



Permit with introductory note

The Environmental Permitting (England & Wales) Regulations 2016

Rolls Royce plc

Rolls Royce Washington Campus
Radial Park Road
Washington
Tyne and Wear
NE38 9DA

Permit number

EPR/CP3131DW

Rolls Royce Washington Campus

Permit number EPR/CP3131DW

Introductory note

This introductory note does not form a part of the permit

The main features of the permit are as follows.

Rolls Royce plc manufactures components for use in the aerospace industry at their UK Discs (UKD) and Fleet Support Facility (FSF) based in Washington, Tyne and Wear. The manufacturing process can be summarised in three main steps; machining of the nickel, steel and titanium components, surface treatment (etching) and non-destructive testing. The machining of the components and associated processes is not covered under EPR, which covers only the surface treatment, liquid effluent treatment and their directly associated activities of painting, non-destructive testing and storage of chemicals.

The installation consists of two surface treatment lines at the UKD facility, which has a total surface treatment vat capacity of; 10,500 L for nickel components and 7,875 L for titanium components. The FSF consists of two surface treatment lines with a surface treatment vat capacity of 11,340 L for titanium components and 6,804 L for nickel and steel components. The total surface treatment vat capacity for both of the facilities is 36,519 L. The total tank capacity is 143,130 L, which includes degreasing and rinse tanks that are part of the surface treatment process, but not surface treatment vats.

The main stages of the surface treatment process for nickel and titanium can be summarised as; alkali clean, rinse, acid etch, rinse, acid desmut, rinse, neutralise and rinse. For steel the following process is used; alkali clean, rinse, acid etch, rinse, neutralise, rinse, gluconate and rinse. The main chemicals used in these processes are; ferric chloride, sulphuric acid, hydrochloric acid, sodium hydroxide, nitric acid, hydrofluorosilicic acid, ammonium bifluoride, hydrofluoric acid and sodium carbonate.

Non-destructive testing of the components is conducted by fluorescent penetrant inspection (FPI), which involves; cleaning the component (UKD only), adding a penetrant dye, removal of excess penetrant using an emulsifier, rinse and dry, application of developer, inspection for defects and a final clean. The FPI chemicals are petroleum distillate based.

Two types of coating are used to protect the components. Graphite and molybdenum disulphide based barrier coatings protect high temperature components, whilst sacrificial coatings and sealcoat that contain chromium trioxide provide resistance corrosion to the other components. Once coated the components are dried in an electrically heated oven. Solvent emissions from paint thinners and paints at the UKD facility and FSF are expected to be 960 kg per annum per facility, totalling 1,920 kg/annum. Scrubbers are used to reduce the emission to air of VOCs and particulates from the coating and non-destructive testing processes.

The effluent treatment plant manages the industrial wastewater from across the site, including treating surface treatment rinse waters and machining emulsions. It comprises; pH adjustment, coagulation, flocculation, settling, filter pressing of sludge, sand filtration and granular activated carbon filtration and has a maximum treatment capacity of 236 tonnes per day. The wastewater then passes into the municipal sewer and is treated by Northumbrian Water at Washington Sewage Treatment Works. Surface water run-off from the roofs and paved areas passes through a sustainable urban drainage system and attenuation pond prior to being discharged to the storm sewer managed by Northumbrian Water. The domestic wastewaters are discharged to the Northumbrian Water foul sewer and bypass the onsite effluent treatment plant.

A central services building is sited in between the FSF and UKD facilities, which serves both the facilities and houses the surface treatment line chemical distribution system. A chemical filling point for the central services building is located adjacent to the structure, which is fully bunded and drains to the underground storage tank prior to being transferred to the surface water attenuation pond with a pen stock drain in between.

The status log of the permit sets out the permitting history, including any changes to the permit reference number.

Status log of the permit		
Description	Date	Comments
Application EPR/CP3131DW/A001	Duly made 19/07/2017	Application for surface treatment processes of aviation components.
Additional information received	23/08/2017 08/09/2017 13/09/2017 18/09/2017	Response to Schedule 5 Notice dated 30/08/2017.
Additional information received	30/10/2017	Response to Schedule 5 Notice dated 20/10/2017.
Additional information received	12/12/2017	Environment Agency H1 assessment of emissions from the surface treatment tanks.
Additional information received	14/12/2017	Acceptance of liability for site restoration in lieu of baseline data for site condition report.
Additional information received	22/12/2017	H1 assessment of measured emissions to air during commissioning.
Additional information received	02/02/2018	Compressed air agitation overview and operating techniques.
Permit determined EPR/CP3131DW (PAS Billing ref. CP3131DW)	08/02/2018	Permit issued to Rolls Royce plc.

End of introductory note

Permit

The Environmental Permitting (England and Wales) Regulations 2016

Permit number

EPR/CP3131DW

The Environment Agency hereby authorises, under regulation 13 of the Environmental Permitting (England and Wales) Regulations 2016

Rolls Royce plc ("the operator"),

whose registered office is

62 Buckingham Gate

London

SW1E 6AT

company registration number 01003142

to operate an installation at

Rolls Royce Washington Campus

Radial Park Road

Washington

Tyne and Wear

NE38 9DA

to the extent authorised by and subject to the conditions of this permit.

