid Deposition at Ecological Receptors

Receptor	Calculated PC to Annual Acid Deposition (Keq N.ha ⁻¹ .Year ⁻¹)	Percentage Contribution to Worst Case Critical Load for Annual Acid Deposition (%)
R24	0.0030	2.99
R25	0.0025	2.46
R26	0.0016	1.63
R27	0.0164	16.41
R28	0.0011	1.09
R29	0.0025	2.47
R30	0.0025	2.49
R31	0.0010	0.98
R32	0.0018	1.81
R33	0.0008	0.80

We can conclude that the impacts at all ecological receptors are not predicted to be significant with all modelled loads <100% of the worst case critical load.

4 Application of Best Available Techniques (BAT)

4.1 BAT and emissions control

The Applicant provided an updated 'Assessment of Best Available Techniques and Technical Description', document reference 3910-2467-BAT, dated 14 November 2019.

The Applicant confirmed that the carbonisation process has emissions requiring the installation of a thermal oxidiser for abatement. There will be a by-pass emission stack equipped with carbon filters for use if the thermal oxidiser goes off-line during a treatment cycle.

The CVI process emissions are treated via a cryogenic plate abatement system to condense out the PAHs which are a by-product of this process. The emissions from CVI 3 will initially be routed via the thermal oxidiser. Refer to Section 3.4 of this document for details of the releases and controls in place for the CVI emissions. The Applicant has proposed recovering energy from these emissions using a genset. We have set an improvement condition requiring a full review of energy recovery options from all the CVI processes. Also refer to Section 5.2 of this document.

The Applicant confirmed that the anticipated average failure rate of the thermal oxidiser is 3%. It can therefore be assumed that the maximum duration of use of the carbon filter for abatement will be 3% in any one year, estimated to equate to one 16 hour run each year. As such, long-term impacts are not expected to be significant.

The Applicant proposes a further line of abatement in the event that the carbon filter fails. The expected failure rate of the carbon filter is one in ten years. Should the carbon filter system fail, the furnace will shut down, the furnace gas exit valve will close and the additional abatement system will be activated. After 15 minutes of gas generation within the furnace, a pressure relief valve will activate, releasing furnace gas into the pressure release ducting which will be directed to the 30m stack. Once pressure is released, the valve will seal. As soon as the furnace enters safe shut-down mode, the rapid cooling system will activate and reduce the furnace temperature below the point at which furnace gases are generated. The process will take approximately two hours, during which time there will be a series of small gas releases every 15 minutes.

We are satisfied that the operating techniques and emission control measures for the facility are in accordance with BAT for this type of operation.

5 Emissions to air and the emission limits applied to the plant

5.1 Sector benchmarks

The Applicant's air quality modelling refers to the following sector benchmarks.

Pollutant	Emission Benchmark In EA Sector Guidance Note 4.03 (mg.m⁻³)^(a)	Emission Concentrations Based Upon Monitoring Data (mg.m⁻³)^(b)
Ammonia	10-50	No monitoring data available
Benzene	5	<0.06
Hydrogen Cyanide	2-5	No monitoring data available
NO _x	50-200	No monitoring data available
Particulate Matter	5-20	0.18 - 2.7
VOC Total Class A	20	No monitoring data available
VOC Total Class N	75	No monitoring data available
Total VOC (as carbon)	-	Fume booths 1 = 1.27 Fume booth 2 = 1.6 Fume booth 3 = 4.94 CVI2 = 381.1 ^(b)

N.B (a) Expressed at reference conditions of 273K, 101.3KPa_{df}

(b) Monitoring undertaken prior to introduction of 10,000m³hour⁻¹ of additional air to flue. Reported monitoring concentration adjusted to take account of additional air

5.2 Setting air emission limits and monitoring requirements

We have set limits and monitoring requirements based on the relevant guidance notes as follows:

Listed Activity	Emission points	Parameters	Emission conc.	Sector guidance benchmark	Permit emission limits	Monitoring requirements and frequency
Section 6.2 Part A(1)(a)	A1 CVI 2	Total VOCs	100,617 µg/m ³ (A1) ^{Note 1}	No benchmarks for this type of process	No limits set	Yes 6 monthly ^{Note 7}
		PAH ^{Note 2}	21,066 µg/m ³ (A1) ^{Note 1}			No ^{Notes 6 and 9}
		BaP ^{Note 2}	70.6 µg/m ³ (A1) ^{Note 1}			No ^{Notes 6 and 9}
		Napthalene ^{Note 2}	19942 µg/m ³ (A1) ^{Note 1}			No ^{Notes 6 and 9}
Section 4.2 Part A(1)(a)(v)	A2, A11 MIST exhaust	Particulate matter	1.34 mg/m ³ (A2) ^{Note 1} 2.7 mg/m ³ (A11) ^{Note 1}	5-20 mg/m ³ ^{Note 3}	No limits set	No ^{Notes 6 and 9}
Section 4.2 Part A(1)(a)(v)	A3, A4 Dust extraction	Particulate matter	0.18 mg/m ³ (A3) ^{Note 1} 2.41 mg/m ³ (A4) ^{Note 1}	5-20 mg/m ³ ^{Note 3}	No limits set	No ^{Notes 6 and 9}
Directly associated activity	A5, A6, A7, A12, A13, A14 Fume booth exhausts	Total VOCs	1.27 mg/m ³ (A5) ^{Note 1} 1.60 mg/m ³ (A6) ^{Note 1} 4.94 mg/m ³ (A7) ^{Note 1}	^{Note 4} No benchmark for this parameter	No limits set	No ^{Note 9}

