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Environment Team
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Our reference: **NRW/EPR/01/2019**

Matthew Kelk
Regulatory Officer
Natural Resources Wales
Chester Road
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Re: Annual Performance Report

Dear Matthew,

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**
- **2018 Performance review**
- **2019 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 3rd and 7th December 2018.

During the monitoring period several back-up boilers were not operational due to lack of demand and were therefore not sampled. These emission points were as follows

- CHP-A1 Stringer Boiler 1
- CHP-A2 Stringer Boiler 2
- CHP-A4 West Factory Boiler 1
- CHP-A5 West Factory Boiler 2
- CHP-A6 West Factory Boiler 3
- CHP-A7 West Factory Boiler 4
- CHP-A16 MCC Boiler 1 D
- CHP-A17 MCC Boiler 2 D
- CHP-A21 West Road Boiler 3 E

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

Emissions to Water

Sampling of emissions to water (Table S3.2) was undertaken throughout 2018. During 2018 there was a single breach of a permitted limit.

On 15th January 2018, suspended solids in Surface Water 16 (SW16) were measured at 58 ug/l against a permit limit of 50 ug/l. The incident was reported to NRW in line with permit requirements. Root cause was identified and corrective actions have been implemented.

Emissions to Sewer

Weekly sampling of emissions to sewer (Table S3.3) was undertaken throughout the first three quarters of 2018. With the agreement of NRW, sampling of emissions to sewer were stopped at the beginning of October 2018.

During 2018 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 2018 and communicated to NRW. No noise issues related to Airbus operations were identified.

The next noise survey will be undertaken in 2021 in line with the three yearly requirement of the Permit.

2018 Performance review

Airbus Broughton measured its environmental indicators both as normalised data and as absolute data. Again, for 2018, data was normalised against tonnes of 'delivered' product (rather than 'built').

During 2018, Airbus Broughton delivered 8436.2 tonnes of finished product, compared with 8874.8 tonnes in 2017. This is a mass reduction of 4.9%. However, the actual number of wing sets delivered (all variants) rose from 725 in 2017 to 737 in 2018 (1.66% increase). The mass reduction is due to the rate reduction in A380 which is our largest variant.

Airbus has declared the following corporate 2030 environmental targets, based on a 2015 baseline:

- Total waste produced to be reduced by 25% (equivalent to 1.90% per year)
- Non-recycled waste to be reduced by 100% (equivalent to 36.9% per year)
- Reduce CO₂ emissions by 60% (equivalent to 5.93% per year)
- No change in absolute VOC emissions (equivalent to a 60% 'performance increase' by 2030 (5.93% per year))
- Reduce water consumption by 50% (equivalent to 4.52% per year)

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Actual environmental performance on the Airbus Broughton site during 2018 was measured as follows.

Reduce total waste produced by 1.90% annually

- During 2018 Airbus Broughton reduced total waste produced (excluding swarf and inerts) by 4.07% in absolute terms (an increase of 0.15% when normalised), based on 2017 data. This equates to 274.99 tonnes of waste.

Explanation – *There is no obvious single cause for the reduction in the absolute waste figure. However, the change in surface treatment chemistry has produced a net reduction in that area. Also, in 2018 there was a reduction of 4.9% in the mass of delivered product compared to 2017. This offsets the absolute waste reduction meaning that normalised performance is effectively unchanged.*

Reduce non-recycled waste by 36.9% annually

- During 2018 Airbus Broughton reduced non-recycled waste by 4.42%, in absolute terms, (an increase of 0.55% when normalised) based on 2017 data. This equates to 164.75 tonnes of waste.

Explanation – *There is no obvious single cause for the reduction in the absolute non-recycled waste figure. However, the change in surface treatment chemistry has produced a net reduction in that area. Also, in 2018 there was a reduction of 4.9% in the mass of delivered product compared to 2017. This offsets the absolute waste reduction meaning that normalised performance is effectively unchanged.*

Reduce the total energy consumption [as Tonnes CO₂] on site by 5.93% annually

- During 2018, total energy consumption [as tonnes CO₂] on the Airbus Broughton site increased by 1.17% in absolute terms (an increase of 6.43% when normalised), based on 2017 data. This equates to 610.32 tonnes CO₂.