Name	Date
Mike Jenkins	08/02/2018

Authorised on behalf of the Environment Agency

Conditions

1 Management

1.1 General management

- 1.1.1 The operator shall manage and operate the activities:
 - (a) in accordance with a written management system that identifies and minimises risks of pollution, including those arising from operations, maintenance, accidents, incidents, non-conformances, closure and those drawn to the attention of the operator as a result of complaints; and
 - (b) using sufficient competent persons and resources.
- 1.1.2 Records demonstrating compliance with condition 1.1.1 shall be maintained.
- 1.1.3 Any person having duties that are or may be affected by the matters set out in this permit shall have convenient access to a copy of it kept at or near the place where those duties are carried out.

1.2 Energy efficiency

- 1.2.1 The operator shall:
 - (a) take appropriate measures to ensure that energy is used efficiently in the activities;
 - (b) review and record at least every four years whether there are suitable opportunities to improve the energy efficiency of the activities; and
 - (c) take any further appropriate measures identified by a review.

1.3 Efficient use of raw materials

- 1.3.1 The operator shall:
 - (a) take appropriate measures to ensure that raw materials and water are used efficiently in the activities;
 - (b) maintain records of raw materials and water used in the activities;
 - (c) review and record at least every four years whether there are suitable alternative materials that could reduce environmental impact or opportunities to improve the efficiency of raw material and water use; and
 - (d) take any further appropriate measures identified by a review.

1.4 Avoidance, recovery and disposal of wastes produced by the activities

- 1.4.1 The operator shall take appropriate measures to ensure that:
 - (a) the waste hierarchy referred to in Article 4 of the Waste Framework Directive is applied to the generation of waste by the activities; and
 - (b) any waste generated by the activities is treated in accordance with the waste hierarchy referred to in Article 4 of the Waste Framework Directive; and
 - (c) where disposal is necessary, this is undertaken in a manner which minimises its impact on the environment.

- 1.4.2 The operator shall review and record at least every four years whether changes to those measures should be made and take any further appropriate measures identified by a review.

2 Operations

2.1 Permitted activities

- 2.1.1 The operator is only authorised to carry out the activities specified in schedule 1 table S1.1 (the "activities").

2.2 The site

- 2.2.1 The activities shall not extend beyond the site, being the land shown edged in green on the site plan at schedule 7 to this permit.

2.3 Operating techniques

- 2.3.1 The activities shall, subject to the conditions of this permit, be operated using the techniques and in the manner described in the documentation specified in schedule 1, table S1.2, unless otherwise agreed in writing by the Environment Agency.
- 2.3.2 If notified by the Environment Agency that the activities are giving rise to pollution, the operator shall submit to the Environment Agency for approval within the period specified, a revision of any plan or other documentation ("plan") specified in schedule 1, table S1.2 or otherwise required under this permit which identifies and minimises the risks of pollution relevant to that plan , and shall implement the approved revised plan in place of the original from the date of approval, unless otherwise agreed in writing by the Environment Agency.
- 2.3.3 Any raw materials or fuels listed in schedule 2 table S2.1 shall conform to the specifications set out in that table.
- 2.3.4 The operator shall ensure that where waste produced by the activities is sent to a relevant waste operation, that operation is provided with the following information, prior to the receipt of the waste:
- (a) the nature of the process producing the waste;
 - (b) the composition of the waste;
 - (c) the handling requirements of the waste;
 - (d) the hazardous property associated with the waste, if applicable; and
 - (e) the waste code of the waste.
- 2.3.5 The operator shall ensure that where waste produced by the activities is sent to a landfill site, it meets the waste acceptance criteria for that landfill.

2.4 Improvement programme

- 2.4.1 The operator shall complete the improvements specified in schedule 1 table S1.3 by the date specified in that table unless otherwise agreed in writing by the Environment Agency.
- 2.4.2 Except in the case of an improvement which consists only of a submission to the Environment Agency, the operator shall notify the Environment Agency within 14 days of completion of each improvement.

3 Emissions and monitoring

3.1 Emissions to water, air or land

- 3.1.1 There shall be no point source emissions to water, air or land except from the sources and emission points listed in schedule 3 tables S3.1 and S3.2.
- 3.1.2 The limits given in schedule 3 shall not be exceeded.
- 3.1.3 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.

3.2 Emissions of substances not controlled by emission limits

- 3.2.1 Emissions of substances not controlled by emission limits (excluding odour) shall not cause pollution. The operator shall not be taken to have breached this condition if appropriate measures, including, but not limited to, those specified in any approved emissions management plan, have been taken to prevent or where that is not practicable, to minimise, those emissions.
- 3.2.2 The operator shall:
 - (a) if notified by the Environment Agency that the activities are giving rise to pollution, submit to the Environment Agency for approval within the period specified, an emissions management plan which identifies and minimises the risks of pollution from emissions of substances not controlled by emission limits;
 - (b) implement the approved emissions management plan, from the date of approval, unless otherwise agreed in writing by the Environment Agency.
- 3.2.3 All liquids in containers, whose emission to water or land could cause pollution, shall be provided with secondary containment, unless the operator has used other appropriate measures to prevent or where that is not practicable, to minimise, leakage and spillage from the primary container.

3.3 Odour

- 3.3.1 Emissions from the activities shall be free from odour at levels likely to cause pollution outside the site, as perceived by an authorised officer of the Environment Agency, unless the operator has used appropriate measures, including, but not limited to, those specified in any approved odour management plan, to prevent or where that is not practicable to minimise the odour.
- 3.3.2 The operator shall:
 - (a) if notified by the Environment Agency that the activities are giving rise to pollution outside the site due to odour, submit to the Environment Agency for approval within the period specified, an odour management plan which identifies and minimises the risks of pollution from odour;
 - (b) implement the approved odour management plan, from the date of approval, unless otherwise agreed in writing by the Environment Agency.

