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Airbus UK Ltd
Environment Team
Chester Road
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CH4 0DR

31st January 2018

Our reference: **NRW/EPR/01/2018**

Beth Voice
Regulatory Officer
Natural Resources Wales
Chester Road
Buckley
CH7 3AJ

Re: Annual Performance Report

Dear Beth,

In line with the requirements of section 4.2 of our Permit, please find below our annual performance report covering the following.

- **Air emissions (NOx)**
- **Emissions to water**
- **Emissions to Sewer**
- **Noise**
- **2017 Performance review**
- **2018 Environmental targets**
- **REACh Compliance (including Chromium reduction)**
- **Solvent management plan**

Air Emissions (NOx)
An air emission monitoring survey for oxides of nitrogen (as NOx), as required by Table S3.1, was undertaken between 5th and 8th December 2017.

During the monitoring period several items of plant were not operational due to lack of demand and were therefore not sampled. These emission points were as follows

- CHP-A6 West Factory Boiler 3
- CHP-A7 West Factory Boiler 4
- CHP-A10 West Factory CHP 3
- CHP-A13 Stringer CHP 2
- CHP-A17 MCC Boiler 2 D
- CHP-A19 West Road Boiler 1 E

Results of the NOx monitoring are summarised in form Air 1 which has been submitted separately. No emissions exceeded specified limits.

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Emissions to Water
Sampling of emissions to water (Table S3.2) was undertaken throughout 2017. During 2017 there were no breaches of a specified limit.

Emissions to Sewer
Weekly sampling of emissions to sewer (Table S3.3) was undertaken throughout 2017. During 2017 there were no breaches of a specified limit in the discharges at emission points TE1 and TE3.

Noise
A noise monitoring survey, as required by Table S3.4, was undertaken during June/July 2015. The next survey will be undertaken in 2018 in line with the three yearly requirement of the Permit.

2017 Performance review
Airbus Broughton measured its environmental indicators both as normalised data and as absolute data. Again, for 2017, data was normalised against tonnes of 'delivered' product (rather than 'built').

During 2017, Airbus Broughton delivered 8874.8 tonnes of finished product, compared with 8415.9 tonnes in 2016. This is an increase of 5.5%.

For 2017, Airbus had established the following corporate environmental targets:
- No increase in total waste produced (but non-recycled waste to be reduced by 0.9% per year)
- Reduce CO2 emissions by 3.5% per year
- Achieve a 50% reduction in VOC emissions by 2020, based on a 2006 baseline (this equates to an annual target of 4.83%).
- Reduce water consumption by 1.25% per year

Actual environmental performance on the Airbus Broughton site during 2017 was measured as follows.

No increase in total waste produced, based on 2016 data.
- During 2017 Airbus Broughton increased total waste produced (excluding swarf and inerts) by 14.96% in absolute terms (an increase of 9.02% when normalised), based on 2016 data. This equates to 879.31 tonnes of waste.

Explanation *– In 2017 there was an increase in production at Broughton resulting in a 5.5% increase in delivered product. However, the most significant contribution to the increase in waste was the transition from chromic acid anodising to tartaric sulfuric acid anodising. This process changeover contributed to an 1889.74 tonne increase in surface treatment related waste. This was partly offset by a 1010.43 tonne reduction in other waste streams.*

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Reduce non-recycled waste by 0.9%, based on 2016 data.

- During 2017 Airbus Broughton increased non-recycled waste by 92.01%, in absolute terms, (an increase of 82.08% when normalised) based on 2016 data. This equates to 1785.65 tonnes of waste.

Explanation *– In 2017, Airbus changed the surface treatment process from chromic acid anodising to tartaric sulfuric acid anodising. This process changeover created an 1889.74 tonne increase in non-recycled waste, which was slightly offset by reductions in non-recycled waste in other areas.*

Reduce the total energy consumption [as Tonnes CO2] on site by 3.5%, based on 2016 data.

- During 2017, total energy consumption [as tonnes CO2] on the Airbus Broughton site reduced by 1.42% in absolute terms (a reduction of 6.51% when normalised), based on 2016 data. This equates to 844.15 tonnes CO2.

Explanation *– In 2017 the reduction in energy consumption (as CO2) was probably due to a continued general drive for energy efficiency, including the ongoing roll-out of LED lighting. Climatic conditions may also have been a factor (2016 average temperature 9.4 degrees versus 2017 average temperature 9.7 degrees).*

Reduce VOC emissions from Broughton site by 4.83%, based on 2016 data.

