Environment Agency Permitting decisions

We have decided to vary the permit for Broughton Aircraft Factory operated by Airbus Operations Limited.

The permit number is EPR/BM3965IA.

The operator is Airbus Operations Limited.

The facility is located at Chester Road, Broughton, Chester CH4 0DR.

The decision was effective from 03/08/10.

Summary of the decision

We have decided to vary the permit for Broughton Aircraft Factory operated by Airbus Operations Ltd, subject to the conditions in the variation notice. 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 environment protection is provided.

We are satisfied that the necessary measures will be in place and that this will be ensured by the permit conditions, which are considered to be sufficient and proportionate for this installation. These conditions have been imposed in order to avoid any pollution risk.

The installation is located within the boundary of the Hawarden airfield to the north of the village of Broughton in Flintshire, Wales. Activities comprise the whole process of the manufacture of aircraft wings and components, from the delivery of the raw materials to the despatch of the completed wings. Wing parts are shipped out either by a specially adapted aircraft, road transport or barge. Aircraft movements are not regulated by the permit but the movement of road traffic on site is controlled.

This variation enables the Operator to convert the anodising processes on the Large Component Manufacturing (LCM) and Stringer Manufacturing Centre (SMC) operations from Chromic Acid Anodising solution to a mixed Tartaric and Sulphuric Acid anodising solution, known as TSA. This will secure compliance with the REACH Regulations, which are expected to ban the use of chromium compounds in the longer term. The changes will lead to no overall increase in chemical inventories held on site and no extension of the installation boundary. The principle of operation of the anodising lines remains essentially the same and the removal of chromium compounds from the site operations reduces risk to both the environment and human health.

The variation application does not propose any change to the anodising process in Hawker Redux, which will continue to operate chromic acid solution anodising.

Extensive trials of the TSA anodising process have been conducted in order to secure Civil Aviation Authority approval for the use of the process in aircraft manufacture. These trials have demonstrated that the TSA process offers lower environmental impact, reduced energy consumption and reduced water consumption in relation to the chrome anodising process.

The proposed changes do not affect the number or location of release points to air, water or sewer. However, the character of the emissions to air and sewer will change owing to the elimination of chromium compounds. Principal emissions to air arising from the change will comprise tartaric and sulphuric acid mist, whilst other releases remain largely as before, with the exception of the chromium component, which will be eliminated. The release to sewer will continue to carry progressively reducing concentrations of chromium compounds as the residual chrome in the system is removed.

During the process of transition from Chromic Acid Anodising to TSA Anodising, there will be a period when both techniques will effectively be operational, leading to a temporary increase in chemical inventory and consequently an increased risk to the environment. However, this is an unavoidable and necessary part of the conversion, owing to the need to qualify the TSA process under strict Civil Aviation Authority rules, and the period of enhanced risk will be relatively short at around nine to twelve months.

Activity	Justification / Detail	Determination criteria met	
		No	Yes
	EPR/BM3965IA/V 005 3.19, 3.20, 3.21, 3.22, 3.23 (except 3.23.6 and 3.23.7)		
Emission limits	We have imposed no changes to extant emission limits under this variation. However, we may agree in writing with the operator that monitoring for Total Chrome releases at emission points TE1 and TE3 may cease when monitoring results show that releases have ceased. It is considered that the ELVs / equivalent parameters or technical measures described above will ensure that significant pollution of the environment is prevented and a high level of protection for the environment secured.		✓
Monitoring	We have imposed no changes to extant monitoring requirements under this variation. However, we may agree in writing with the operator that monitoring for Total Chrome releases at emission points TE1 and TE3 may cease when monitoring results show that releases have ceased. Based on the information in the application we are satisfied that the operator's techniques, personnel and equipment have either MCERTS certification or MCERTS accreditation as appropriate.		✓
Reporting	We have specified additional reporting of the annual usage of Ardrox 6333 as specified in Schedule 5 in order to monitor its usage in the context of the identified release of boron to sewer.		✓
Operator Competence			
Technical competence	There is no known reason to consider that the operator will not have the management systems to enable it to comply with the permit conditions. The decision was taken in accordance with RGN 5 on Operator Competence.		✓
Relevant Convictions	The National Enforcement Database has been checked to ensure that all relevant convictions have been declared. The operator satisfies the criteria in RGN 5 on Operator Competence.		✓
OPRA			
Opra Score	The Opra score is 212 (without Compliance Rating) and 217 (including Compliance Rating). The Opra score has not changed from that set out in the application and was agreed by the Agency by letter dated 05/08/2009. The score without Compliance Rating was applied to determine the correct fee for this application.		