Section 1.2 Part A(1)(f)(iv)	A10 Thermal oxidiser serving the carbonisation process	Ammonia	2.28 mg/m ³ Note 10	No benchmarks for this type of process	Note 5	Yes Six monthly Notes 5 and Note 8
		Hydrogen cyanide	5.43 mg/m ³ Note 10			
		Acrylonitrile	17.76 mg/m ³ Note 10			
		NO _x	30.79 mg/m ³ Note 10			
Section 6.2 Part A(1)(a)	A10 Thermal oxidiser serving CVI 3	None methane volatile organic compounds (NMVOCs)	<150 mg/m ³ Note 10	No benchmarks for this type of process	Note 5	Yes Six monthly Notes 5 and Note 8
		Carbon monoxide (CO)	<600 mg/m ³ Note 10			
		Formaldehyde	<60 mg/m ³ Note 10			
		Oxides of nitrogen (NO and NO ₂ expressed as NO ₂)	<500 mg/m ³ Note 10			
Section 1.2 Part A(1)(f)(iv) and Section 6.2 Part A(1)(a)	A15 Stand-by dispersion stack	Emissions from the carbonisation process and CVI 3	No monitoring data available. Model inputs provided by technology provider.	No benchmarks for this type of process	No limits set	Note 11
Section 6.2 Part A(1)(a)	A16 Genset exhaust	Emissions from CVI 2, CVI 3 and CVI 4	No monitoring data available. Model inputs provided by the Applicant.	Note 12	Note 5	Yes Six monthly Notes 5 and Note 8

Note 1: Appendix IV-Emissions Monitoring Reports of the 'Emissions Modelling Assessment' report, reference 4013-2467-B, dated 15 November 2019.

Note 2: Polyaromatic hydrocarbons (PAH) - Poly-cyclic aromatic hydrocarbon, and comprises Anthanthrene, Benzo[a]anthracene, Benzo[b]fluoranthene, Benzo[k]fluoranthene, Benzo[b]naph(2,1-d)thiophene, Benzo[c]phenanthrene, Benzo[ghi]perylene, **Benzo[a]pyrene**, Cholanthrene, Chrysene, Cyclopenta[c,d]pyrene, Dibenzo[ah]anthracene, Dibenzo[a,i]pyrene Fluoranthene, Indo[1,2,3-cd]pyrene, **Naphthalene**.

Note 3: Most apt sector guidance is EPR 4.03 for the inorganic chemicals sector.

Note 4: Most apt sector guidance is EPR 2.07 for the surface treatment sector.

Note 5: We have set improvement conditions (IC01, IC02 and IC04) to determine the requirement for emission limits.

Note 6: Impacts screened out as insignificant.

Note 7: Impacts not screened out as insignificant.

Note 8: Check abatement/combustion performance.

Note 9: No active abatement in place.

Note 10: Anticipated emissions provided by the Applicant.

Note 11: Refer to Section 4.1 of this document for operation of the stand-by dispersion stack. Operational hours shall be monitored in accordance with table S4.2 of the permit.

Note 12: We have set improvement conditions requiring details of the proposed BAT options for energy recovery from the waste CVI gases and assessment of the impacts. The options for energy recovery should not be necessarily limited to the genset referred to in this Application. This is required nine months following commissioning of CVI 3 to allow time to gather sufficient data to be use in the report.

6 Emissions to water

The Applicant confirmed that there are no emissions to water from the installation. The cooling systems are closed loop and the cooling water does not come into contact with the product at any stage. No water is used within the process or for cleaning.

They also confirm that there are no operations carried out on external areas. The only external storage is a liquid petroleum gas (LPG) tank.

Water from external areas is clean roof water or surface water run-off from access roads and car parking areas.

We are satisfied that the necessary controls are place for the inspection and ongoing maintenance of hard-standing and drainage systems.

The Applicant is exploring options for combined heat and power (CHP) from the CVI emissions. The permit includes provision for this and it is anticipated that any equipment will be installed in external areas.

We have included emission point W1 in the permit to ensure that the necessary controls are in place for the surface water drainage.

