



**2020 Annual performance activity review of Environmental Permit
EPR/BB3790FX v1**

January 2021

Author: Toby Ambler

1. Terms of reference

Condition 4.2.2 of Environmental Permit EPR/BB3790FX requires AluK (GB) Ltd to provide a report on the performance of the activities over the previous year. This report shall include a review of the results of the monitoring and assessment carried out in accordance with the permit including an interpretive review of that data.

The reporting periods for the annual parameters set out in Tables S4.1, S4.2 and S4.3 are from 01/01/2020 to 31/12/2020 and shall use the reporting forms as described in Table S4.4.

The reporting period for the quarterly parameters set out in Table S4.1 will be from 01/10/2020 to 31/12/2020 and shall use the reporting forms as described in Table S4.4.

2. Reporting of emissions to air for the period from 01/01/2020 to 31/12/2020

On the 19th & 20th October 2020 Environmental Compliance Ltd (ECL) were commissioned by AluK to undertake an emission monitoring survey of Emission points A1 & A2 at their Chepstow Plant. Table 1 below presents the findings of the study and demonstrates compliance to the Emission Limit Values as described in Schedule 3 – Emissions and monitoring of Environmental Permit EPR/BB3790FX. A full copy of ECL Emissions Monitoring Survey P4475 is available upon request. During 2020 and to ensure that the survey was conducted safely AluK completed a programme of installing roof light protection panels and additional safety system runs to stacks A1 & A2.

Table 1 Emissions to air							
Emission Point	Substance / Parameter	Emission Limit Value	Reference Period	Result ^[1]	Test Method ^[2]	Sample Date and Times ^[3]	Uncertainty ^[4]
A1	Oxides of nitrogen (NO and NO ₂ expressed as NO ₂)	70 mg/m ³	Periodic (average hour) over	0.09mg/m ³	BS EN 14792: 2017	20/10/2020 11.45 – 12.45	6%
A1	Sulphur dioxide	25 mg/m ³	Periodic (average hour) over	0.71mg/m ³	BS EN 14791:2 017	20/10/2020 13.10 – 14.12	13%
A1	Particulate matter	25 mg/m ³	Periodic (average hour) over	.53mg/m ³	BS EN 13284-1:2017 & MID	20/10/2020 13.10 – 14.12	85%
A1	Hydrogen fluoride	2.0 mg/m ³	Periodic (average hour) over	0.03mg/m ³	BS ISO 15713:2 006 & MID	20/10/2020 11.30 – 12.30	13%
A2	Oxides of nitrogen (NO and NO ₂ expressed as NO ₂)	70 mg/m ³	Periodic (average hour) over	0.17mg/m ³	BS EN 14792: 2017	19/10/2020 13.45 – 14.45	6%
A2	Sulphur dioxide	25 mg/m ³	Periodic (average over hour)	5.55mg/m ³	BS EN 14791:2 017	19/10/2020 13.00-14.02	13%
A2	Particulate matter	25 mg/m ³	Periodic (average over hour)	0.71mg/m ³	BS EN 13284-1:2017 & MID	19/10/2020 13.00 – 14.02	59%
A2	Hydrogen fluoride	2.0 mg/m ³	Periodic (average over hour)	0.03mg/m ³	BS ISO 15713:2 006 & MID	19/10/2020 14.25 – 15.25	13%

3. Reporting of emissions to sewer for the period from 01/10/2020 to 31/12/2020

3.1 Emission Points W1 & W2

Weekly spot monitoring of emission points W1 & W2 commenced on 29th June 2020 in response to the issue of Environmental Permit EPR/BB3790FX dated 26th June 2020.

Emission points W1 & W2 relate to the source emissions to water of uncontaminated surface water drainage via interceptors into unlined balancing lagoons. The limit parameters of oil and grease (none visible) and pH (min 6 max 9) have not been breached during the period between 29th June 2020 and 31st December 2020. All parameters were within their respective emission limit value (ELV).

Maintenance of the mainline drainage, gully pots, interceptors and pump station was carried out during August 2020.

3.2 Emission Point S1

Emission points S1 relates to the source emission from the Effluent treatment plant.

The daily limit parameters of pH (min 6 max 9) have not been breached during the period between 6th July 2020 and 31st December 2020. pH was within its specified limits.