Annex 1: decision checklist

<table>
<tr><th rowspan="2">Activity</th><th rowspan="2">Justification / Detail</th><th colspan="2">Determination criteria met</th></tr>
<tr><th>No</th><th>Yes</th></tr>
<tr><td colspan="4">Receipt of submission</td></tr>
<tr><td>Application fee</td><td>The application fee is correct (agreed with Agency 05/08/2009).</td><td></td><td>✓</td></tr>
<tr><td>Commercial confidentiality</td><td>The operator has not made a claim for commercial confidentiality in relation to this Variation. We have not received any information in relation to this application that appears to be confidential in relation to any party.</td><td></td><td>✓</td></tr>
<tr><td colspan="4">Consultation</td></tr>
<tr><td>Scope of consultation</td><td>No consultation requirements were identified or implemented, since this has been categorised as a normal variation and no consultation is therefore required. The decision was taken in accordance with RGN EPR 8, Changes in operation and our Public Participation Statement.</td><td></td><td>✓</td></tr>
<tr><td colspan="4">European Directives</td></tr>
<tr><td>Applicable Directives</td><td>The European Directives that apply to the regulated facility are as follows: IPPC Directive.</td><td></td><td></td></tr>
<tr><td colspan="4">Environmental Risk Assessment and operating techniques</td></tr>
<tr><td>Environmental risk</td><td>We have reviewed the operator's assessment of the environmental risk from the facility, which employed the Agency's H1 methodology. The assessment shows that, applying the conservative criteria in our guidance on Environmental Risk Assessment, all emissions may be categorised as environmentally insignificant with the exception of:
• sulphuric acid mist to air; and,
• boron and sulphate to sewer.
However, taking into account the inherently conservative nature of the assessment methodology and the assumptions and input data for the assessment, we have concluded that significant impacts are unlikely to arise as a consequence of the changes proposed under this variation.</td><td></td><td>✓</td></tr>
<tr><td>Operating techniques</td><td>We have reviewed the techniques used by the operator and compared these with the relevant guidance notes. The proposed techniques / emission levels for priorities for control are in line with the benchmark levels contained in the TGN and we consider them to represent appropriate techniques for the facility.</td><td></td><td>✓</td></tr>
<tr><td colspan="4">The permit conditions</td></tr>
<tr><td>Pre-operational conditions</td><td>Based on the information on the application, we consider that we need to impose a pre-operational condition which requires the submission of a revised Accident Management Plan which reflects the changes to the raw material inventory.</td><td></td><td>✓</td></tr>
<tr><td>Incorporating the application</td><td>We have specified that the applicant must operate his installation in accordance with the following descriptions in his application:
Table S1.2 Operating techniques<table><tr><th>Description</th><th>Parts</th><th>Date Received</th></tr><tr><td>Application</td><td>The response to section 2.1, 2.2 and 2.3 in the application.</td><td>04/12/06</td></tr><tr><td>Additional information from the Operator</td><td>Atmospheric Dispersion Modelling</td><td>08/01/07</td></tr><tr><td>Additional information from the Operator</td><td>Re-submission of main text of the application, PPC04, PPC06 and Table 2.10.2 Surface Water Monitoring.</td><td>15/01/07</td></tr><tr><td>Additional information from the Operator</td><td>Atmospheric Dispersion Modelling for Onsite Receptors and Conversion of nitric oxide to nitrogen dioxide</td><td>17/01/07</td></tr><tr><td>Application</td><td>Sections 3.12, 3.13, 3.17, 3.18,</td><td>11/11/09</td></tr></table></td><td></td><td>✓</td></tr>
</table>

Multiple operator installations

Permit condition 1.7

There are no changes proposed to the arrangements which are in place for the management of multi operator issues at this installation. No changes to permit conditions are required.

Reporting

Permit condition 4.2

We have amended the existing reporting requirements in Table S5.3 to include the annual reporting of Ardrox 6333 usage owing to the release of boron to sewer which originates from this cleaning material. Otherwise, reporting requirements are unchanged.

This is considered appropriate and proportionate for the installation.

Miscellaneous

No specific issues have been identified.

Other legal requirements

The Conservation (Natural Habitats etc) Regulations 1994

The proposals in this variation application introduce no changes which affect the previous assessment of the potential for impact on designated sensitive receptors provided with the original application and no changes are therefore proposed to any conditions in the permit.

Since this is a standard variation, consultation with EN / CCW was not required.

Countryside and Rights of Way Act 2000 (Crow 2000)

The proposals in this variation application introduce no changes which affect the previous assessment of the potential for impact on designated sensitive receptors provided with the original application and no changes are therefore proposed to any conditions in the permit.

Since this is a standard variation, consultation with EN / CCW was not required.

No changes to the current monitoring regime are proposed following the conversion to TSA anodising on the LCM and SMC surface treatment facilities, with the exception that the requirement to monitor for chrome is expected to cease once the conversion has been completed and chrome releases have been demonstrated to have stopped. Table S4.3 has therefore been amended accordingly, with a provision to agree the cessation of monitoring for chrome in writing with the Agency once releases have demonstrably ceased (release points TE1 and TE3). Since chrome anodising will continue on Hawker Redux, the monitoring regime for this discharge will continue unchanged (release point TE2).