- During 2017, total VOC emission on the Airbus Broughton site reduced by 4.72% in absolute terms, (a reduction of 9.64% when normalised), compared to 2016 data. This equates to 8.76 tonnes of VOC.

Explanation *– A number of factors contributed to the VOC reduction in 2016. In Stringer Manufacturing Centre (SMC) line flushing solvent was replaced with a non-VOC alternative. A significant reduction in the consumption of gun wash solvent supplied by SafetyKleen was also seen. Production of A380 wings reduced significantly in 2017 and this was reflected in the VOC consumption associated with that area (however, production in other areas increased with an associated increase in consumption). VOC emission from the use of 'Diestone' solvent impregnated wipes also saw a significant reduction in 2017.*

Reduce water consumption on Broughton site by 1.25%, based on 2016 data.

- During 2016 total water consumption on the Airbus Broughton site reduced by 4.97% in absolute terms (a reduction of 9.89% when normalised), compared to 2016 data. This equates to 6843 m3 of water.

Explanation *– In 2017 the reduction in total water consumption was achieved due to a number of factors. A program of toilet refurbishments was implemented across the site introducing additional sensor taps and more efficient flushing. In addition, the replacement of sections of eighty year old water main may have eliminated undetected underground losses.*

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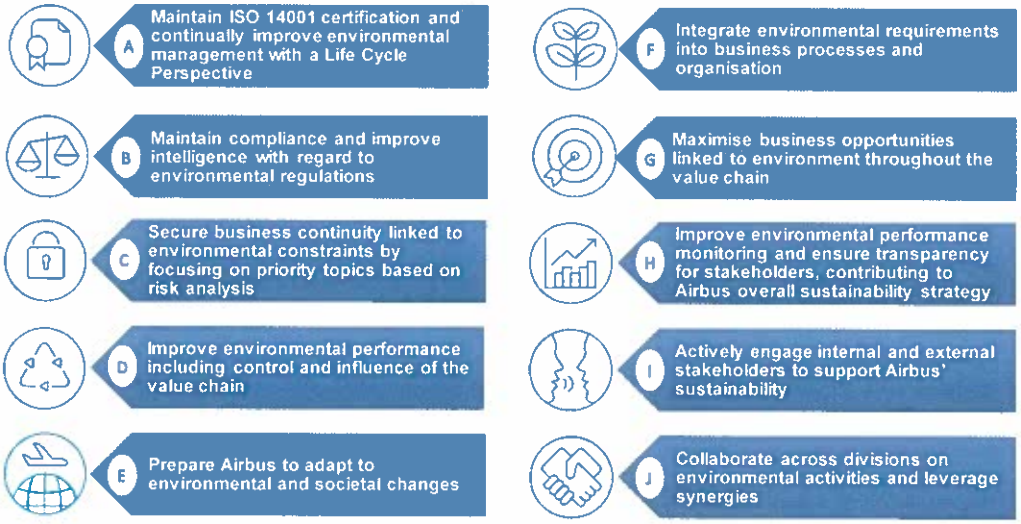
2018 Environmental Targets

During 2018, as in previous years, each business unit will contribute to the site Environmental Management Programme (EMP) with specific projects to reduce the environmental impact of Airbus Broughton activities. These programmes are a requirement of every Airbus site as part of the Airbus Global Certification to ISO14001.

At time of writing, the Airbus Broughton site is still awaiting the specific corporate environmental targets for 2018 from Airbus Central in Toulouse. A high level slide providing top level environmental objectives is given below.



REACh Compliance (including Chromium reduction)

The following report is provided by the Engineering Function and is updated from the report submitted in January 2017. The revised paragraphs are shown in blue italic.

Chromate loaded structural primers are used on metallic substrates only as part of the corrosion protection scheme that includes anodising. Chromate free alternatives are used for composite structures as such corrosion resistance is unnecessary on these parts. For paint layers above structural primer – which do not contribute to corrosion resistance – chromate free alternatives are available and widely used.

Chromate free anodising

From the start of Chromate reduction initiatives the problem has been to achieve a similar level of combined corrosion resistance with a Chromate free anodising / Primer scheme as with the existing chromated combination. By substituting Chromate free Tartaric Sulphuric Acid (TSA) anodising no improvement in the corrosion protection properties of the anodising layer was achieved – meaning that no decline in the corrosion protection properties of the structural Primer could be acceptable.

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Construction of the TSA plant is now complete and a commissioning test program has been successfully passed. The associated Penetrant Flaw Detection (PFD) plant has been constructed and is now fully operational.