The daily flow limit of 144m³/day (emission point M1) has not been breached during the period 1st July 2020 to 31st December 2020. Installation of an MCERTS flow meter is planned for Q1 of 2021.

Breaches of limit parameters Total Aluminium (ELV 2.0mg/L) that occurred during 2020 have been reported to the Natural Resources Wales NRW via the Schedule 5 notice procedure. These Schedule 5 notifications are available upon request.

The following initiatives relating to Total Aluminium (Al) were carried out during 2020.

To remove historic sediment, in January 2020 we completed a programme of deep cleaning of the Effluent Treatment Plant (ETP) pipework and equipment.

In March 2020 an additional pH probe was supplied and installed which now acts as a confirmatory back up to the existing monitoring probes located in the neutralisation reactor. This now provides additional early warning if our process is not within parameters.

In June 2020 a Partech Aluminium (Al) analyser was installed allowing for a constant monitoring and recording of dissolved Al levels leaving our plant in the effluent to be discharged.

We also carried out a review of our procedures for maintenance, calibration and filter press cleaning. In addition to this we revised our PPM routines and purchased an additional set of filter plates and filter cloths so the whole filter set can now be changed proactively as identified by the PPM schedule.

In addition to the replacement of the filter cloths precautionary full deep cleansing of the ETP now takes place on a regular basis in order to remove any potential residual particulates that may have settled during the filter cloth replacement programme.

Regular cleaning of the settlement / decantation tank is also carried out.

We identified that a high iron parameter reading may be accompanied with a discolouration of discharge. We have since amended our procedures to incorporate a regular visual check of the discharge from our filter press. This now allows for an immediate response and containment of discharge to sewer.

A recent trial conducted during Q4 of 2020 (comparing results from the Al monitor with those analysed by an external laboratory) demonstrated that the Al monitor underestimates the Al concentration in the emissions to sewer. The in-line Al monitor does not appear to be providing accurate and reliable results. As a matter of good practice, we have now developed a procedure to verify the Al concentration in the discharge by utilising an external laboratory.

Operators and all those having responsibilities relating to the anodising plant or effluent treatment plant are now trained in the taking and interpretation of readings from the in-line Al monitor, in the reporting of those results and in the procedures for the prevention of discharge of non-conforming effluent to sewer.

During the initial operation of the Al monitor it was noted that air was entering into the sampling pipe when the ETP was not in operation. A temporary solution of manually pausing the sampling when the ETP was not in operation was introduced. In addition and as a temporary measure the sample pipe was relocated to a more suitable position to allow for the pipe to be permanently submerged. It is planned for this sample pipe to be relocated to a more permanent position when the MCERTS flow meter is installed.

We also developed and implemented a procedure to prevent any effluent containing determinands at or above the permitted ELVs from being discharged to sewer.

Investigations into the technical and economic feasibility of installing a SCADA system were undertaken and it was established that a more cost-effective way for the in-line AI monitor to raise alarms and communicate results automatically can be utilised using our existing system. The current system provides data in a timely manner.