3.4 Noise and vibration

- 3.4.1 Emissions from the activities shall be free from noise and vibration at levels likely to cause pollution outside the site, as perceived by an authorised officer of the Environment Agency, unless the operator has used appropriate measures, including, but not limited to, those specified in any approved noise and vibration management plan to prevent or where that is not practicable to minimise the noise and vibration.
- 3.4.2 The operator shall:
 - (a) if notified by the Environment Agency that the activities are giving rise to pollution outside the site due to noise and vibration, submit to the Environment Agency for approval within the period specified, a noise and vibration management plan which identifies and minimises the risks of pollution from noise and vibration;

- (b) implement the approved noise and vibration management plan, from the date of approval, unless otherwise agreed in writing by the Environment Agency.

3.5 Monitoring

- 3.5.1 The operator shall, unless otherwise agreed in writing by the Environment Agency, undertake the monitoring specified in the following tables in schedule 3 to this permit:
 - (a) point source emissions specified in tables S3.1 and S3.2;
- 3.5.2 The operator shall maintain records of all monitoring required by this permit including records of the taking and analysis of samples, instrument measurements (periodic and continual), calibrations, examinations, tests and surveys and any assessment or evaluation made on the basis of such data.
- 3.5.3 Monitoring equipment, techniques, personnel and organisations employed for the emissions monitoring programme and the environmental or other monitoring specified in condition 3.5.1 shall have either MCERTS certification or MCERTS accreditation (as appropriate), where available, unless otherwise agreed in writing by the Environment Agency.
- 3.5.4 Permanent means of access shall be provided to enable sampling/monitoring to be carried out in relation to the emission points specified in schedule 3 tables S3.1, S3.2, unless otherwise agreed in writing by the Environment Agency.

4 Information

4.1 Records

- 4.1.1 All records required to be made by this permit shall:
 - (a) be legible;
 - (b) be made as soon as reasonably practicable;
 - (c) if amended, be amended in such a way that the original and any subsequent amendments remain legible, or are capable of retrieval; and
 - (d) be retained, unless otherwise agreed in writing by the Environment Agency, for at least 6 years from the date when the records were made, or in the case of the following records until permit surrender:
 - (i) off-site environmental effects; and
 - (ii) matters which affect the condition of the land and groundwater.
- 4.1.2 The operator shall keep on site all records, plans and the management system required to be maintained by this permit, unless otherwise agreed in writing by the Environment Agency.

4.2 Reporting

- 4.2.1 The operator shall send all reports and notifications required by the permit to the Environment Agency using the contact details supplied in writing by the Environment Agency.
- 4.2.2 A report or reports on the performance of the activities over the previous year shall be submitted to the Environment Agency by 31 January (or other date agreed in writing by the Environment Agency) each year. The report(s) shall include as a minimum:
 - (a) a review of the results of the monitoring and assessment carried out in accordance with the permit including an interpretive review of that data;

- (b) the annual production /treatment data set out in schedule 4 table S4.2; and
 - (c) the performance parameters set out in schedule 4 table S4.3 using the forms specified in table S4.4 of that schedule.
- 4.2.3 Within 28 days of the end of the reporting period the operator shall, unless otherwise agreed in writing by the Environment Agency, submit reports of the monitoring and assessment carried out in accordance with the conditions of this permit, as follows:
- (a) in respect of the parameters and emission points specified in schedule 4 table S4.1;
 - (b) for the reporting periods specified in schedule 4 table S4.1 and using the forms specified in schedule 4 table S4.4 ; and
 - (c) giving the information from such results and assessments as may be required by the forms specified in those tables.
- 4.2.4 The operator shall, unless notice under this condition has been served within the preceding four years, submit to the Environment Agency, within six months of receipt of a written notice, a report assessing whether there are other appropriate measures that could be taken to prevent, or where that is not practicable, to minimise pollution.

4.3 Notifications

- 4.3.1 In the event:
- (a) that the operation of the activities gives rise to an incident or accident which significantly affects or may significantly affect the environment, the operator must immediately—
 - (i) inform the Environment Agency,
 - (ii) take the measures necessary to limit the environmental consequences of such an incident or accident, and
 - (iii) take the measures necessary to prevent further possible incidents or accidents;
 - (b) of a breach of any permit condition the operator must immediately—
 - (i) inform the Environment Agency, and
 - (ii) take the measures necessary to ensure that compliance is restored within the shortest possible time;
 - (c) of a breach of permit condition which poses an immediate danger to human health or threatens to cause an immediate significant adverse effect on the environment, the operator must immediately suspend the operation of the activities or the relevant part of it until compliance with the permit conditions has been restored.
- 4.3.2 Any information provided under condition 4.3.1 (a)(i), or 4.3.1 (b)(i) where the information relates to the breach of a limit specified in the permit, shall be confirmed by sending the information listed in schedule 5 to this permit within the time period specified in that schedule.
- 4.3.3 Where the Environment Agency has requested in writing that it shall be notified when the operator is to undertake monitoring and/or spot sampling, the operator shall inform the Environment Agency when the relevant monitoring and/or spot sampling is to take place. The operator shall provide this information to the Environment Agency at least 14 days before the date the monitoring is to be undertaken.
- 4.3.4 The Environment Agency shall be notified within 14 days of the occurrence of the following matters, except where such disclosure is prohibited by Stock Exchange rules:
- Where the operator is a registered company:
- (a) any change in the operator's trading name, registered name or registered office address; and

- (b) any steps taken with a view to the operator going into administration, entering into a company voluntary arrangement or being wound up.

