



Permitting decisions

Bespoke permit

We have decided to grant the permit for Rolls Royce Washington Campus operated by Rolls Royce plc.

The permit number is EPR/CP3131DW/A001.

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

Purpose of this document

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

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

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

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

Key issues of the decision

Existing Facility

The UK Discs (UKD) facility is already operating as this was under the threshold of 30m³ surface treatment vat capacity required for it to be a listed activity under EPR 2016. Addition of the Fleet Support Facility (FSF) on this site has brought the capacity over the 30m³ threshold and therefore both surface treatment lines will now be covered by this permit.

Effluent Treatment

Effluent Treatment Plant

The treatment of liquid effluent at the onsite effluent treatment plant (ETP) is an activity listed under Section 5.4A(1)(a)(ii), Schedule 1 of EPR due to having a non-hazardous treatment capacity of 236 tonnes per day, however in Opra charging the limit is 300 tpd, as stated in Opra for EPR V3.91, Annex A – Opra Scheme for Installations, April 2017, therefore in the Operators Opra it does not incur an activity/complexity charge.

The waste water treated in the ETP is discharged to Northumbrian Water Washington sewage treatment works and the uncontaminated surface water run-off is discharged via interceptors to the Northumbrian Water municipal surface water sewer.

Monitoring of the discharge to sewer has been conducted monthly from January 2016 – November 2016 for nickel, chromium III, copper and zinc, from which annual average values have been derived to be used in the H1 tool. The maximum values for those substances are below the limits in the trade effluent agreement, therefore they are used as the maximum concentrations in the H1 tool. All of the substances screened out as insignificant, with COD, suspended solids and oils not being assessed as the water is being discharged to a sewage treatment works, and are within their trade effluent consent limits. Monitoring techniques of emissions of substances to water have been assigned using the Environment Agency's M18 Technical Guidance Note on Monitoring of Discharges to Water and Sewer.

No emission limits have been placed upon the permit for emissions to sewer as all of the substances screened out when using the H1 tool at the trade effluent consent limits, which are enforced by Northumbrian Water. Monthly monitoring of pH, total chromium, chromium VI, COD, copper, zinc and nickel is to be undertaken along with quarterly reporting. Flow monitoring is to be undertaken continuously during discharge as this is a batch process, which should also be reported quarterly.

The discharge to the municipal surface water sewer will have weekly inspections for oil and grease.

These limits and monitoring requirements are deemed to offer sufficient protection of the River Wear at the point of discharge from the sewage treatment works.

Effluent and Chemicals Pipework

Double skinned pipework and leak detection systems are employed when transferring effluent and chemicals across the installation. An improvement condition (IC) has been included in order to establish an inspection and maintenance regime for the pipework.

Emissions to Air

The point source emissions to air from the facility are from three main sources:

- Gas fired boiler
- Local exhaust ventilation serving the surface treatment tanks
- Local exhaust ventilation serving the paint booths

Emissions to air of nitrogen dioxide and sulphuric acid were shown to not be insignificant using the Environment Agency's H1 tool and are discussed in further detail below. The assessment was undertaken using the concentrations that were measured during the commissioning of the surface treatment lines. Assessment of the emissions to air for all of the substances detailed below was undertaken. Emissions of hydrogen chloride and hydrogen fluoride were found to screen out when using the H1 tool and therefore no further assessments were undertaken for these substances.

Acid Fumes

Emissions of sulphuric acid (H_2SO_4) do not screen-out as insignificant process contributions (PCs) for human health. Background data for this substance is not typically monitored in urban/industrial areas and the applicant has not screened-out the predicted environmental concentration (PEC) for this substance.

However, the background for such pollutants is expected to be low, the screening dispersion factors are highly conservative, and continuous 24/7 emissions have been assumed which is also conservative. The assessment undertaken was reviewed in consultation with our Air Quality Modelling and Assessment Unit and we have concluded that the predicted PCs are an overestimation of potential impacts and any detailed modelling would demonstrate no predicted exceedances of relevant environmental standards.

Emissions of Hydrogen Fluoride were assessed against the critical levels associated with local conservation sites and concluded that there will not be a significant impact. We noted that the applicant had used a monthly dispersion factor to assess against the weekly critical level, this is not likely to be conservative as shorter averaging times lead to higher predictions. Additionally, they had not considered deposition and HCl contribution to acid deposition. However, there are only local nature sites within the screening distances and we are satisfied that the PCs of HF are likely to be below the 100% assessment criteria for these sites and that HCl contributions to acid deposition will be insignificant.

