

31st January 2024

Mrs E A Parr
PPC Compliance Assistant
Natural Resources Wales
Rivers House
St Mellons Business Park
St Mellons
CARDIFF
CF3 0EY

Dear Mrs Parr,

RE: Meltshop EPR Permit TP3639BH 4.2.2. Annual Returns 2023

In accordance with Environmental Permitting Regulations (EPR) Meltshop Permit TP3639BH, permit condition 4.2.2 requires the following:

4.2.2 For the following activities in schedule 1, table S1.1, A1 to A8. A report or reports on the performance of the activities over the previous year shall be submitted to Natural Resources Wales by 31st January (or other date agreed in writing by Natural Resources Wales each year. The report(s) shall include as a minimum:

- a) a review of the results of the monitoring and assessment carried out in accordance with the permit including an interpretive review of that data, and*
- b) the annual production/treatment data set out in Schedule 4 Table S4.2*

1.1 Introduction

CELSA Steel UK's vision is to be a leader in the generation of circular production chains to contribute to the transition towards a positive impact economy. Despite an exceptionally difficult market, CELSA Steel UK are committed to achieving continual improvement of our environmental performance.

The Meltshop's environmental performance in 2023 has been reviewed, including the environmental Objectives and Targets which have been set for 2024 in conjunction with senior management. CELSA received 6 founded complaints via NRW (Natural Resources Wales) about Meltshop operations in 2023. All complaints in 2023 were regarding dust fallout in the local area. In response to complaints from local residents and businesses, CELSA Steel UK has implemented multiple projects to mitigate the risk of dust emissions from Meltshop permitted operations. These include trialling alternative dust suppression spray technologies, continuation of roof canopy repairs and the introduction of additives to the melting process to reduce the quantity of loose dust generated in the formation of ladle slag. A large project is also underway to upgrade the existing slag cooling structure adjacent to the furnaces. This will be completed in 2024.

1.2 Environmental Performance Review

1.2.1 Production and Energy Consumption

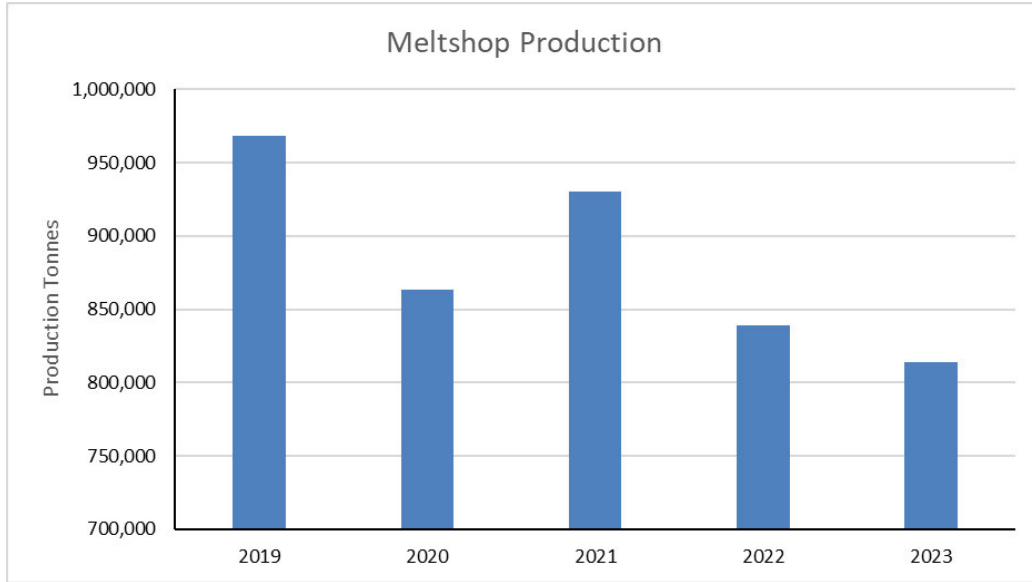


Figure 1: Finished Steel annual production from activity A1.

There was a 3% decrease in production from 2022 to 2023.