We have also retained the requirement for monitoring of total chrome at surface water release point SW16 owing to the continued presence of chrome chemicals on site (on the Hawker Redux facility) and Table S4.2 is therefore unchanged.

Closure and decommissioning

Permit condition 2.7

The proposed changes to the installation do not affect the existing site closure arrangements and there is no change to the installation boundary. The changes to the materials inventory introduce a net reduction in environmental risk, owing to the reduction in chrome usage, following the conversion to TSA anodising on the LCM and SMC surface treatment facilities.

Site Condition Report

The operator provided an Application Site Report (ASR) with the original permit application which included a phase 1a investigation which identified a number of potential contaminants which may be present in the underlying land as a consequence of the site's historical activities. No further ground investigations were undertaken for this application for variation of the permit since the proposed changes do not increase the land area of the installation, nor do they introduce any change to the risk of pollution of the underlying land.

The process design for the conversion to TSA anodising will incorporate containment and control measures which are BAT for all new tanks, including secondary containment of an appropriate standard and control measures such as overfill protection which initiate relevant system shutdowns on detection of high levels in the treatment tanks. There will be no substantial change in the materials inventory in terms of quantity of chemicals held, although the nature of some raw materials will change as a consequence of conversion from chrome anodising to TSA anodising.

The change in the nature of the raw materials is noted (and, indeed, offers environmental benefits owing to the reduction in chrome usage) but, overall, we agree with the applicant's assessment that the original assessment of risk to the underlying land remains valid and that no changes to extant pollution prevention measures are required, other than those already incorporated into the process design for the new treatment tanks.

We therefore consider that the changes proposed by this variation are BAT with regard to energy efficiency and global warming potential.

The installation is party to the Underlying Climate Change Agreement for the Aerospace Sector.

Standard Condition 1.3 in the Permit is considered to be appropriate and sufficient.

Accident management plan

Permit Condition 1.2

Based upon the information submitted in the variation application, we are satisfied that appropriate measures remain in place to ensure that accidents that may cause pollution are minimised. The system of accident prevention and control encompassed within the management systems will continue to cover the varied activities, which will not introduce any additional environmental risks. A minor revision is required to reflect the changes to the raw material inventory within the Accident Management Plan and this has been required by a pre-operational measure in Table S1.4B (POM 1).

Whilst this installation is currently a Lower Tier COMAH (Control of Major Accident Hazard Regulations 2005) site, the applicant states that the site will no longer come under these Regulations once the conversion to TSA anodising on the LCM and SMC facilities is complete. However, we note that chrome anodising is to continue on the Hawker Redux facility and this may influence whether the COMAH Regulations continue to apply.

Standard Condition 1.2 in the Permit is considered to be appropriate and sufficient.

Noise and vibration

Permit condition 3.5

Based upon the information in the application we are satisfied that the proposed changes do not introduce any additional sources of noise and that previously assessed measures for the control of noise remain appropriate. No additional conditions are therefore considered necessary to prevent noise and vibration.

Monitoring

Permit condition 3.6

The operator has proposed that monitoring of releases to air remains inappropriate following the conversion to TSA anodising on the LCM and SMC surface treatment facilities. Emissions have been calculated to be very low and the impact assessment indicated that significant impacts were unlikely. We agree that no changes to the monitoring schedule for emissions to air are required.

Treated effluent is discharged to sewer (under Consent, issued by Welsh Water) for further treatment at the local Sewage Treatment Works.

We are satisfied that the operator's justification for their proposed waste disposal option shows that such waste that does arise from the installation that can not be recovered will be disposed of using a disposal method that avoids or reduces any impact on the environment. The changes proposed by this variation application do not affect this assessment.

The character of the waste filter cake will change as a consequence of the phasing out of chrome and this metal will ultimately no longer be present in this waste stream. The impact assessment considers the additional quantity of filter cake which will be produced on a temporary basis during the commissioning and qualification period, when both chrome anodising and TSA anodising will be operational. Spent UV lamps are also identified and these will be sent for appropriate recycle.

Standard Condition 1.5 in the Permit is considered to remain appropriate.

Energy efficiency

Permit condition 1.3

Based upon the information submitted in the variation application, we are satisfied that, in the context of the nature and scale of the varied installation, the appropriate measures will be in place to secure the efficient use of energy. There are no proposed changes to the energy management principles already in place at the installation and these will continue to be applied to the varied activities.

The TSA anodising process is projected by the applicant to deliver a substantial reduction in energy usage of between 60% and 80% compared to the current chrome anodising process. This is a consequence of a 25% reduction in amperage requirements per square metre and reduced turnover in the bath contents of some 75% compared to chrome anodising. Savings of this magnitude have already been demonstrated at other Airbus facilities which have converted from chrome anodising to TSA anodising and the confidence level associated with these predicted energy efficiencies is therefore very high.