Chromium

Emissions of Chromium (Cr VI) to air are associated (and abated) with the facility's particulate emissions. The applicant's assessment assumed a Cr VI concentration in the PM₁₀ fraction of 0.0006 µg/m³, which is 300% of the 0.0002 µg/m³ Environmental Assessment Level (EAL). However, this concentration is based upon unabated emissions and the applicant has stated that they will achieve a 99% Cr VI particulates removal efficiency from the installed high efficiency particulate air filter in the local exhaust ventilation, which would bring the PC down to 3% of the EAL. A 3% PC is still not considered insignificant at the screening stage. However, the dispersion factor used in the assessment provided is the worst case assuming an emission height of zero and we are satisfied that emissions of Cr VI from the facility will not have a significant impact (and are likely to be insignificant) provided the proposed abatement efficiency is achieved and maintained. Improvement conditions 2 and 3 have been included to confirm these estimated concentration values.

VOC

As above for the acid fumes, the long-term PCs for emissions of cyclohexanone are not insignificant and the PEC has not been considered because there is no background data available for this pollutant. However, we are satisfied that since the screening uses the worst case screening dispersion factors any detailed modelling would likely indicate insignificant impacts.

NOx

Emissions of nitrogen oxides (as NO₂) were modelled by the applicant using ADMS 5.1, with their modelling and conclusions being assessed by the Environment Agency's Air Quality Monitoring and Assessment Unit (AQMAU). The assessment by AQMAU concluded that there would be slightly higher concentrations of NO₂ than predicted by the modelling, however we are satisfied that emissions will not have a significant environmental impact as there would be no exceedances of the Environmental Standard for human health and that impacts upon habitat sites are likely to be insignificant.

Monitoring Emissions to Air

Technical Guidance Note M2 – Monitoring of Stack Emissions to Air was used to set the monitoring methods for emissions to air of; nitric acid vapour, sulphuric acid (including sulphuric acid mist and sulphur trioxide), hydrogen fluoride, cyclohexane (following VOCs method) and hydrogen chloride. The monitoring frequency of emissions from the stacks will be determined based upon the results of the H1 assessment to be undertaken in improvement conditions 2 and 3, which will be based upon the risk to the environment and human health.

Emission Limits

The emission limit value (ELV) for nitric acid vapour has been set at 200 mg/m³, in line with their modelled emissions. This has been set as this provides sufficient environmental protection as no breaches of environmental assessment levels (EAL) for human health or habitats are expected, as described previously.

Measurement of the emissions during commissioning showed that they are well below this limit and are emitting nitric acid at concentrations of 1.5 mg/m³ and can therefore meet these limits.

Hydrogen chloride ELVs were not set as these screened out at stage 1 in the Environment Agency's H1 tool at 6% of the short term EAL.

Hydrogen fluoride ELVs were not set as these screened out at stage 2 in the H1 tool with a long term predicted environmental contribution of 4% and short term process contribution of 3%.

The H1 assessment conducted using sulphuric acid concentrations measured during commissioning has shown that the long term PEC is 85% of the EAL and short term is 71% of the EAL, which means that they do not screen out. AQMAU advised that if detailed modelling were to be undertaken then it would indicate that there would be no breaches of limits for human health or at the local wildlife sites, therefore the ELV for sulphuric acid has been set at 5 mg/m³.

The quantitative assessment of emissions to air of chromium III and chromium VI will be undertaken by initially agreeing the monitoring programme that will be used to monitor the emissions to air under normal operation with the Environment Agency, as stated in IC 2. This is to be conducted prior to the monitoring in IC 3 to ensure that representative data is collected. Once this has been completed then through IC 3 the concentrations of emissions monitored from the emission points will be used as the data for the H1 assessment. Emission limit values based upon what Rolls Royce plc can actually achieve will be proposed and agreed by the Environment Agency if they are deemed to acceptable. A six month time limit after commissioning of the Fleet Support Facility has been given as this is sufficient time to conduct the monitoring and assessment, whilst also minimising the risk to the environment and human health.