Where the operator is a corporate body other than a registered company:

- (a) any change in the operator's name or address; and
- (b) any steps taken with a view to the dissolution of the operator.

In any other case:

- (a) the death of any of the named operators (where the operator consists of more than one named individual);
- (b) any change in the operator's name(s) or address(es); and
- (c) any steps taken with a view to the operator, or any one of them, going into bankruptcy, entering into a composition or arrangement with creditors, or, in the case of them being in a partnership, dissolving the partnership.

4.3.5 Where the operator proposes to make a change in the nature or functioning, or an extension of the activities, which may have consequences for the environment and the change is not otherwise the subject of an application for approval under the Regulations or this permit:

- (a) the Environment Agency shall be notified at least 14 days before making the change; and
- (b) the notification shall contain a description of the proposed change in operation.

4.3.6 The Environment Agency shall be given at least 14 days notice before implementation of any part of the site closure plan.

4.4 Interpretation

- 4.4.1 In this permit the expressions listed in schedule 6 shall have the meaning given in that schedule.
- 4.4.2 In this permit references to reports and notifications mean written reports and notifications, except where reference is made to notification being made "immediately", in which case it may be provided by telephone.

Schedule 1 – Operations

Table S1.1 activities			
Activity reference	Activity listed in Schedule 1 of the EP Regulations	Description of specified activity and WFD Annex I and II operations	Limits of specified activity
AR1	Section 2.3 Part A(1)(a) – Surface treating metal materials using an electrolytic or chemical process where the aggregated volume of the treatment vats is more than 30m ³ .	Electrolytic and chemical etching of nickel, titanium and steel parts.	From receipt of raw materials to despatch of etched material for further processing. Surface treatment is limited to the use of nitric acid, sulphuric acid, hydrochloric acid, hydrofluoric acid, hydrofluorosilicic acid, ferric chloride and ammonium bifluoride. Limited to the operation of four separate treatment lines with a surface treatment vat capacity of 36,519 L. Despatch of process effluent to wastewater treatment plant and exhaust of extracted process fumes via scrubbers to air.
AR2	Section 5.4 Part A(1)(a)(ii) – Disposal of non-hazardous waste with a capacity exceeding 50 tonnes per day involving physico-chemical treatment.	Treatment of effluent from chemical etching and other manufacturing activities. D9 – Physico-chemical treatment resulting in final compounds or mixtures which are discarded by any of the operations numbered D1 to D12.	From receipt of process effluent to discharge of treated effluent to sewer, including storage and dispatch of solids originating from effluent treatment. Maximum effluent treatment capacity of 236 tonnes per day.
Directly Associated Activity			
AR3	Painting of components	Application of paint coatings to components.	From receipt of components and raw materials to oven drying and despatch of finished product. Exhaust of extracted process fumes to air via abatement.
AR4	Non-destructive testing of components	Application of a penetrant dye to components.	From receipt of components and raw materials to oven drying and dispatch of finished product.
AR5	Surface water drainage systems.	Discharge of surface water run-off to Northumbrian Water surface water sewer.	From the collection of uncontaminated surface water run-off to the management through SUDS and disposal into the

Table S1.1 activities			
Activity reference	Activity listed in Schedule 1 of the EP Regulations	Description of specified activity and WFD Annex I and II operations	Limits of specified activity
			surface water sewerage system.
AR6	Storage of chemicals	Storage of chemicals associated with activity AR1, AR2, AR3 and AR4 in Table S1.1	From receipt of chemicals and storage to disposal of containers.

Table S1.2 Operating techniques		
Description	Parts	Date Received
Application	Section 2. Main Plant and Equipment Section 3. Management Systems Section 7. Resource Efficiency	16/05/2017
Schedule 5 Notice Response	Response to question 1d and 1e. Hazardous Substances: Storage, Containment and Good Housekeeping – HSE CS 21-00, Sep 2014 Chemicals Management – HSE CS 07-00, Sep 2016 Response to question 4f, including full Emergency Response Plan Summary of Environmental Management System	08/09/2017
Request for further information	Summary to Justify the Use of Compressed Air in the Surface Treatment Process at the Rolls-Royce Facility in Washington	02/02/2018

Table S1.3 Improvement programme requirements		
Reference	Requirement	Date
IC 1	The Operator shall prepare and submit to the Environment Agency a comprehensive noise assessment report undertaken by an experienced and suitably qualified person in accordance with the procedures given in BS4142:2014 (Methods for rating and assessing industrial and commercial sound). The assessment shall include the identification and assessment of the impact of noise emissions upon sensitive receptors arising from the operation of the permitted facility. In the event that the report shows that the assessed noise levels could have an adverse impact, the report shall include proposals for the further attenuation and/or management of noise and shall include a timescale, to be agreed with the Environment Agency, for the implementation of the proposed measures.	Within 3 months of completion of commissioning of the Fleet Support Facility
IC 2	The Operator shall agree in writing with the Environment Agency a monitoring programme for the monitoring of emissions to air from emission points A3 and A4 for chromium III and chromium VI under normal operating conditions.	Within 3 months of completion of commissioning of the Fleet Support Facility