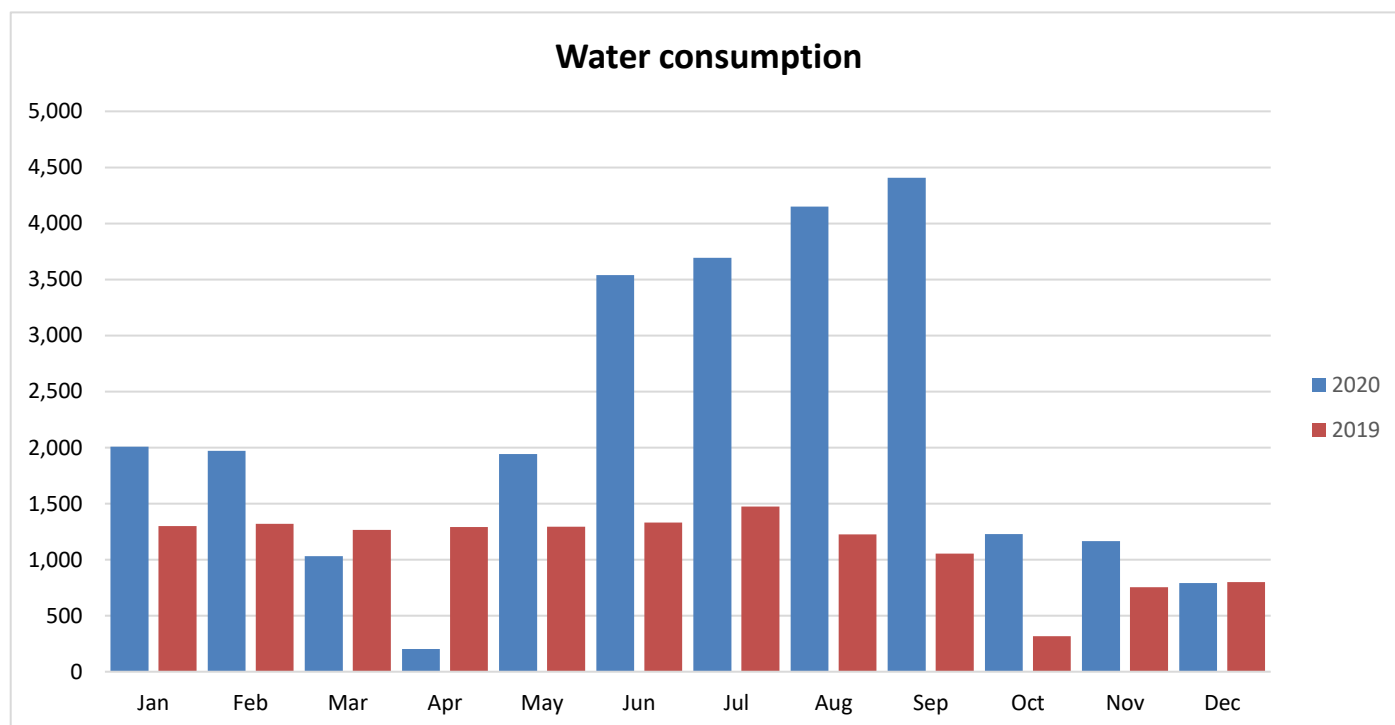
During the period from 7th January 2020 to 25th September 2020 dilution was used only as a temporary measure to control the Aluminium discharge. It was noted by NRW that they would not tolerate dilution as a form of treatment and that we had been relying on this method for far too long.

During this period of dilution we developed a long-term solution to the AI ELV breach issue involving a filtration system and during September 2020 we were given financial approval to proceed with our plan to prevent the discharge of out of specification effluent to foul sewer. This involved installing extra pipework to divert the discharge from the ETP and filter press to a holding tank and passing it through a filtration system before discharge to sewer. Due to the COVID-19 pandemic the commissioning of this project is taking longer than originally planned with a revised completion date of 31st March 2021.

4. Reporting of Water Usage for the year 2020

4.1 Water consumption

	2020 m3	2019 m3	Variance m3	Variance %
Total	26,127	13,428	12,699	94.6



Water consumption during 2020 was 26,127 m³. This was 12,699 m³ or 94.6% more than 2019. There were 2 main changes over the year. The first was the temporary introduction of water dilution to the final effluent leaving the building due to problems of higher levels of AI than the sites trade effluent consent and environmental permits allowed. The dilution was increased during the summer months but turned off at the end of the September. The second change was the impact of COVID-19 which saw the site shut down during some of March, all of April and some of May, reducing slightly the increased use for dilution.