The principal source of energy for the anodising process is electricity from the National Grid. This is supplemented by electricity from the on-site CHP unit, but since this only provides approximately 0.5% of the total electricity usage of the process, it is not a significant component and has no great influence on the overall energy efficiency or the global warming potential of the activity. The nature of the process means that the only significant global warming emission is carbon dioxide (mostly indirectly from off-site power generation). No other global warming gases are released. The operator has therefore calculated that the global warming potential of the TSA anodising processes is 556,437 tonnes CO_2 equivalent. However, since the TSA anodising process introduces a significant energy usage reduction over the previous chrome anodising process, and since energy consumption is the only generator of global warming emissions, the overall global warming potential of the activity is substantially reduced by these proposed changes.

Each secondary containment bund will be equipped with a blind sump and sump pump for direct transfer to effluent treatment. The bund will also have level sensors for the detection of spillages or overflows.

Chemical dosing to the new treatment tanks will be conducted under the control of the Airbus UK Laboratory, subject to existing procedures and controls for such activities. Chemicals are delivered in IBCs which are located on dedicated, existing bunds. Additional chemical storage for the effluent treatment plant will consist of a 2500 litre bulk storage tank with an integrated bund.

There is no potential for fugitive emissions to air as a result of the proposed changes.

We consider that the proposed measures are BAT and no additional conditions are therefore deemed necessary to prevent fugitive emissions.

Conditions relating to Odour

Permit condition 3.4

Based upon the information in the application we are satisfied that the proposed changes do not introduce any additional sources of odour and that previously assessed measures for the control of odour remain appropriate. No additional conditions relating to the control of odour are considered necessary.

Efficient use of raw materials

Permit condition 1.4

Based upon the information submitted in the variation application, we are satisfied that the appropriate measures remain in place to ensure the efficient use of raw materials and water. The raw materials inventory and annual consumption data have been revised to reflect the phasing out of chrome anodising and the introduction of TSA anodising on the LCM and SMC surface treatment facilities.

Evaporative losses of water from the anodising activities are considered to be insignificant and are unlikely to change on the introduction of the TSA anodising process, since previous measures for the control of evaporative water and chemical loss will continue to be applied.

Standard Condition 1.4 in the Permit is considered to remain appropriate and sufficient.

Avoidance, recovery and disposal of wastes produced by the activities

Permit condition 1.5

Based upon the information submitted in the variation application, we are satisfied that the appropriate measures are in place such that waste production will be avoided as far as possible, and where waste is produced it will be recovered unless technically and economically impossible.

Three new emergency transfer tanks will be installed for the LCM treatment facility, located externally to the building. These tanks will have a combined capacity of 330,000 litres, which represents the maximum capacity of any single process tank plus 10% contingency. They will be installed in a new concrete bund lined with a chemically resistant coating which will have a containment capacity of 110% of one transfer tank and 35% of the combined volume of all three transfer tanks.

A single new emergency transfer tank will be installed for the SMC treatment line, again located externally to the building. The tank will have a capacity of 95,000 litres, which represents the maximum capacity of any single process tank plus 11% contingency. It will be installed in a new concrete bund lined with a chemically resistant coating which will have a containment capacity of 110% of the transfer tank.

In general, all transfer systems, tanks and secondary containment are to be designed in accordance with the following:

- HSE / EA document *"Containment of Bulk Hazardous Liquids at COMAH Establishments Containment Policy – Supporting Guidance for Secondary and Tertiary Containment"* [April 2008];
- CIRIA *"Chemical Storage Tank Systems – Good Practice Guide"*;
- Bund Design to BS8007.

Treatment (anodising) tanks will be equipped with two level sensing devices:

- One which monitors the working level, initiates automatic top-up and generates high level alarms; it will also inhibit the exit sprays if necessary;
- A high level sensor which monitors for ultimate high level status and provides overfill protection; this device will trigger automatic shutdown of the de-ionised water plant and chemical dosing feed and will generate an automated SMS text message to mobile phones for responsible operations and maintenance personnel.

Emergency transfer tanks will be manufactured to BS4994 and will be constructed of glass reinforced plastic with an internal lining of polypropylene. They will be equipped with:

- Level sensors to detect spillages or overflows;
- Connections to pump out the facility to road tanker;
- Automatic shut-off valves;
- Internal wash down facility using de-ionised water.

The configuration of the effluent treatment systems, coupled with further treatment off-site at a sewage treatment works, have therefore previously been assessed as BAT and accepted by the Agency as such.

As with the boron release, there is no background data for sulphate in the River Dee and no requirement on the SU to monitor for it in their discharge, nor has there has been any indication from the Sewerage Undertaker (SU) that this component of the effluent is causing an issue, either within the sewage treatment works or at the point of release to the Dee Estuary, where impact has been assessed separately under the SU's own discharge consent.

Since all other parameters have already been screened out, we have therefore concluded that significant impacts from releases to sewer which arise from the proposed changes are unlikely, for the following reasons:

- It is likely that the sewage treatment works is achieving a treatment factor in excess of 0.6;
- There is an absence of evidence which suggests that an adverse impact may actually be occurring;
- The nature of the assessment is inherently conservative and is based on maximum pollutant concentration at maximum allowed discharge flowrate.