Table S1.3 Improvement programme requirements

Reference	Requirement	Date
	The methods of monitoring must be in line with Environment Agency guidance on Monitoring Emissions to Air, Land and Water (MCERTS), which is available on the Environment Agency website.	
IC 3	<p>The Operator shall conduct stack emission monitoring for chromium III and chromium VI from emission points A5 & A6 in line with the agreed monitoring programme in IC 2, table S1.3.</p> <p>A report on the monitoring and impacts from the emissions must be submitted to the Environment Agency for approval, which must include the following;</p> <ol style="list-style-type: none">1. Assessment of the impact from the emissions using the Environment Agency's H1 tool.2. Detailed air dispersion modelling if the concentrations are above those estimated in section 5.3.2 of the application and do not screen out using the H1 tool.3. Proposed emission limits and monitoring frequency to be included in table S3.1.4. Proposed methods of abatement and timescales of implementation if the emissions are deemed to be significant.	Within 6 months of completing IC 2
IC 4	<p>The Operator shall monitor the emissions of iron in the discharge to sewer from the onsite effluent treatment plant and undertake an assessment using the Environment Agency's H1 tool, which must be submitted to the Environment Agency for approval. A minimum of 12 samples over a 3 month duration must be collected for the analysis under normal operating conditions.</p> <p>In the event that the emissions of iron do not screen out as insignificant then the Operator shall propose methods to reduce the amount of iron dosed at the effluent treatment plant for wastewater treatment or propose emission limits, which must be agreed in writing with the Environment Agency.</p>	Within 6 months of completion of commissioning of the Fleet Support Facility
IC 5	The Operator shall provide a written operating procedure/s to the Environment Agency for written approval detailing the inspection and maintenance of the underground tank serving the unloading area of the Central Services Building.	Within 3 months of completion of commissioning of the Fleet Support Facility
IC 6	The Operator shall provide a written operating procedure/s to the Environment Agency for written approval detailing the inspection and maintenance of the pipework that carries any substances that are liable to pollute the environment.	Within 3 months of completion of commissioning of the Fleet Support Facility

Schedule 2 – Waste types, raw materials and fuels

Table S2.1 Raw materials and fuels	
Raw materials and fuel description	Specification
-	-

Schedule 3 – Emissions and monitoring

Table S3.1 Point source emissions to air – emission limits and monitoring requirements						
Emission point ref. & location	Source	Parameter	Limit (including unit) ¹	Reference period	Monitoring frequency	Monitoring standard or method
A1 as shown on drawing Figure 4, Installation Emission Points, Rolls-Royce, Washington	UKD surface treatment line scrubber	Hydrogen chloride	No limit set	Half hourly average	Annually	BS EN 1911
		Hydrogen fluoride	No limit set	Half hourly average	Annually	BS ISO 15713
		Nitric acid vapour	200 mg/m ³	Half hourly average	Annually	US EPA M7d
		Sulphuric acid (including sulphuric acid mist and sulphur trioxide)	5 mg/m ³	Half hourly average	Annually	US EPA Method 8
A2 as shown on drawing Figure 4, Installation Emission Points, Rolls-Royce, Washington	FSF surface treatment line scrubber	Hydrogen chloride	No limit set	Half hourly average	Annually	BS EN 1911
		Hydrogen fluoride	No limit set	Half hourly average	Annually	BS ISO 15713
		Nitric acid vapour	200 mg/m ³	Half hourly average	Annually	US EPA M7d
		Sulphuric acid (including sulphuric acid mist and sulphur trioxide)	5 mg/m ³	Half hourly average	Annually	US EPA Method 8
A3, A4 as shown on drawing Figure 4, Installation Emission Points, Rolls-Royce, Washington	UKD paint area local exhaust ventilation (LEV)	Cyclohexanone	No limit set	-	Annually	BS CEN/TS 13649
A5, A6 as shown on drawing Figure 4, Installation Emission Points, Rolls-Royce, Washington	FSF paint area LEV	Cyclohexanone	No limit set	-	Annually	BS CEN/TS 13649
		Chromium VI and its compounds as chromium	To be agreed upon completion of IC 2	Half hourly average	Annually	BS EN 14385
Note 1. Reference conditions – 0°C, 101.3 kPa and no correction for water vapour or oxygen.						

Table S3.2 Point source emissions to sewer – emission limits and monitoring requirements

Emission point ref. & location	Source	Parameter	Limit (incl. Unit) ¹	Reference period	Monitoring frequency	Monitoring standard or method
S1 – Emission to Northumbrian Water Blackburn Meadows Sewage Treatment Works, as shown on drawing figure 4 Installation Emission Points.	UKD/FSF effluent treatment plant	Flow	No limit set	-	Continuous when discharging	MCERTS self-monitoring of effluent flow scheme
		pH	No limit set	Spot sample	Quarterly	SCA blue book 14 ISBN 0117514284
		Chromium VI	No limit set	Spot sample	Monthly	BS 6068-2.47 ISO 11083
		Total chromium	No limit set	Spot sample	Monthly	BS EN 1233
		Copper	No limit set	Spot sample	Monthly	BS EN ISO 17294-1:2006
		Zinc	No limit set	Spot sample	Monthly	BS EN ISO 17294-1:2006
		Nickel	No limit set	Spot sample	Monthly	BS 6068-2.29 ISO 8288
		COD	No limit set	Spot sample	Monthly	BS ISO 15705:2002 Or BS 6069-2.80:2002
W1 – Emission to Northumbrian Water Municipal Surface Water Sewer, as shown on drawing figure 4 Installation Emission Points	Uncontaminated surface water	Oil and grease (visual)	None	-	Weekly	-

Schedule 4 – Reporting

Parameters, for which reports shall be made, in accordance with conditions of this permit, are listed below.