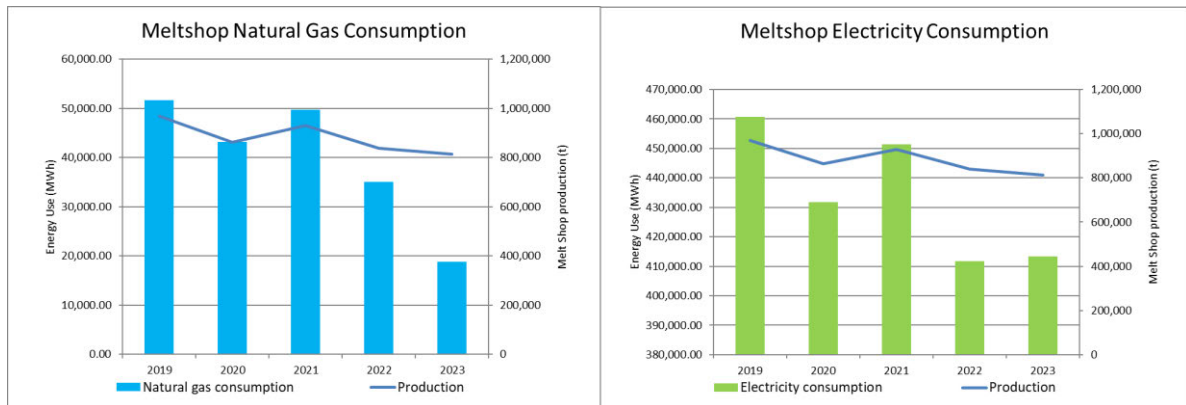


Figure 2: Total natural gas and electricity consumption.

Electricity consumption has increased by 0.4% between 2022 and 2023. Natural gas consumption has decreased by 46% between 2022 and 2023.

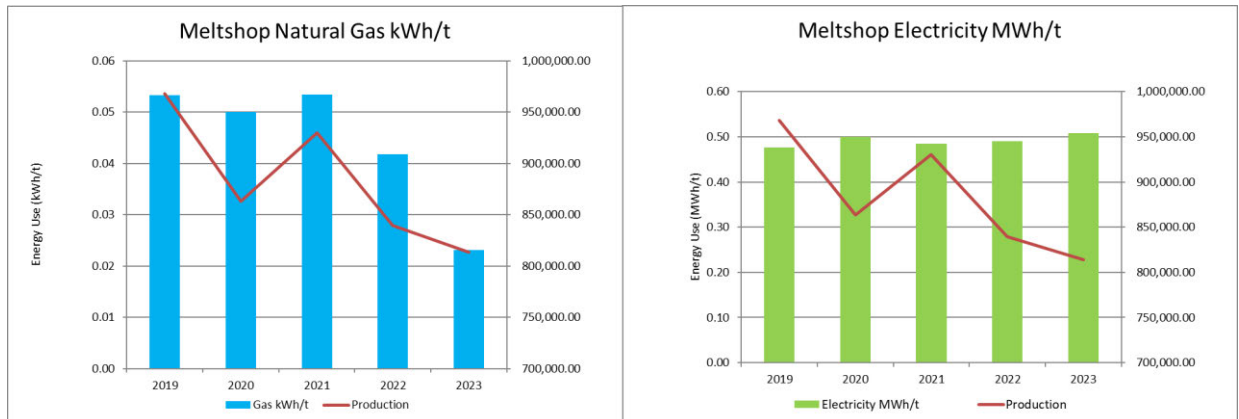


Figure 3: Meltshop natural gas and electricity consumption per tonne

From 2022 to 2023, per tonne of steel produced, electricity consumption increased by 4% while natural gas use decreased by 45%.

Natural gas consumption decreased at a steady rate throughout 2023, whilst electricity consumption fluctuated, with a monthly average of 413 MWh/t a month. These results are largely due to the efforts made in line with CELSA's Net Zero. Projects included:

- Gas preheaters consumption reduced by 40%, oxy gas instead of air gas in new system means nitrogen no longer needs to be heated.
- Furnace gas consumption reduced by 80% chemical optimisation means it isn't needed throughout entire melt cycle + optimisation the furnace.
- LED lights now in 100% of Meltshop to improve electricity consumption.

Meltshop electricity consumption per tonne increased in comparison to 2022 performance. This is partly due to the challenges associated with maintaining energy efficiency at lower production rates. Projects to increase efficiency in electricity use include optimising chemical energy usage inside the furnace during the summer months and changing the lighting in the Meltshop to 100% LED's.