We therefore consider that further assessment of these releases is neither appropriate or proportionate.

We have further concluded that measures for the control of emissions to sewer are BAT.

As a precautionary requirement, we have set an improvement condition which asks the Operator to investigate the availability of feasible alternatives to Ardrox 6333, in order to remove the boron component of the effluent altogether. We have also included a requirement in Table S5.3 of the permit for the reporting of annual usage of Ardrox 6333, against the eventuality that a suitable alternative is not available.

Emissions to Land

There are no emissions to land from this installation.

Fugitive emissions of substances

Based upon the information provided in the variation application, we are satisfied that the appropriate measures will be in place to prevent fugitive emissions from the proposed new process plant.

The TSA anodising tanks are to be converted from the existing emergency transfer tanks by re-lining with PVDF and will be contained within appropriate secondary containment (bunding). Bund containment capacity will be 110% of the tank capacity.

The assessment of impact arising from releases to sewer employed the Agency's H1 methodology and considered the changes in the discharge introduced by the adoption of TSA anodising. The *"chemical specific"* approach was adopted (treating the discharge as *"simple"*), since a substantial proportion of the discharge can be identified as specific parameters and their concentrations were available from a sampling and testing exercise. The assessment also took into account that further treatment of the effluent release was undertaken at a sewage treatment works (a treatment factor of 0.6 was assumed) and that the receiving waters for the discharge from the sewage treatment works (River Dee) are estuarine (dispersion rate for the estuary assumed to be *"freshwater – medium"*, based on H1 guidelines). Discharge was assumed to occur at the maximum consented flowrate of 72 m^3 per day at peak concentrations of contaminants, which introduces a conservative basis of assessment.

The results of the screening assessment were that all parameters could be screened out with the exception of boron and sulphate, where results were greater than 1% of the EQS, as follows:

Parameter	EQS mg/l	PC mg/l	PC as % EAL
Boron (dissolved)	1	0.12	12%
Sulphate (soluble)	400	180	45%

The only source of boron within the installation is a cleaning chemical known as Ardrox 6333. However, the MSDS suggests a boron content of ~ 0.0567% - 0.1134% by weight (~ 0.567 g – 1.134 g per kg), which is essentially a trace level contaminant. Usage of Ardrox 6333 has not changed since the original permit was issued and the material was identified on the original raw materials listing. The presence of boron in the effluent release was only detected when a comprehensive suite of determinands was analysed during preparation work for this variation but it is likely that this parameter has been consistently present. In that context, there has been no indication from the Sewerage Undertaker (SU) that this component of the effluent is causing an issue, either within the sewage treatment works or at the point of release to the Dee Estuary, where impact has been assessed separately under the SU's own discharge consent. There is, in fact, no background data for boron in the River Dee and no requirement on the SU to monitor for it in their discharge.

The sulphate component of the effluent arises as a result of its presence in detergents used in the primary stages of the surface treatment activities undertaken at this installation and is not subject to change under the proposals contained within this application to vary the permit. The operator has previously investigated options for the treatment of sulphate within the on-site effluent treatment plants but has concluded that there are no feasible solutions which do not raise other issues, for example, increased waste sludge disposals to land.

- TE3: SMC Effluent Treatment Plant.

No changes to the effluent discharge are predicted for release point TE2, since the Hawker Redux facility will continue to use chrome anodising. This release is therefore not considered any further.

The principal change to releases via TE1 and TE3 will be the eventual disappearance of chrome, which is a net environmental benefit. The TSA anodising process will lead to an increase in COD loading but effluent treatment facilities have been re-designed to improve COD removal prior to discharge to take this into account. Otherwise, the proposed changes will have no adverse effect on effluent discharge.

Existing effluent treatment plants for the LCM and SMC facilities will be retained with enhanced COD removal capability plus two additional process steps:

- UV oxidation to oxidise tartrate into carbon dioxide and water to prevent interference with hydroxide precipitation of metals. The process utilises ultra violet light and hydrogen peroxide (35%) which will be stored locally to the treatment vessel in a self bunded 2500 litre bulk storage tank in compliance with CEFIC guidance document *"Hydrogen Peroxide Bulk Storage Guideline"*. A pre-operational condition has been set at POM1, requiring a revision to the extant Accident Management Plan to take account of this new raw material.

- Ion exchange will be used to regenerate a new waste metal stream. The TSA anodising process will dissolve aluminium, and other metals such as copper, from treated components and this must be removed to prevent the concentrations in the electrolyte becoming too high, rendering it unusable. The metals are removed by ion exchange units, leaving de-ionised water for return to the process. Accumulated metals are then periodically removed by regenerating the ion exchange columns with sulphuric acid (anion resin) and sodium hydroxide (cation resin), leaving regenerated ion exchange resins ready for further use and a waste eluent containing the metals which is stored for treatment on the existing effluent treatment plants along with current metal-containing effluent streams.