Table S4.1 Reporting of monitoring data			
Parameter	Emission or monitoring point/reference	Reporting period	Period begins
Emissions to air Parameters as required by condition 3.5.1.	A1, A2, A3, A4, A5, A6	Every 12 months	1 January
Emissions to water Parameters as required by condition 3.5.1	S1	Every 3 months	1 January, 1 April, 1 July, 1 October
Surface water monitoring Parameters as required by condition 3.5.1	W1	Every 3 months	1 January, 1 April, 1 July, 1 October

Table S4.2: Annual production	
Parameter	Units
Components produced	tonnes

Table S4.3 Performance parameters		
Parameter	Frequency of assessment	Units
Water usage	Annually	tonnes
Energy usage	Annually	MWh
Raw material usage	Annually	tonnes
Ferric chloride usage	Annually	tonnes
Hydrochloric acid usage	Annually	tonnes
Hydrofluoric acid usage	Annually	tonnes
Ammonium bifluoride usage	Annually	tonnes
Sulphuric acid usage	Annually	tonnes
Nitric acid usage	Annually	tonnes
Total solvent usage	Annually	tonnes

Table S4.4 Reporting forms		
Media/parameter	Reporting format	Date of form
Air	Form air 1 or other form as agreed in writing by the Environment Agency	30/11/2017
Sewer	Form sewer 1 or other form as agreed in writing by the Environment Agency	30/11/2017
Water usage	Form water usage 1 or other form as agreed in writing by the Environment Agency	30/11/2017

Table S4.4 Reporting forms

Media/parameter	Reporting format	Date of form
Energy usage	Form energy 1 or other form as agreed in writing by the Environment Agency	30/11/2017
Performance parameters	Form performance 1 or other form as agreed in writing by the Environment Agency	30/11/2017

Schedule 5 – Notification

These pages outline the information that the operator must provide.

Units of measurement used in information supplied under Part A and B requirements shall be appropriate to the circumstances of the emission. Where appropriate, a comparison should be made of actual emissions and authorised emission limits.

If any information is considered commercially confidential, it should be separated from non-confidential information, supplied on a separate sheet and accompanied by an application for commercial confidentiality under the provisions of the EP Regulations.

Part A

Permit Number	
Name of operator	
Location of Facility	
Time and date of the detection	

(a) Notification requirements for any malfunction, breakdown or failure of equipment or techniques, accident, or emission of a substance not controlled by an emission limit which has caused, is causing or may cause significant pollution	
To be notified within 24 hours of detection	
Date and time of the event	
Reference or description of the location of the event	
Description of where any release into the environment took place	
Substances(s) potentially released	
Best estimate of the quantity or rate of release of substances	
Measures taken, or intended to be taken, to stop any emission	
Description of the failure or accident.	

(b) Notification requirements for the breach of a limit	
To be notified within 24 hours of detection unless otherwise specified below	
Emission point reference/ source	
Parameter(s)	
Limit	
Measured value and uncertainty	
Date and time of monitoring	

(b) Notification requirements for the breach of a limit	
To be notified within 24 hours of detection unless otherwise specified below	
Measures taken, or intended to be taken, to stop the emission	

Time periods for notification following detection of a breach of a limit	
Parameter	Notification period

(c) Notification requirements for the detection of any significant adverse environmental effect	
To be notified within 24 hours of detection	
Description of where the effect on the environment was detected	
Substances(s) detected	
Concentrations of substances detected	
Date of monitoring/sampling	

Part B – to be submitted as soon as practicable

Any more accurate information on the matters for notification under Part A.	
Measures taken, or intended to be taken, to prevent a recurrence of the incident	
Measures taken, or intended to be taken, to rectify, limit or prevent any pollution of the environment which has been or may be caused by the emission	
The dates of any unauthorised emissions from the facility in the preceding 24 months.	

Name*	
Post	
Signature	
Date	

* authorised to sign on behalf of the operator

Schedule 6 – Interpretation

“accident” means an accident that may result in pollution.

“application” means the application for this permit, together with any additional information supplied by the operator as part of the application and any response to a notice served under Schedule 5 to the EP Regulations.

“authorised officer” means any person authorised by the Environment Agency under section 108(1) of The Environment Act 1995 to exercise, in accordance with the terms of any such authorisation, any power specified in section 108(4) of that Act.

“EP Regulations” means The Environmental Permitting (England and Wales) Regulations SI 2016 No.1154 and words and expressions used in this permit which are also used in the Regulations have the same meanings as in those Regulations.

“emissions of substances not controlled by emission limits” means emissions of substances to air, water or land from the activities, either from the emission points specified in schedule 3 or from other localised or diffuse sources, which are not controlled by an emission or background concentration limit.

“groundwater” means all water, which is below the surface of the ground in the saturation zone and in direct contact with the ground or subsoil.

“Industrial Emissions Directive” means DIRECTIVE 2010/75/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 24 November 2010 on industrial emissions

“MCERTS” means the Environment Agency’s Monitoring Certification Scheme.

“quarter” means a calendar year quarter commencing on 1 January, 1 April, 1 July or 1 October.