1.2.2 Air emissions

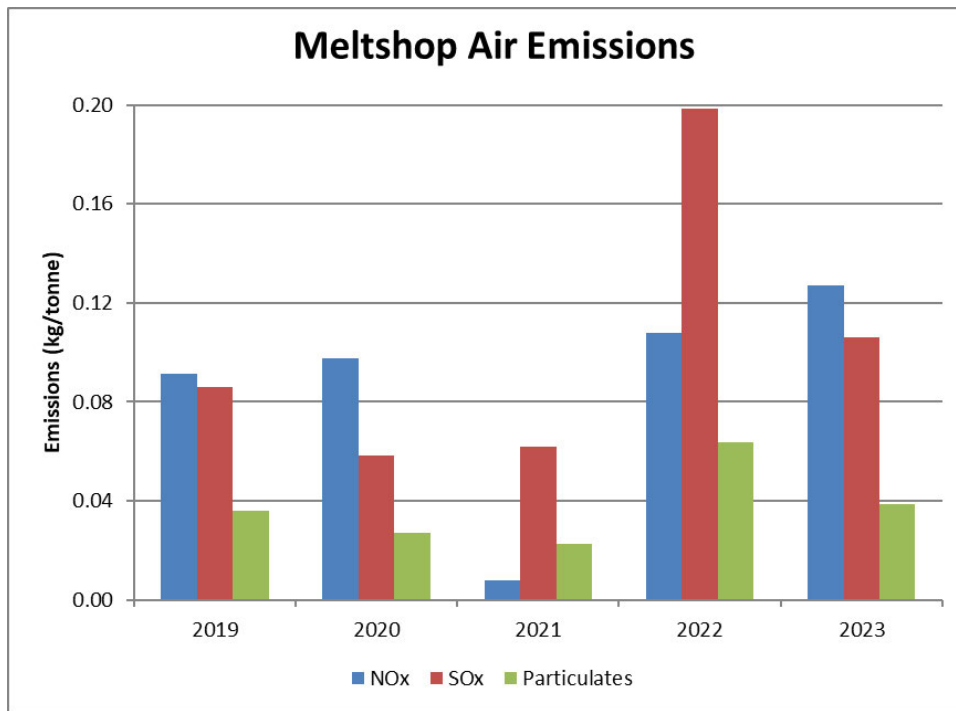


Figure 4: Meltshop air emissions.

Emissions of SOx and particulates decreased by 46% and 39% per tonne respectively compared to 2022 emissions. NOx emissions increased by 18% but continue to remain under permitted limits.

1.2.3 Wastewater Quality

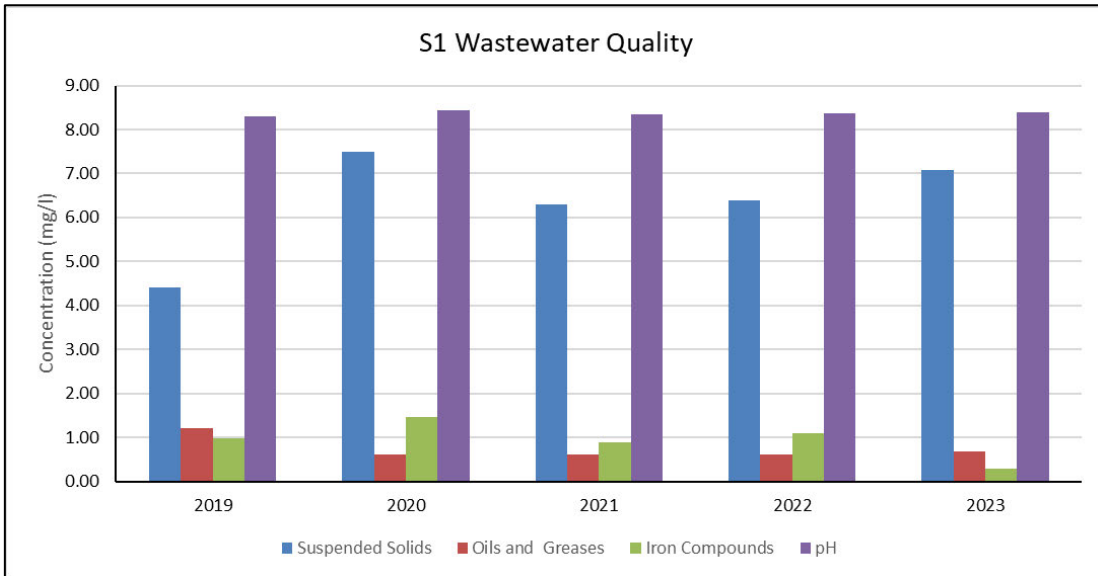


Figure 5: Wastewater quality.