Explanation – *Climatic conditions (2017 average temperature 9.6 degrees versus 2018 average temperature 9.5 degrees) may have been a factor in the increase in energy consumption (as CO₂). A reduction in electricity consumption was offset by increased consumption of both natural gas and fuel oil.*

Reduce VOC emissions from Broughton site by 5.93% annually

- During 2018, total VOC emission on the Airbus Broughton site reduced by 10.20% in absolute terms, (a reduction of 5.53% when normalised), compared to 2017 data. This equates to 18.05 tonnes of VOC.

Explanation – *The most significant contribution to the reduction in VOC emission is from the use of solvent for paint gun washing. This was achieved by a reduction in the number of gun-wash machines and a general improvement in the efficiency of usage in the remaining machines. There was also a notable improvement in the usage of impregnated wipes. Another factor in achieving the reduction seems to have been the build reduction of both the A380 and A330 variants.*

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Reduce water consumption on Broughton site by 4.52% annually

- During 2018 total water consumption on the Airbus Broughton site increased by 7.84% in absolute terms (an increase of 13.45% when normalised), compared to 2017 data. This equates to 10250 m3 of water.

Explanation – In 2018 the increase in total water consumption was probably due to the introduction of 'Penetrant Flaw Detection' as part of the changeover from Chromic anodising to Tartaric-Sulphuric anodising in the surface treatment areas. Process issues have resulted in a significant quantity of waste rinse water. Engineering projects are in progress to address these issues and reduce the amount of waste water created by the new process.

2019 Environmental Targets

During 2019, 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.

The specific Airbus corporate environmental targets detailed above will apply each year up until 2030.

A high level slide providing top level 2019 environmental objectives is given below.

Airbus Commercial Aircraft Environmental Objectives 2019



Ensure successful ISO 14001 recertification, deploying environmental guidelines across functions for eco-efficient processes and practices



Implement 2030 vision to improve our environmental footprint and our supply chain including consistency with the Paris agreement



Address climate change by actively contributing to the international aviation actions towards technologies, offsetting, and sustainable fuels



Engage with relevant stakeholders to strengthen Airbus communication regarding eco-efficiency commitments



Build a concept for a breakthrough aircraft in terms of environmental performance



Develop means for each employee to grow their environmental responsibility in contribution to Airbus sustainability



Secure business continuity and maintain compliance with regards to environmental regulations, one focus being substances replacement



REACH Compliance (including Chromium reduction)

The following report is provided by the Engineering Function

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 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 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.

An extensive project was carried out during 2018 to ensure the authorisation conditions were met by the sunset date of 22 January 2019. This has resulted in a multi-million pound investment by Airbus Broughton in equipment to collect and safely remove chromate containing dusts at the point of generation in the manufacturing process

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During 2018 Airbus took the lead in setting up a team in the Engineering domain to lead development of alternative metallic surface corrosion suppressing Primers that eliminate strontium chromate from containing basic and wash primers, within the lifetime of the current authorisation. The BPAX (Basic Primer Acceleration) project launched in March 2018

The project aims to have deliver a qualified basic primer in time for implementation prior to the authorisation expiry in 2026 date, and to that end lead aircraft are expected in service during the early 2020's to demonstrate corrosion protection levels can be achieved.

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 were implemented in time for the sunset date for Chromates 21/09/2017.

Borate Free Degreasers

Work is continuing to qualify alternative borate free Degreasers for use in process lines, TRL's 5 and 6 were passed in 2018 and work is continuing to qualify two separate products in 2019, even in the absence of a sunset date for these borates.

Solvent Management Plan

Industrial Emissions Directive (IED) reduction scheme target calculation using 2018 data

Airbus Broughton - 2018 Coating activities*

Solids	230.18	Tonnes		
Factor (PG6-40)	0.58			
Target VOC value	133.50	Tonnes		
Coating VOC (gross)	104.61	Tonnes	Equates to	78.36% of target
VOC Waste	23.00	Tonnes		
Coating VOC (net)	81.61	Tonnes	Equates to	61.13% of target

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

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The calculation shows that in 2018 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.

Details of solvent reduction projects planned for 2019 will be communicated to NRW as soon as they become finalised

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

Yours sincerely,



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