Protected Species and Sites

The European Eel, Atlantic Salmon and Sea Lamprey have all been identified as protected species in the River Wear, into which the sewage treatment works discharges. As the substances in the emissions to water have all screened out as insignificant when using the Environment Agency's H1 tool, then we are satisfied that there will be no impact upon these protected species.

The Wear River Bank Woods are a local wildlife site, situated upstream of the discharge. As all substances screened out using the H1 tool then we are satisfied that there will be no impact upon this site from water emissions.

Vigo Wood and Railway Embankment, Generals Wood, Washington Western Highway, Princess Anne Park, Worm Hill, Colbeck Burn and James Steel Park: Mount Pleasant Riverside have all been identified as local wildlife sites within the screening distance of emissions to air. Cherry Banks, Scorers Wood and Reach Wood are all ancient woodland that are within the screening distance. As explained in the section on emissions to air we are satisfied that there is likely to be no impact upon these sites from the Rolls Royce Washington Campus.

BAT

The FSF and UKD facilities are in line with the relevant indicative BAT in the How to Comply: The Surface Treatment of Metals and Plastics by Electrolytic and Chemical Processes (EPR 2.07) guidance, except for the use of high pressure air spargers in the surface treatment tanks.

According to the guidance, high pressure air spargers are not considered to be BAT for mixing because they have higher energy usage, can increase the emissions to air of acid mists and can increase the rates of degradation of perishable materials.

Components which have internal surface areas are produced and surface treated by the operator. These components are subject to tight tolerances in the amount of material that should be removed during the surface treatment. The operator provided evidence, based upon trials undertaken at a similar facility, demonstrating that when eductors are used these tolerances cannot be met, however when air spargers are

used these tolerances can be met. This is due to removal rates on the internal surface areas being far less than on the external surface areas.

Surface treatment facilities managed by Rolls Royce in Germany and Derby use air sparging due to the process issues described above. This issue has also been observed in other manufacturers surface treatment tanks.

A number of measures are employed by the Operator to reduce the energy consumption and emissions to air of acids from the surface treatment tanks, which include:

- Lidded tanks to reduce heat loss
- Closure of lids when surface treatment not taking place
- Reduced air extraction rates when lids in place
- Reduced flowrate through the air spargers when lids in place
- Alkaline scrubbers in the local exhaust ventilation

It is considered that the operator would not be able to meet the tolerances required of their products if eductors were to be used, which has been shown on components produced in Germany, therefore we are satisfied that eductors would not be suitable for mixing within the surface treatment tanks of the permitted facility.

The operator is emitting significantly below the indicative BAT-AELs associated with emissions to air of 200 mg/m³ for oxides of nitrogen and 100 mg/m³ for oxides of sulphur. The emissions to air measured during commissioning were 1.5 mg/m³ for oxides of nitrogen and 5 mg/m³ for oxides of sulphur.

An operating technique that details the methods that will be used to minimise emissions to air and energy usage associated with the use of air spargers has been included in the operating techniques table in the permit.

Taking the above into account, we are satisfied that in this instance the use of air spargers represents equivalent technical measures and ensures an equivalent level of environmental protection to the use of eductors and are considered BAT for the facility in question.

Painting

Estimated solvent use is 1.8 tonnes per annum, which is below the threshold in EPR Section 6.4 Part A (2) and Part B (a) (iv), therefore coating of the components is not a listed activity in its own right and is classed as a directly associated activity (DAA). No solvent emission plan is required as it falls below relevant thresholds. The drying ovens are extracted and vented through the paint shop booth air extraction units.

Chemical Storage

The polypropylene bund in the chemical store is suitable for storing the proposed chemicals; ammonium bifluoride, hexafluorosilic acid, nitric acid, hydrofluoric acid, ferric chloride, hydrochloric acid and sulphuric acid. There is also separate bunding for the acids and alkalis so that if there are any spills of both then there can be no reaction between them.

Bunding in the ETP is achieved by using a concrete cast bund that is epoxy coated. This means that the bund will be resistant to any spills of acids that are used there. Small spills of effluent are common in ETPs, therefore pocket sumps have been incorporated into the flooring so that the spilt water can easily be returned into the treatment system.