The annual average pH remained consistent with previous years in 2023 returning an average value of 8.38 in 2023 compared to 2022's value of 8.37. Concentrations of suspended solids, oils and greases and iron compounds all remained under permitted limits in 2023, returning annual average concentrations of 7.08mg/l, 0.69mg/l and 0.29mg/l respectively.

Water Consumption

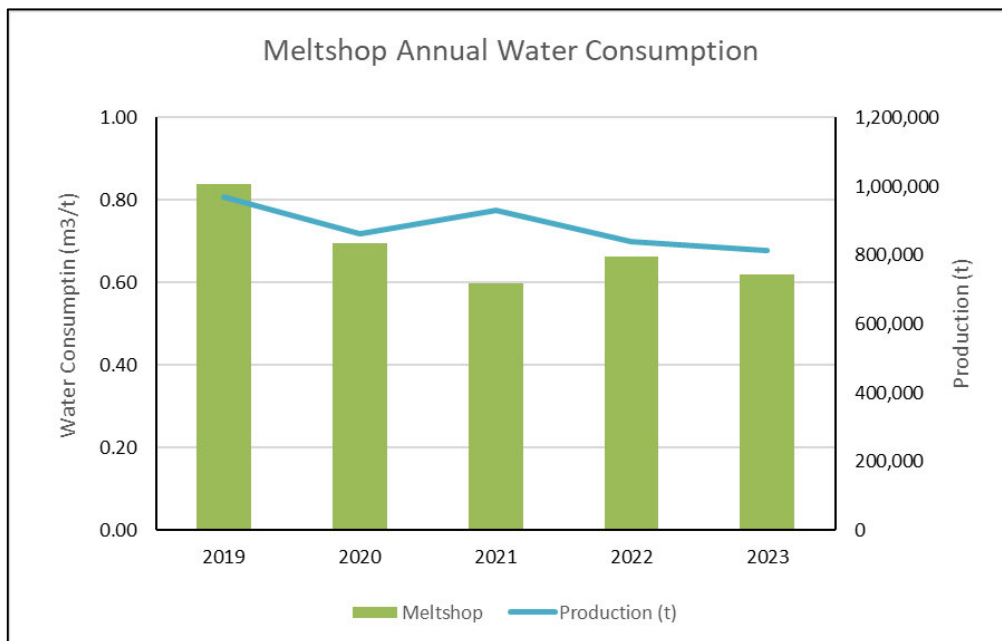


Figure 6: Meltshop water consumption (m³/tonne)

2023 water consumption per tonne in the Meltshop decreased slightly at 0.62m³/tonne compared to 0.66m³/tonne in 2022.