Decision checklist

Aspect considered	Decision
Receipt of Application	
Confidential information	<p>A claim for commercial or industrial confidentiality has been made.</p> <p>We have accepted the claim for confidentiality. We have excluded the relevant process documents as we consider that the inclusion of the relevant information on the public register would prejudice the Applicant's interests to an unreasonable degree. The reasons for this are given in the notice of determination for the claim.</p> <p>The decision was taken in accordance with our guidance on confidentiality.</p>
Identifying confidential information	We have not identified any further information provided as part of the Application that we consider to be confidential.
Consultation	
Consultation	<p>The consultation requirements were identified in accordance with the Environmental Permitting Regulations (EPR) and our public participation statement.</p> <p>The Application was publicised on the GOV.UK website.</p> <p>We consulted the following organisations:</p> <p>Food Standards Agency (FSA)</p> <p>Health & Safety Executive (HSE)</p> <p>Public Health England (PHE)</p> <p>Knowsley Council Environmental Health</p> <p>The comments and our responses are summarised in the consultation section.</p>
Operator	
Control of the facility	We are satisfied that the Applicant (now the operator) is the person who will have control over the operation of the facility after the grant of the permit. The decision was taken in accordance with our guidance on legal operator for environmental permits.
The facility	
The regulated facility	<p>We considered the extent and nature of the facilities at the site in accordance with RGN2 'Understanding the meaning of regulated facility', Appendix 1 of RGN 2 'Interpretation of Schedule 1' and Appendix 2 of RGN 2 'Defining the scope of the Installation'.</p> <p>The extent of the facilities are defined in the site plan and in the permit. The activities are defined in table S1.1 of the permit.</p> <p>Also refer to Key issues section of this document.</p>

Aspect considered	Decision
The site	
Extent of the site of the facility	The Applicant has provided a plan which we consider is satisfactory, showing the extent of the site of the facility. The plan is included in the permit.
Site condition report	<p>The Applicant 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.</p> <p>The permit includes the following standard condition:</p> <p>Periodic monitoring shall be carried out at least once every 5 years for groundwater and 10 years for soil, unless such monitoring is based on a systematic appraisal of the risk of contamination.</p> <p>This condition is required for this installation which is subject to the IED.</p>
Biodiversity, heritage, landscape and nature conservation	<p>The Application is within the relevant distance criteria of a site of heritage, landscape or nature conservation, and/or protected species or habitat.</p> <p>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.</p> <p>We consider that the Application will not affect any sites of nature conservation, landscape and heritage, and/or protected species or habitats identified. Refer to Key issues section of this document.</p> <p>We have not consulted Natural England on the Application. The decision was taken in accordance with our guidance.</p>
Environmental risk assessment	
Environmental risk	<p>We have reviewed the Applicant's assessment of the environmental risk from the facility, refer to Key issues section of this document.</p> <p>The Applicant's risk assessment is satisfactory.</p>
Operating techniques	
General operating techniques	<p>We have reviewed the techniques used by the Applicant and compared these with the relevant guidance notes and we consider them to represent appropriate techniques for the facility.</p> <p>We have specified some controls from the air quality modelling report to ensure that the releases are in line with the proposal. These include:</p> <ul style="list-style-type: none"> - volumetric flow rate; - that the CVI processes are not operated simultaneously with the carbonisation process; - % operation of the stand-by dispersion stack (emission point A15). <p>We have also added the definition for the end of commissioning and also included this in Section 6 Interpretation section of the permit. This is required as the dates for the improvement conditions refer to the commissioning of plant.</p>

Aspect considered	Decision
	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	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. Also refer to Key issues section of this document.
Operating techniques for emissions that screen out as insignificant	For emissions of pollutants that have been screened out as insignificant, we agree that the Applicant'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. Also refer to Key issues section of this document.
Odour management	We consider that the Applicant's proposals represent the appropriate measures to prevent/minimise odour from the permitted activities.
Noise management	We do not consider that the activities carried out at the site have the potential to cause noise and/or vibration that might cause pollution outside the site.
Permit conditions	
Improvement programme	Based on the information In the Application, we consider that we need to impose an improvement programme. Refer to Key issues section of this document.
Emission limits	Limits have been set for emissions to air where required. Refer to Key issues section of this document. There are no emissions to water from the facility. Refer to Key issues section of this document.
Monitoring	We have decided that monitoring should be carried out for the parameters listed in the permit, using the methods detailed and to the frequencies specified. Refer to Key issues section of this document.
Reporting	We have specified reporting in the permit for emissions to air and performance parameters.
Operator competence	
Management system	There is no known reason to consider that the operator will not have the management system to enable them to comply with the permit conditions. The decision was taken in accordance with the guidance on operator competence and how to develop a management system for environmental permits.

Aspect considered	Decision
Relevant convictions	<p>The Case Management System has been checked to ensure that all relevant convictions have been declared.</p> <p>No relevant convictions were found. The operator satisfies the criteria in our guidance on operator competence.</p>
Growth Duty	
Section 108 Deregulation Act 2015 – Growth duty	<p>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.</p> <p>Paragraph 1.3 of the guidance says:</p> <p>“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.”</p> <p>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.</p> <p>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.</p>

Consultation

The following summarises the responses to consultation with other organisations, 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, letter dated 31 October 2019, Environmental Public Health Scientist
Brief summary of issues raised
No issues raised
Summary of actions taken or show how this has been covered
No action required