5. Reporting of Energy Usage for the year 2020

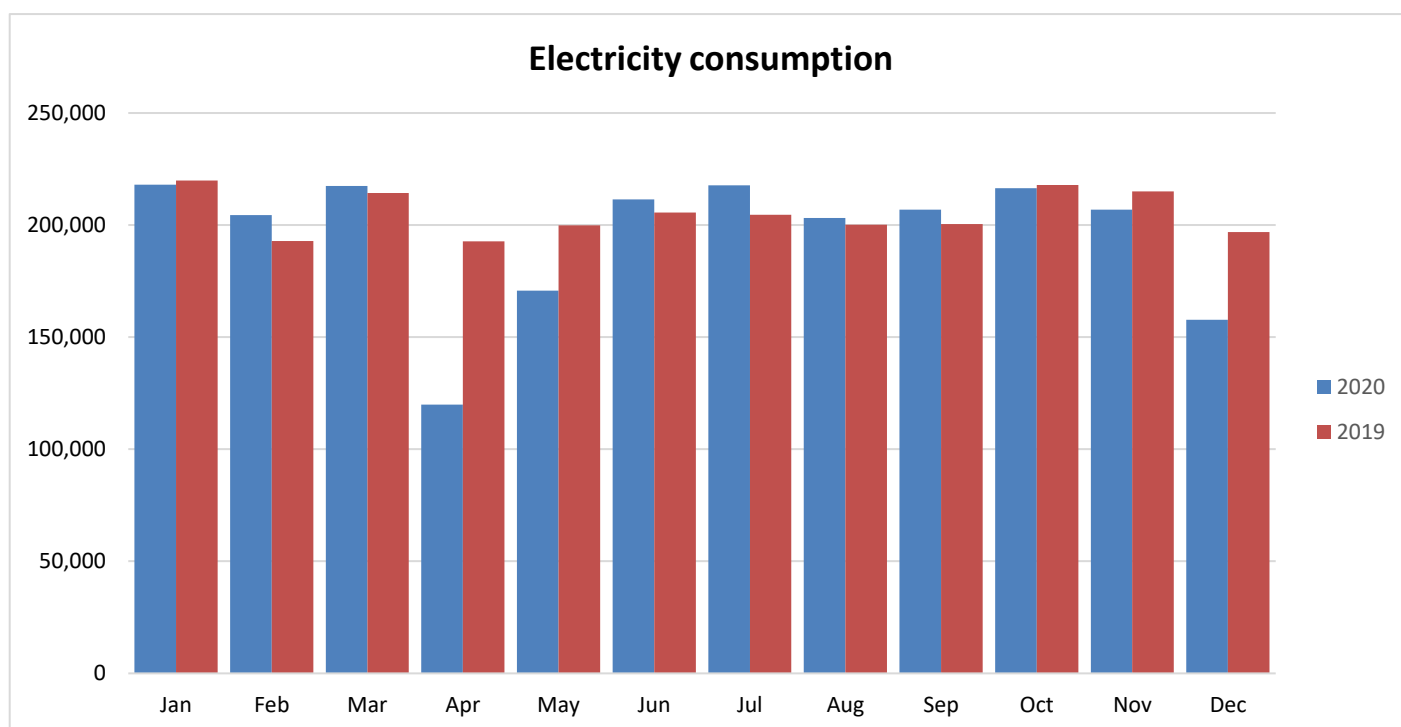
5.1 Electricity

Delivered electricity consumption

	2020 kWh	2019 kWh	Variance kWh	Variance %
Total	2,351,188	2,460,022	-108,834	-4.4

Carbon footprint

	2020 Tonnes/CO2	2019 Tonnes/CO2	Variance Tonnes/CO2	Variance %
Total	548	629	-81	-12.8



Electricity consumption during 2020 was 2,351,188 kWh. This was 108,834 kWh or 4.4 % less than 2019. The main change over the year was the impact of COVID-19 which saw the site shut down during some of March, all of April and some of May. However, once production restarted, it did use more electricity initially than the previous year.

Carbon emissions fell by a larger 12.8% as the emissions factors for grid electricity also dropped.

Changes were made to the emergency lighting systems late in the year which allowed the main lighting to be switched off out of operational hours and especially over the Christmas period, resulting in a 20% reduction. These changes should allow further reductions during 2021.