The proposed techniques for effluent treatment are described in the application and compared to relevant requirements set out in guidance, such as effluent minimisation, effluent handling, treatment objectives, primary treatment and secondary treatment. The proposed TSA anodising process maintains the site water recycling performance for rinse water (66%) and reduces overall water usage when compared to the chrome anodising process. The introduction of a further effluent treatment stage by reverse osmosis was considered but ruled out as not BAT on the grounds of capital and operating costs. Overall, the operator considers that the measures proposed for on-site effluent treatment plus further off-site treatment at a sewage treatment works are BAT and we agree with this conclusion.

Parameter	EAL µg/m^3	PC µg/m^3	PC as % EAL	Background µg/m^3	PEC µg/m^3	PEC as % EAL
H_2SO_4 ST	300	28.18	9.4%	5.8	39.78	13.26%
H_2SO_4 LT	10	1.13	11.3%	5.8	6.93	69.3%

Note: background H_2SO_4 concentration calculated by direct conversion from background SO_2 concentration of 3.8 µg/m^3 (see assumption above)

Since the short term result is < 10% EAL, this may be screened out as unlikely to lead to significant impact. Whilst the long term result is > 1% EAL, the PEC is < 70% EAL and further assessment was therefore considered unnecessary.

Overall, taking into account the assumptions listed above, we consider that this assessment is highly conservative and is likely to be delivering results which are substantially overestimated. The determination of background sulphuric acid concentration in the manner described is itself very conservative and, in reality, sulphuric acid is not generally found as a background constituent in ambient air owing to its affinity for water, which leads to it being "washed out" as acid rain. However, we do not consider that acid deposition is likely to be significant either, owing to the substantial margin of conservatism related to the estimated release rates, which have been increased by 100% above those predicted for the purposes of assessing the potential impact. The predicted release rates themselves are also conservative in that each source has been assumed to be contributing at its likely maximum simultaneously, which, in practice, is unlikely to be the case.

We therefore agree with the operator's conclusion that significant impacts from emissions to air which arise from the proposed changes are unlikely and that measures proposed for the control of emissions to air are BAT.

Emissions to Surface Water

There are no direct releases to water or groundwater from the proposed changes.

Since there will still be chrome present in the inventory of substances in use at the installation (on the Hawker Redux facility), we have not made any change to the requirement to monitor surface water release point SW16 for total chrome (frequency: monthly, with no limit).

Emissions to Sewer

The installation discharges treated effluent to sewer under Consent (Welsh Water) from three release points, as follows:

- TE1: LCM Effluent Treatment Plant;
- TE2: Hawker Redux Effluent Treatment Plant;

Emissions to air from the LCM effluent treatment plant exhaust via release point A90 whilst those from the SMC effluent treatment plant exhaust via release point A91. Both will contain minor concentrations of NO_x, sulphates and chrome mist but A90 will also contain low concentrations of acid vapour from the hydrochloric acid storage tank (during bulk delivery only). Both effluent treatment plants will utilise an additional process of UV oxidation with hydrogen peroxide to break down and oxidise tartrate into carbon dioxide and water, since this would otherwise interfere with hydroxide precipitation of metals. This process requires an additional washbox on the extraction system, where a condensate is collected and removed to effluent treatment, whilst the airstream proceeds via the existing system to the identified release points. These airstreams are not otherwise abated since the releases are not considered to be significant. Estimated annual emission of CO_2 from the UV oxidation process is expected to be 24 tonnes from the LCM effluent treatment plant and 8 tonnes from the SMC effluent treatment plant. In the wider context of the anodising facilities and the scale of indirect CO_2 emissions from electricity usage, these additional releases of CO_2 are considered to be of no significance.

Overall, the emissions to air from the effluent treatment plants are not expected to change substantially from those which arose previously, apart from the eventual removal of chrome mist, and are expected to be so low as to be considered insignificant.

The assessment of impact arising from releases to air employed the Agency's H1 methodology and considered the changes in the emissions introduced by the adoption of TSA anodising. Essentially, chrome mist releases are removed and sulphuric acid mist becomes the principal potential emission. The screening assessment applied the following assumptions:

- Pollutant concentrations in the stack exhaust air were increased by 100% for contingency;
- Since there are no EALs for sulphates, all sulphate emissions have been assumed to undergo 100% conversion to sulphuric acid in the atmosphere;
- A weighted average flowrate has been calculated for the LCM extraction system emissions, taking into account the variable fan speed, maximum flowrate of 24 m^3/s and the maximum concentration of sulphates;
- Background concentration of sulphuric acid can be calculated by direct conversion from background levels of SO_2;
- Maximum concentrations from each contributing source occur simultaneously and have been aggregated.

These assumptions are very conservative and will lead to a substantial safety factor in the assessment results.