The surface treatment lines are located within a concrete constructed bunded enclosure that is coated in epoxy and lined with polypropylene for increased wear resistance. The tanks are raised above floor level on a steel platform to allow full inspection and maintenance of both the tanks and the polypropylene liner. All of the incompatible chemicals within the bund are segregated and each bund has a pocket sump with level

indicators that can be pumped to the ETP. To ensure that the bund cannot be overwhelmed the high level control in the sump automatically turns off the mains water supply to the treatment lines.

Bunding in the fluorescent penetrant inspection area consists of a polypropylene spill containment bund, which sits on a sealed concrete floor that is coated with epoxy. The bund has a pocket sump with level indicators, with the effluent being able to be transferred to the ETP.

Noise

The main sources of noise have been identified as; delivery vehicles, external fume scrubber fans and the chiller units serving the air conditioning.

An acoustic report was submitted by Wakefield Acoustics who examined noise levels emanating from an existing onsite scrubber system. Their recommendations included acoustic closures for the fan casings and a silencer for the stack.

The acoustic screens have been fitted for both the UK Discs facility and the Fleet support Facility. They have been fitted for the scrubber fans in the UK Discs facility. Acoustic screens have also been fitted to the chillers and wet back ventilations system in the UK Discs facility. For the FSF acoustic screens have been fitted around the scrubber fans and the chillers. A silencer has also been fitted to the FSF etch scrubber system.

These noise abatement measures are expected to limit the impact of noise emissions upon the local receptors to <5dBA during both the day and night, however confirmation of this will be undertaken by conducting a noise assessment to BS4142 as an improvement condition once the site has been commissioned and is running under normal operating conditions.

Site Condition Report

Baseline data for the site condition report was collected prior to earthworks that were conducted onsite. These earthworks included importation of waste material and reuse of existing onsite material. Due to these earthworks the existing baseline data is no longer considered to be representative of the current situation onsite, therefore Rolls Royce have accepted liability upon permit surrender of remediating any pollution that may have arisen from activities they undertook onsite.

Performance Parameters

The performance parameters are to be measured against the total combined tonnage of components produced from both of the FSF and UKD facilities. The main parameters that could change depending upon the tonnage of components produced and therefore show the plants relative efficiency include; water, energy, solvent, ferric chloride, hydrochloric acid, hydrofluoric acid, sulphuric acid, nitric acid, ammonium bifluoride and raw materials, hence why these were chosen to be the performance parameters.

Improvement Conditions

Improvement condition (IC) 1 has been included because there have been potential issues with noise identified. Abatement measures have been installed to minimise the impacts from noise, however no BS4142:2014 noise assessment has been undertaken to determine the efficacy of these measures as the site has not been completed. This IC looks to quantify the impacts from noise emissions upon the local receptors and if there is an adverse impact then proposals for further management are required to be submitted and implemented. The 3 month deadline has been given as there is the potential for a significant impact upon the sensitive receptors.

Emissions of chromium VI to air from the paint booths is estimated in section 5.3.2 of the application. IC 3 has been included in order to quantify these estimations (and additionally quantify chromium III emissions) and assess them using the Environment Agency's H1 tool. If they are above the concentrations and quantities estimated in section 5.3.2 of the application then detailed air dispersion modelling will need to be

undertaken. If this shows that there may be a risk to human health or protected habitat sites then proposals for further management will be required to be submitted, agreed and implemented. Monitoring frequency and emission limits will be agreed based upon the risk to the environment and human health. The monitoring programme shall be agreed with the Environment Agency prior to the monitoring to ensure that the monitoring will provide representative samples under normal operating conditions for analysis.

IC 4 requires the Operator to assess the impacts of emissions of iron to sewer using the Environment Agency's H1 tool. This has been included as an IC as no monitoring of the iron concentration has been previously conducted and is unable to be completed during the permit determination period. Iron compounds are dosed into the waste water at the ETP to remove other contaminants and may remain at higher concentrations after passing through the final screening process. Internal Environment Agency guidance: Chemical Dosing Coaching Aid, Coaching Aid for National Permitting can be used in the setting of emission limits. A six month deadline has been set as three months is required to gather the necessary data for analysis and a further three months gives the Operator enough time after the busy period of commissioning.