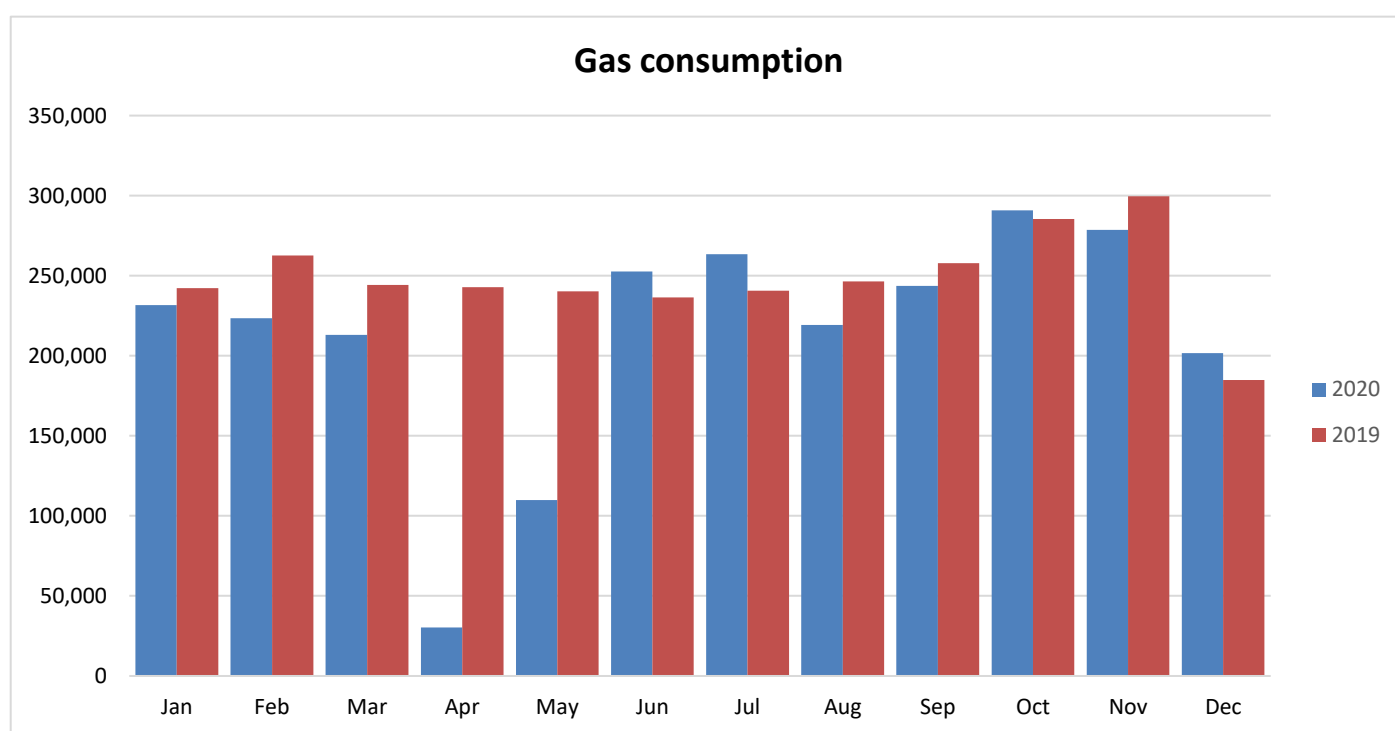
5.2 Gas

Gas consumption

	2020 kWh	2019 kWh	Variance kWh	Variance %
Total	2,558,420	2,983,365	-424.945	-14.2

Carbon footprint

	2020 Tonnes/CO2	2019 Tonnes/CO2	Variance Tonnes/CO2	Variance %
Total	470	548	-78	-14.2



Gas consumption during 2020 was 2,558,420 kWh. This was 424,945 kWh or 14.2 % less than 2019. The main change over the year was the impact of COVID-19 which saw the site shut down during some of March, all of April and some of May although gas consumption had also been lower for the first 3 months of the year. Once production restarted, again it saw more gas use initially than the previous year.

Carbon emissions also fell by 14.2% as the emissions factors for natural gas were almost unchanged.

6. Reporting of other performance indicators for the period 01/01/2020 to 31/12/2020

6.1 Finished Product

Finished Product		
Year	2020	2019
Finished Product (Tonnes)	3755.15	3892.046
Finished Product (Unit)	939,736	962,900

The finished product tonnage and unit data for 2020 when compared against 2019 data reflects how resilient AluK has been to the COVID-19 pandemic. AluK had a period of furlough between 31st March and 30th April 2020.

A successful recertification audit for ISO 9001:2015 and ISO 14001:2015 was also undertaken.

6.2 Waste Product

Waste Produced		
Year	2020	2019
Waste Produced (Tonnes)	428.4	494.49

During December 2019 AluK migrated their non-hazardous waste to Veolia. For the reporting period of 1st January 2020 to 31st January 2020 Veolia collected 272.15 tonnes of waste. 30.52t went to landfill, 64.7t was diverted and 176.93t was recycled. AluK saved 84t of CO₂e. Aluk will continue to investigate recycling initiatives during 2021.

Veolia collected 97.08t of cardboard, 30.52t of filters, 2,584kg of food waste, 64.7t of Non-Hazardous Industrial (NHI), 1,142kg of recyclate and 76.12t of wood.

We generated 107.48t of Hazardous waste and 48.77t of metal waste.