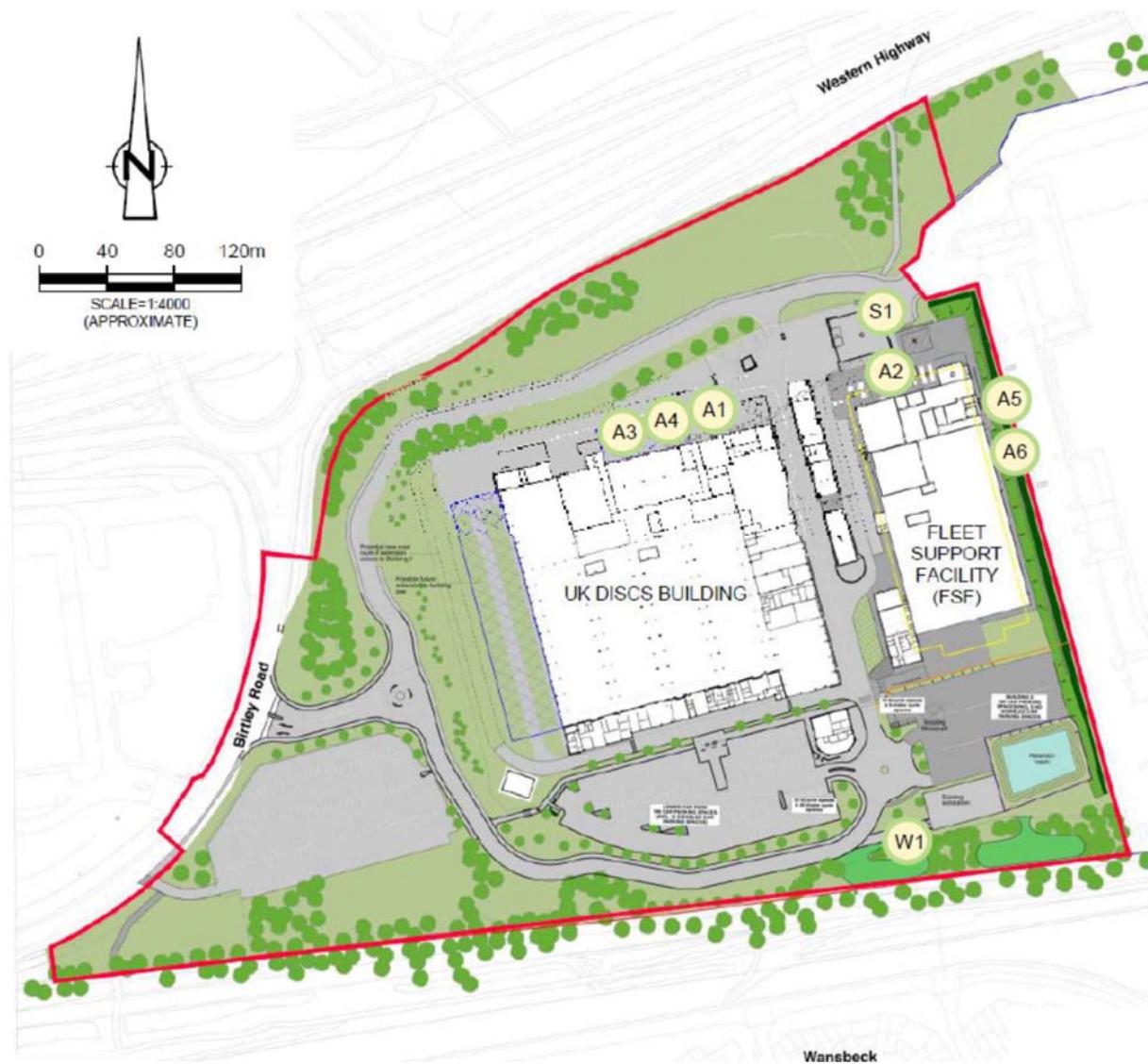
Where a minimum limit is set for any emission parameter, for example pH, reference to exceeding the limit shall mean that the parameter shall not be less than that limit.

Unless otherwise stated, any references in this permit to concentrations of substances in emissions into air means:

- in relation to emissions from combustion processes, the concentration in dry air at a temperature of 273K, at a pressure of 101.3 kPa and with an oxygen content of 3% dry for liquid and gaseous fuels, 6% dry for solid fuels; and/or
- in relation to emissions from non-combustion sources, the concentration at a temperature of 273K and at a pressure of 101.3 kPa, with no correction for water vapour content.

“year” means calendar year ending 31 December.

Schedule 7 – Site plan



END OF PERMIT

Permit Number: CP3131DW

Operator: Rolls Royce plc

Facility: Rolls Royce plc

Form Number: Air1 / 30/11/2017

Reporting of emissions to air for the period from DD/MM/YYYY to DD/MM/YYYY

Emission Point	Substance / Parameter	Emission Limit Value	Reference Period	Result ^[1]	Test Method ^[2]	Sample Date and Times ^[3]	Uncertainty ^[4]
A1	Hydrogen chloride	No limit set	Half hourly average		BS EN 1911		
	Hydrogen fluoride	No limit set	Half hourly average		BS ISO 15713		
	Nitric acid vapour	200 mg/m ³	Half hourly average		US EPA M7d		
	Sulphuric acid (including sulphuric acid mist and sulphur trioxide)	5 mg/m ³	Half hourly average		US EPA Method 8		
A2	Hydrogen chloride	No limit set	Half hourly average		BS EN 1911		
	Hydrogen fluoride	No limit set	Half hourly average		BS ISO 15713		
	Nitric acid vapour	200 mg/m ³	Half hourly average		US EPA M7d		
	Sulphuric acid (including sulphuric acid mist and sulphur trioxide)	5 mg/m ³	Half hourly average		US EPA Method 8		

