Airbus UK Ltd
Environment Team
Chester Road
Broughton
Chester
CH4 0DR

31st January 2017

Our reference: **NRW/EPR/01/2017**

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.

- **2016 End of year reporting forms**
- **Air emissions**
- **Emissions to water**
- **Emissions to Sewer**
- **Noise**
- **2016 Performance review**
- **2017 Environmental targets**
- **REACh Compliance (including Chromium reduction)**
- **Solvent management plan**

2016 End of year reporting forms
Please find attached signed copies of the following reporting forms, in line with the requirements of the permit:

- 2016 annual environmental performance indicators
  - Finished product
  - Water usage
  - Waste produced
- 2016 annual energy usage
  - Electricity
  - Gas
- 2016 NOx emission to air report

Air Emissions
An air emission monitoring survey for oxides of nitrogen (as NOx), as required by Table S3.1, was undertaken during week 50 2016. It should be noted that table S3.1 in the permit lists four Combined Heat and Power (CHP) engines on the West Factory. In fact only three CHP engines were ever installed at this location. For the purposes of this report it is emission reference CHP-A8 which is taken to be the missing engine.

The survey was only able to sample emissions from all the CHP engines on site. Unfortunately, due to maintenance issues with two boilers (one in E boiler house and one on the West Factory) and a lack of demand for heat from the remainder, none of the back-up boilers listed in table S3.1 were operating at the time of monitoring.

For information, during 2016 the actual utilisation of the back-up boiler plant was as follows;

- West Factory 3.4% of the total potential heat output
- Stringers 5.2% of the total potential heat output
- Skin Mill 3.8% of the total potential heat output
- "D" (LCM) 0% of the total potential heat output
- "E" (inner West Road) 9.2% of the total potential heat output

Results of the monitoring are summarised in form Air 1 which is included with this report. No emissions exceeded specified limits.

Emissions to Water
Sampling of emissions to water (Table S3.2) was undertaken throughout 2016. During 2016 there were two breaches of a specified limit, which were reported as required. Both incidents involved levels of suspended solids in the discharge at emission point SW16. Corrective action has been undertaken.

Emissions to Sewer
Weekly sampling of emissions to sewer (Table S3.3) was undertaken throughout 2016. During 2016 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.

2016 Performance review
Airbus Broughton measured its environmental indicators both as normalised data and as absolute data. Again, for 2016, data was normalised against tonnes of 'delivered' product (rather than 'built').

During 2016, Airbus Broughton delivered 8415.9 tonnes of finished product, compared with 8103.8 tonnes in 2015. This is an increase of 3.9%.

For 2016, 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 2016 was measured as follows.

No increase in total waste produced, based on 2015 data.

- During 2016 Airbus Broughton increased total waste produced (excluding swarf and inerts) by 3.1% in absolute terms (a reduction of 0.71% when normalised), based on 2015 data. This equates to 177.49 tonnes of waste.

Explanation *– In 2016 there was an upturn in production at Broughton resulting in a 3.9% increase in delivered product. The total volume of waste produced followed this upward trend but to a lesser extent, resulting in a small reduction when normalised.*

Reduce non-recycled waste by 0.9%, based on 2015 data.

- During 2016 Airbus Broughton reduced non-recycled waste by 19.9%, in absolute terms, (a decrease of 23.1% when normalised) based on 2015 data. This equates to 482.97 tonnes of waste.

Explanation *– In 2016, Airbus implemented new waste sortation initiatives to improve segregation. These focused on the removal of wood, cardboard and various metal waste types from the general waste stream.*

For information, during 2016, recycled waste (disposal codes R2 to R13) increased by 660.46 tonnes.

Reduce the total energy consumption [as Tonnes CO2] on site by 3.5%, based on 2015 data.

- During 2016, total energy consumption [as tonnes CO2] on the Airbus Broughton site increased by 0.28% in absolute terms (a reduction of 3.44% when normalised), based on 2015 data. This equates to 167 tonnes CO2.