All aircraft parts have been TSA treated from week 30 of 2017 onwards. All chromate containing products have been removed from treatment baths prior to the sunset date of September 21st 2017

Chromate free primer

Airbus's approach to Chromate free structural primer has been co-ordinated trans-nationally for the whole of Airbus by the Engineering Function who are responsible to ensure that the technical capabilities of the paint are achieved. Together with Manufacturing Engineering and Procurement we have partnered with the main aerospace paint suppliers to attempt to develop a Chromate free corrosion suppressing structural primer to use in conjunction with our chromate free anodising processes. This approach – different to the in house development of the TSA anodising – was selected primarily

1. Because Airbus has no specialised paint development skill set
2. Because Chromate free aerospace paint chemistry already exists and in many cases is patented
3. Because our suppliers have specialist paint development laboratories that can be used to develop paints available generally in the market

Initial development of Chromate free paints was started in the early 2000's and some paints got as far as trials by around 2004, but were not acceptable on a number of fronts.

A second round of paint development culminated in Technology Readiness Level* (TRL) 3 being passed on five separate paints from four suppliers. This triggers both industrial (ease of preparation, application, thickness management and drying) and detailed technical (corrosion resistance, adhesion, abrasion and chemical attack resistance etc.) testing at TRL level 4.

The project is now an international collaboration between all interested paint manufacturing companies TRL 2 has been completed in November 2014 and TRL 3 was passed in December 2016 but no further progress was achieved in 2017. Despite considerable investment by Airbus and its suppliers the technology will not be implemented by the sunset date for Strontium Chromate January 2019. Therefore, as required under REACh regulations, a collaborative group of Airbus' paint suppliers and raw material suppliers have prepared authorization documentation to enable continued use of Chromated basic primer beyond January 2019. This has been accepted by ECHA and an authorisation with various conditions on Chromate dust and paint emission controls has been granted for 7 years.

Following the continued failure of paint supply chain to develop suitable alternatives to strontium chromate containing paints Airbus is in the process of setting up a team in the Engineering domain to lead development of alternative metallic surface preparation processes that will allow the elimination of strontium chromate containing basic and wash primers, within the lifetime of the current authorisation

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Alodine replacement

Again the supply chain attempts to develop a suitable alternative to this product have failed and an authorization document has been prepared with suppliers and accepted by ECHA. The authorisation conditions imposed by ECHA have been implemented in time for the sunset date for Chromates 21/09/2017

Alusol replacement

During 2014, Airbus Broughton was informed by Castrol that it planned to cease production of Alusol AD by September 2015. Alusol AD is the primary cutting fluid used for machining of aluminium at Broughton, with 2014 consumption in the region of 38,000L. The reasons given by Castrol for ceasing production included the introduction of new labelling requirements across Europe and the requirements of REACH – specifically removal of borates.

The initially proposed date of September 2015 for cessation of manufacture of this product did not provide a long enough timescale for Airbus to qualify a replacement product. Therefore, Procurement entered into negotiations with Castrol and secured an extended supply date of "end of 2016". An alternative borate-free Castrol product (Hysol SL 54 XBB) was qualified and rolled out during 2016. The remaining stock of Alusol was consumed as planned by Easter 2017 and fully replaced by Hysol which will mean the site is well in advance of the February 2020 sunset date for borates
Work is continuing to qualify alternative borate free Degreasers for use in process lines, TRL 4 was passed for Immersion with TRL 5 planned for Q1 2018.

Solvent Management Plan

Industrial Emissions Directive (IED) reduction scheme target calculation using 2017 data

Airbus Broughton - 2017 Coating activities*

Solids	**246.95**	**Tonnes**		
Factor (PG6-40)	0.58			
Target VOC value	**143.23**	**Tonnes**		
Coating VOC (gross)	**113.78**	**Tonnes**	**Equates to** **79.44%**	**of target**
VOC Waste	39.38	Tonnes		
Coating VOC (net)	**74.40**	**Tonnes**	**Equates to** **51.94%**	**of target**

** Coating activities = Paint application, Sealant application , Cleaning of Equipment (as agreed with NRW)*

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The calculation shows that in 2017 VOC emissions from coating activities on the Broughton site, even before deduction of the waste figure, were significantly below the IED target value.

As required by the IED, the target VOC calculation utilises site total data representing coating activity across the whole installation. A breakdown of coating activity data and surface cleaning activity data, by paint shop, can be provided to NRW if requested.

A timing plan detailing solvent reduction projects planned for 2017 is provided in the spreadsheet '2018 VOC reduction plan v1 05-18.xlsx' which is included with this letter.

Should you have any further questions please do not hesitate to contact me.

Yours sincerely,

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