Applying calculated effective stack heights and associated dispersion factors, the following results were obtained:

Emissions to Air

The principal sources of emissions to air from the TSA anodising process are essentially unchanged from the chrome anodising process, in that they comprise air extracted by tank lip exhaust ventilation systems from the treatment tanks. However, the character of the releases will change owing to the removal of chrome mist and its replacement with sulphuric acid mist, which will be generated in the same manner (in low concentrations) during anodising. Extraction system fans on the LCM facility are subject to variable speed control for optimum extraction / energy efficiency.

The sources of releases to air comprise:

- *Decontamination Rinse (LCM tanks 01 and 02; SMC tanks 01 and 02)*, where components are sprayed with degreaser solution; a demister pad removes particulates and accumulated liquid is drained back to a drainage channel;

- *Deoxidisation (LCM tank 05 and SMC tank 08)*, which uses nitric acid and the extracted air contains very low concentrations of NO_x, which is removed by scrubbing prior to release to air;

- *Anodising (LCM tank 08 and SMC tank 09)*, where gases are produced at the electrodes, leading to the generation of predominantly sulphuric acid mist (previously chromic acid mist); acid mist is removed by a wash box where it impinges and coalesces on eliminator blades for accumulation at the base of the unit; accumulated acid is washed down weekly to the effluent treatment plants dedicated to the LCM and SMC facilities.

Extracted air from the LCM line is treated as before by two water scrubbing towers, which exhaust to release point A79, and will also treat extracted air from an additional new tank (08). There are further emissions of extracted air from tanks 01 (knock-off, via a demister pad) and 02 (degrease) at A81 and tank 11 (rinse, via a demister pad) at A83. The duty of release point A82 changes from extracted air from the chrome anodising bath to extracted air from the spray rinse stage; however, it will remain as a release point although the nature of the emissions changes and are likely to be negligible.

Extracted air from the SMC line tanks 01, 02, 05, 08, 09, 10 and 13 are treated as previously via a horizontal packed bed wet scrubber fitted with a blowdown system. The scrubber removes contaminated water (mist) from the air stream for treatment in the effluent treatment plant. Removal efficiency is estimated to 80% (mists and particulate). Extracted air from tank 09 (the anodising tank) will additionally be pre-washed by a separate, dedicated scrubber before joining the existing system described above. Air is exhausted at release point A84.

facilities in accordance with the application to vary the permit. We have therefore amended Table S1.2 in order to specify that the applicant must operate his installation in accordance with the following descriptions.

Table S1.2 Operating techniques

Description	Parts	Date Received
Application	The response to section 2.1, 2.2 and 2.3 in the application.	04/12/06
Additional information from the Operator	Atmospheric Dispersion Modelling	08/01/07
Additional information from the Operator	Re-submission of main text of the application, PPC04, PPC06 and Table 2.10.2 Surface Water Monitoring.	15/01/07
Additional information from the Operator	Atmospheric Dispersion Modelling for Onsite Receptors and Conversion of nitric oxide to nitrogen dioxide	17/01/07
Application EPR/BM3965IA/V005	Sections 3.12, 3.13, 3.17, 3.18, 3.19, 3.20, 3.21, 3.22, 3.23 (except 3.23.6 and 3.23.7)	11/11/09

The proposals under this application to vary the permit do not introduce any further requirements for limits or controls on raw materials and Table S3.1 is therefore unchanged.

Emissions to water, air or land

Permit condition 3.1

The variation application does not propose any changes to the release points already identified in the permit but there are some changes to the nature and source of the releases themselves.

Note that the Hawker Redux facility will continue to operate chrome anodising and that emissions from that part of the installation are unchanged. The review which follows is therefore focused on the LCM and SMC facilities, where chrome anodising is to be replaced by TSA anodising.

The proposed techniques for the new TSA anodising and subsequent rinsing processes themselves are described in the application and compared to relevant guidance requirements for issues such as rinse water economy, drag-out reduction, energy consumption and prevention of fugitive emissions. In all respects, the applicant considers that proposed measures are BAT and we agree with this conclusion.

The operator has conducted an assessment of the potential for impact on the environment arising from the proposed changes using the Agency's H1 assessment methodology. Since there are no new sources of odour, noise or fugitive emissions associated with the changes, these were not assessed. We agree with this approach.

The impact assessment and measures relating to emissions to air, water, sewer and land are reviewed in more detail below.

Site

Permit condition 2.2

The proposed changes do not affect the area of land included within the installation and there are no changes to the installation boundary.

Overarching Management Condition

Permit condition 1.1

No changes are proposed to the current system of management techniques implemented at the installation. Based upon the information submitted in the variation application and the application for the original permit, we are therefore satisfied that appropriate management systems and structures are in place for this installation and that sufficient financial, technical and manpower resources are available to the operator to ensure compliance with all the permit conditions. All activities continue to be covered by the existing environmental management system (EMS) which we consider is BAT.

Improvement Conditions

Permit condition 2.5

Based upon the information submitted in the variation application we consider it necessary to set an improvement condition (IC10) requiring the investigation of the availability of cleaning chemicals which may offer an alternative to Ardrox 6333, which has been identified as the source of boron releases to sewer.