Explanation *– In 2016 total energy consumption (as Tonnes CO2) was essentially unchanged, despite a production increase of 3.9%. This may be due to more efficient use of energy as production rises. However, 2016 revisions to the DEFRA conversion factors will also have influenced the results.*

Reduce VOC emissions from Broughton site by 4.83%, based on 2015 data.

- During 2016, total VOC emission on the Airbus Broughton site reduced by 11.56% in absolute terms, (a reduction of 14.84% when normalised), compared to 2015 data. This equates to 23.25 tonnes of VOC.

Explanation *– A number of VOC reduction projects were implemented throughout 2016 which contributed to the saving. However, the most significant contribution was the replacement of impregnated wipes in Panel Assembly Centre (PAC) with a non-VOC alternative. Introduction of a water based touch-up primer in conjunction with a*

new distribution process also contributed to the reduction. In addition, a significant reduction in consumption of gun washing solvent was seen in 2016.

Reduce water consumption on Broughton site by 1.25%, based on 2015 data.

- During 2016 total water consumption on the Airbus Broughton site increased by 5.07% in absolute terms (an increase of 1.12% when normalised), compared to 2015 data. This equates to 6592 m3 of water.

Explanation *– In 2016 the increase in total water consumption was broadly in line with the increase in production. It is believed that the small additional increase (seen in the normalised figure) may be due to commissioning trials for changes to the surface treatment facilities, or to new shift patterns introduced in some production areas.*

2017 Environmental Targets

During 2017, as in previous years, each business unit will have an 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.

In 2017 Airbus will continue working to achieve the following environmental targets as part of a 2020 roadmap:

- No increase in total waste produced
- 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.
- Reduce water consumption by 1.25% per year

REACh Compliance (including Chromium reduction)

The following report is provided by the Engineering Function and is updated from the report submitted in January 2016. 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. Following various delays the TSA project has reached implementation stage and plant modifications will continue to enable this.

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 currently undergoing final commissioning.

Target is that all aircraft parts will be TSA treated from week 19 of 2017 onwards. 100% of those parts will be inspected by PFD prior to TSA treatment.

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.

Following a review of the results three of the four suppliers have undertaken to further develop chromate free paints but unfortunately not by further enhancing the paints that failed the 2012 TRL review but by approaching the problem with different technologies. 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. Despite considerable investment by Airbus and its suppliers this means it is unlikely that the technology will 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 are preparing the authorization documentation to enable continued use of Chromated basic primer beyond January 2019.

*(*Technology Readiness Level (TRL) - These levels start at TRL 1 which is basic research, and a product is ready for internal qualification and deployment when it reaches a TRL higher than level 6. Anything lower than TRL6 indicates that the substitute product is not suitable for the particular application and further development is required)*

Alodine replacement

Again the supply chain attempts to develop a suitable alternative to this product have failed and an authorization document is under preparation with suppliers.

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 will be consumed by end the of Q1 2017 and fully replaced by Hysol which will mean the site is well in advance of the February 2020 sunset date for borates

Solvent Management Plan

Industrial Emissions Directive (IED) reduction scheme target calculation using 2016 data

Airbus Broughton - 2016 Coating activities*

Solids	262.73	**Tonnes**			
Factor (PG6-40)	0.58				
Target VOC value	152.38	**Tonnes**			
Coating VOC (gross)	115.54	**Tonnes**	**Equates to**	75.83%	**of target**
VOC Waste	48.46	Tonnes			
Coating VOC (net)	67.08	**Tonnes**	**Equates to**	44.02%	**of target**

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

The calculation shows that in 2016 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 '2017 VOC reduction plan v1 05-17.xlsx' which is included with this letter.

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

Yours sincerely,

Andy Denton
Environment Officer
Airbus Operations, Broughton
Tel: 01244 524252