Emission Point	Substance / Parameter	Emission Limit Value	Reference Period	Result ^[1]	Test Method ^[2]	Sample Date and Times ^[3]	Uncertainty ^[4]
A3	Cyclohexanone	No limit set	-		BS CEN/TS 13649		
A4	Cyclohexanone	No limit set	-		BS CEN/TS 13649		
A5	Cyclohexanone	No limit set	-		BS CEN/TS 13649		
	Chromium VI and its compounds as chromium	To be agreed upon completion of IC 2	Half hourly average		BS EN 14385		
A6	Cyclohexanone	No limit set	-		BS CEN/TS 13649		
	Chromium VI and its compounds as chromium	To be agreed upon completion of IC 2	Half hourly average		BS EN 14385		

1. The result given is the maximum value (or the minimum value in the case of a limit that is expressed as a minimum) obtained during the reporting period, expressed in the same terms as the emission limit value. Where the emission limit value is expressed as a range, the result is given as the 'minimum – maximum' measured values.
2. Where an internationally recognised standard test method is used the reference number is given. Where another method that has been formally agreed with the Environment Agency is used, then the appropriate identifier is given. In other cases the principal technique is stated, for example gas chromatography.
3. For non-continuous measurements the date and time of the sample that produced the result is given. For continuous measurements the percentage of the process operating time covered by the result is given.
4. The uncertainty associated with the quoted result at the 95% confidence interval, unless otherwise stated.

Signed

Date.....

(Authorised to sign as representative of Operator)

Permit Number: CP3131DW **Operator:** Rolls Royce plc

Facility: Rolls Royce plc **Form Number:** Sewer1 / 30/11/2017

Reporting of emissions to sewer for the period from DD/MM/YYYY to DD/MM/YYYY

Emission Point	Substance / Parameter	Emission Limit Value	Reference Period	Result ^[1]	Test Method ^[2]	Sample Date and Times ^[3]	Uncertainty ^[4]
S1	Flow (m ³)	No limit set	Total discharged in quarter		MCERTS self-monitoring of effluent flow scheme		
	pH	No limit set	Spot sample		SCA blue book 14 ISBN 0117514284		
	Total chromium (mg/l)	No limit set	Spot sample		BS EN 1233		
	Chromium VI (mg/l)	No limit set	Spot sample		BS 6068-2.47 ISO 11083		
	COD (mg/l)	No limit set	Spot sample		BS ISO 15705:2002 Or BS 6069-2.80:2002		
	Copper (mg/l)	No limit set	Spot sample		BS EN ISO 17294-1:2006		
	Zinc (mg/l)	No limit set	Spot sample		BS EN ISO 17294-1:2006		

Emission Point	Substance / Parameter	Emission Limit Value	Reference Period	Result ^[1]	Test Method ^[2]	Sample Date and Times ^[3]	Uncertainty ^[4]
	Nickel (mg/l)	No limit set	Spot sample		BS 6068-2.29 ISO 8288		

1. The result given is the maximum value (or the minimum value in the case of a limit that is expressed as a minimum) obtained during the reporting period, expressed in the same terms as the emission limit value. Where the emission limit value is expressed as a range, the result is given as the 'minimum – maximum' measured values.
2. Where an internationally recognised standard test method is used the reference number is given. Where another method that has been formally agreed with the Environment Agency is used, then the appropriate identifier is given. In other cases the principal technique is stated, for example gas chromatography.
3. For non-continuous measurements the date and time of the sample that produced the result is given. For continuous measurements the percentage of the process operating time covered by the result is given.
4. The uncertainty associated with the quoted result at the 95% confidence interval, unless otherwise stated.

Signed

Date.....

(Authorised to sign as representative of Operator)

Permit Number: CP3131DW **Operator:** Rolls Royce plc

Facility: Rolls Royce plc **Form Number:** WaterUsage1 / 30/11/2017

Reporting of Water Usage for the year

Water Source	Usage (m ³ /year)	Specific Usage (m ³ /unit output)
Mains water		
TOTAL WATER USAGE		

Operator's comments:

Signed

Date.....

(authorised to sign as representative of Operator)

Permit Number: CP3131DW **Operator:** Rolls Royce plc

Facility: Rolls Royce plc **Form Number:** Energy1 / 30/11/2017

Reporting of Energy Usage for the year

Energy Source	Energy Usage		Specific Usage (MWh/unit output)
	Quantity	Primary Energy (MWh)	
Electricity *	MWh		
Natural Gas	MWh		
TOTAL			

* Conversion factor for delivered electricity to primary energy = 2.4

Operator's comments:

Signed

Date.....

(Authorised to sign as representative of Operator)

Permit Number: CP3131DW **Operator:** Rolls Royce plc

Facility: Rolls Royce plc **Form Number:** Performance1 / 30/11/2017

Reporting of other performance indicators for the period DD/MM/YYYY to DD/MM/YYYY

Parameter	Units
Total raw material used	tonnes
Ammonium bifluoride used per tonne of product	kg/tonne
Sulphuric acid used per tonne of product	kg/tonne
Nitric acid used per tonne of product	kg/tonne
Hydrofluoric acid used per tonne of product	kg/tonne
Hydrochloric acid used per tonne of product	kg/tonne
Ferric chloride used per tonne of product	kg/tonne
Total solvent usage per tonne of product	kg/tonne

Operator's comments:

Signed

Date.....

(Authorised to sign as representative of Operator)