Table S1.3 has been amended accordingly.

Pre-operational conditions

Permit condition 2.6

Based upon the information submitted in the variation application, we consider that a minor revision is required to reflect the changes to the raw material inventory within the Accident Management Plan following the conversion to TSA Anodising on the LCM and SMC facilities. This has been required by a pre-operational measure in Table S1.4B (POM 1) and the pre-operational condition at 2.6 has been amended to reflect this requirement.

We consider that this condition is proportionate and appropriate.

Off-site conditions

Permit condition 2.4

Based on the information submitted in the application, we consider that it is not necessary to impose any off-site conditions.

In-Process Controls

Permit Condition 2.3

In-process controls are amended to cover the changes relevant to the conversion of chrome anodising to TSA anodising on the LCM and SMC

Permit References

References to permit condition numbers are based on the consolidated permit as issued by variation reference NP3235MQ dated 26th January 2007, following a Regulation 15 review by the Agency.

Guidance

The following guidance has been referenced by the applicant and considered by the Agency in its determination of the application:

- Sector Guidance Note IPPC S2.07, *Guidance for the Surface Treatment of Metals and Plastics for Electrolytic and Chemical Processes* [Issue 1, October 2004];
- *How to comply with your environmental permit – Getting the Basics Right* [EPR 1.00, April 2008];
- Pollution Prevention Guidance Note, *Above-ground oil storage tanks* [PPG2];
- Pollution Prevention Guidance Note, *Storage and handling of drums and intermediate bulk containers (IBCs)* [PPG26];
- European Chemical Industry Council (CEFIC) document *H_2O_2 Bulk Storage Guideline* [September 2001].

We note that new versions of both EPR 2.07 (March 2009) and EPR 1.00 (April 2010) are available. However, since these were either not referenced by the applicant or not available at the time of developing the application, we have determined this variation in the context of the referenced guidance. We do not consider that this will introduce any inconsistencies.

Permitted Activities

Permit condition 2.1

There is no change to the permitted activities proposed by this variation application, since the new TSA Anodising process falls within the same Listed Activity as the Chromic Acid Anodising process which it replaces on the LCM and SMC surface treatment facilities. Chromic anodising will continue on the Hawker Redux facility.

Both processes will be operated temporarily during commissioning and qualification to aerospace manufacturing standards, following which the Chrome Acid Anodising process will be phased out from the LCM and SMC surface treatment facilities. The use of chrome chemicals will then be restricted to the Hawker Redux facility only.

Table S1.1 in Schedule 1 of the permit is revised to show the changes in activity description under the same Listed Activity.

The OPRA profile shows three Section 2.3 A (1) (a) activities, accounting for the three surface treatment facilities, and this remains valid since the proposed TSA Anodising process falls within this same Listed Activity as the Chrome Anodising process which it replaces on the LCM and SMC facilities.

The OPRA score of **212** was used as the basis for the fee for this application to vary the permit, in accordance with the Agency's letter dated 05/08/2009. OPRA scores of 212 (without Compliance Rating) and 217 (including Compliance Rating) are indicated by the OPRA spreadsheet included with the application. These OPRA scores will be used as the basis for subsistence and other charging following this variation of the permit. In accordance with our OPRA Scheme however, the operator's OPRA profile for the facility may change over time.

Key Issues of the decision

Operator

We have checked the applicant's company details and are satisfied that the applicant (currently the operator) is the person who will have control over the operation of the installation after the grant of the variation to the permit.

We are satisfied that they will be able to operate the installation so as to comply with the conditions we have included in the permit. The operator has an appropriate Environmental Management System (EMS) and procedures to operate the installation, including emergency procedures. The installation is managed by suitably competent staff. The operator currently operates an environmental management system that is certified to ISO 14001.

This is a multi-operator installation.

The facility

A brief description of the installation is in the introductory note to the permit.

The change proposed by this variation application comprises the conversion of the surface treatment anodising facilities in Large Component Manufacture (LCM) and Stringer Manufacturing Centre (SMC) from chromic acid solution anodising to a mixed solution of Tartaric and Sulphuric Acid anodising (known as TSA anodising).

The variation application does not propose any change to the anodising process in Hawker Redux, which will continue to operate chromic acid solution anodising.

The definition of the installation is not affected by the proposals included in this variation application, the area of the installation is not changed and the installation boundary remains the same.

Commercial and industrial confidentiality

The operator has not made a claim for commercial confidentiality. We have not received any information in relation to this application that appears to be confidential in relation to any party.

OPRA profile

We are satisfied that the OPRA profile submitted with the application remains accurate following the determination of the application.

Purpose of this document

This decision document:

- explains how the applicant's application has been determined;
- provides a record of the decision-making process;
- shows how all relevant factors have been taken into account; and
- justifies the specific conditions in the permit.

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

Structure of this document

- Key Issues of the decision;
- Annex 1 the decision check list.