Operating procedures (IC 5 and IC 6) detailing the inspection and maintenance of the underground tank serving the unloading area of the Central Services Building and pipework that carries any substances liable to pollute the environment are to be provided to the Environment Agency for approval. The three month deadline for these operating procedures provides sufficient time for these procedures to be written.

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 identified 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 and our public participation statement.</p> <p>The application was publicised on the GOV.UK website and Citizen Space.</p> <p>We consulted the following organisations:</p> <p>Public Health England, Health and Safety Executive, Director of Public Health, Local Authority Planning, Local Authority Environmental Health and Northumbrian Water.</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 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.</p> <p>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.</p>
The site	
Extent of the site of the facility	The operator has provided plans which we consider are satisfactory, showing the extent of the site of the facility including the discharge points. The plan is included in the permit.
Site condition report	<p>The operator has provided a description of the condition of the site, which we consider is not satisfactory. The decision was taken in accordance with our guidance on site condition reports.</p> <p>The operator has accepted liability for remediation of the site upon permit surrender if there is any pollution relating to activities they have undertaken</p>

Aspect considered	Decision
	onsite.
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.</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 operator's assessment of the environmental risk from the facility.</p> <p>The operator's risk assessment is satisfactory.</p>
Operating techniques	
General operating techniques	<p>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.</p> <p>The operating techniques that the applicant must use are specified in table S1.2 in the environmental permit.</p>
Operating techniques for emissions that do not screen out as insignificant	<p>Emissions to air of; nitrogen dioxide and sulphuric acid cannot be screened out as insignificant. We have assessed whether the proposed techniques are BAT.</p> <p>These emissions will not breach any Environmental Assessment Levels, which is covered in more detail in the key issues section.</p> <p>The use of air sparging as an alternative technique for mixing in the surface treatment tanks is considered to offer comparable environmental protection due to the reasons explained in the key issues section.</p> <p>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 ELVs deliver compliance with BAT-AELs.</p>
Operating techniques for emissions that screen out as insignificant	<p>Emissions to water of chromium VI, total chromium, copper, zinc and nickel have been screened out as insignificant, and so we agree that the applicant's proposed techniques are BAT for the installation.</p> <p>We consider that the emission limits included in the installation permit reflect the BAT for the sector.</p>

Aspect considered	Decision
Permit conditions	
Improvement programme	<p>Based on the information on the application, we consider that we need to impose an improvement programme.</p> <p>The reasons for inclusion of the improvement conditions are detailed in the key issues section of this document.</p>
Emission limits	<p>It is considered that the descriptive and numeric limits described below will prevent significant deterioration of receiving waters. We have imposed these limits because either a relevant environmental quality or operational standard requires this.</p> <p>For emissions to municipal surface water sewer a descriptive limit of no oil and grease (visual) has been set.</p> <p>No emissions limits have been added for; flow, pH, chromium VI, total chromium, copper, zinc, nickel and COD as satisfactory emissions limits for these substances are included in the trade effluent consent.</p>
Monitoring	<p>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.</p> <p>These monitoring requirements have been imposed in order to ensure that little risk is posed to human health and local wildlife sites, protected species and ancient woodland.</p> <p>We made these decisions in accordance with How to Comply: The Surface Treatment of Metals and Plastics by Electrolytic and Chemical Processes (EPR 2.07).</p>
Reporting	<p>We have specified reporting in the permit.</p> <p>The reporting frequency is annually for emissions to air, which is in line with the monitoring and every 3 months for emissions to water as this will provide sufficient protection of the environment, without being overly burdensome for the operator.</p> <p>We made these decisions in accordance with How to Comply: The Surface Treatment of Metals and Plastics by Electrolytic and Chemical Processes (EPR 2.07).</p>
Operator competence	
Management system	<p>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.</p> <p>The decision was taken in accordance with the guidance on operator competence and how to develop a management system for environmental permits.</p>
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>

Aspect considered	Decision
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	<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: "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
Centre for Radiation, Chemical and Environmental Hazards (CRCE) at Public Health England
Brief summary of issues raised
One off stack monitoring of emissions to air from the installation has been proposed by the applicant in order to determine the effectiveness of the scrubbers and filters. Public Health England have recommended that sufficient alternative measures are in place to ensure abatement remains effective or that intermittent monitoring is carried out.
Summary of actions taken or show how this has been covered
Annual monitoring of all point source emissions to air from the facility has been stipulated within the permit.