1.2.4 Waste Production

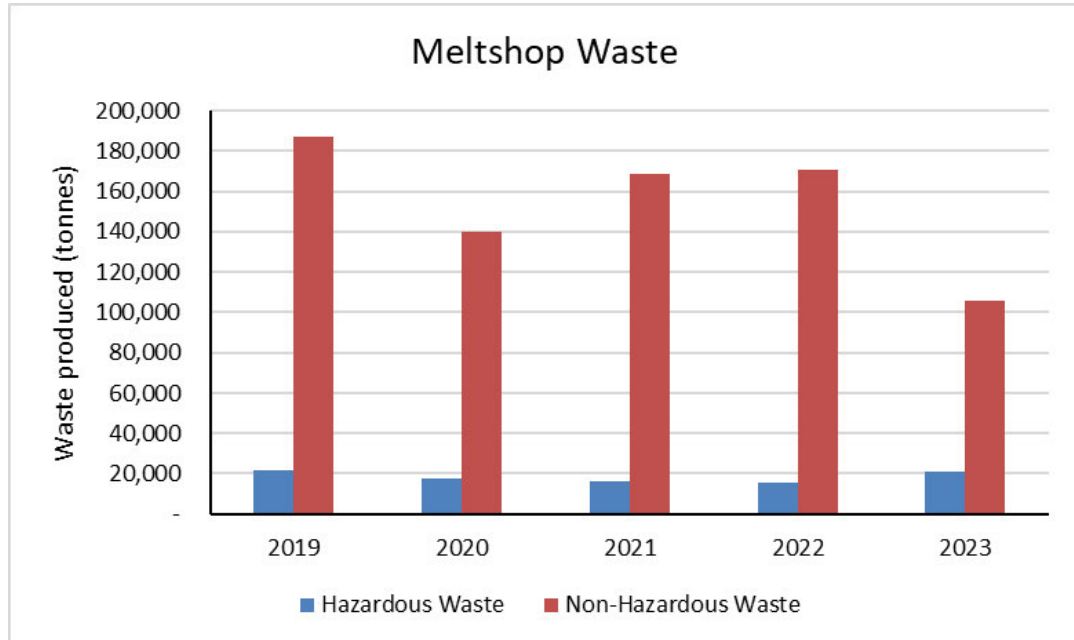


Figure 7: Meltshop waste production.

Hazardous waste production has increased slightly in 2023 in comparison to 2022. Non-hazardous waste production has decreased significantly following the implementation of a waste reduction strategy in 2023, which mainly focussed on improving the segregation of different waste streams at source.

1.2.5 Fugitive Emissions

Particulates are formed during EAF steelmaking and are created from the volatilisation of the steel scrap during the electric arc melting process. Large volumes of fume are generated during the melting process. Fume is drawn off both the electric arc and ladle furnace using extraction fans. The main fume discharge and any fugitive releases in these areas are captured by the roof canopy (total capture system) and conveyed by ducting to the abatement plant (bag house).

CELSA completed a large amount of maintenance work during their maintenance periods which has had a beneficial impact at reducing fugitive emissions and oil leaks, some of this work includes:

- Replacements of ducts to improve water consumption for cooling.
- Roof repairs to building reduce dust emissions.
- Black slag cooling and dust suppression spray installation.
- Change ducts to reduce water leaks and improve negative pressure and increase dust extraction power.
- Gunning refractory to improve lifetime of ducts.

Slag is produced during the making of steel and is a normal by-product of the EAF process. Slag from the EAF is tipped to flow beneath the furnace onto the slag bed. As this is conducted within the main Meltshop, any emissions arising from this are captured by the air collection and abatement system. The slag is then moved by a specially adapted bulldozer to an outside intermediate staging area, to blade the material out and allow cooling water to be sprayed onto the slag. The slag is kept in the staging area until

a cooled economic load has been assembled. It is then transported via dedicated wagons to the slag reprocessing plant on the other side of the Rover Way.

As part of the secondary steel process an artificial slag is generated on the steel ladle. After casting, this slag will be tipped to the ground. When cooled, it is also transported to the slag handling plant across Rover Way. As part of CELSA's circular economy business model, our by-product is sold to our contractor to be used in the asphalt production process at their on-site plant. The asphalt produced at the plant is used in the construction of new roads.

CELSA has two Turnkey Optical Particle Analysis System (TOPAS) ambient air monitors in place in the local community. The primary monitor, located at Willows High School, enables CELSA to gain a greater understanding of dust particulate concentration levels in Tremorfa. The primary TOPAS particulate monitor is a requirement listed on the environmental permit, and data is disclosed to NRW on a quarterly basis. The second reserve monitor is located on the roof of Baden Powell, the local primary school to enhance CELSA's understanding of dust levels in Tremorfa. This also provides us with supplementary data should the Willows High School monitor fail.

In 2023 the company installed an additional 2 particulate monitors at the material handling site adjacent to the Meltshop operations on Rover Way. The data that these monitors provide will further shed light on the efficacy of improvement projects to minimise fugitive dust emissions from activities on site. Currently, CELSA uses dust mitigation measures in accordance with the most recent Best Available Techniques (BAT) reference document for iron and steel production to manage fugitive dust generated by this activity.

In 2023 three permit breaches were reported concerning ambient air monitoring. All three incidents were due to monitor failures on 7th March, 1st August and 13th November respectively. The first incident was due to erosion around the heated inlet resulting in a blockage and consequential airflow error. The pump on the monitor was replaced following this as a precautionary measure. The second incident was the result of the flow level not being set after a routine filter change and service check, which caused an airflow error. Following this, monthly maintenance and service checks were set up with a separate air monitoring company to increase the likelihood of any deterioration of the monitor being detected prior to the point of failure. The final monitor failure was due to an airflow error. The monitor engineer came to site and replaced the airflow filter, and later came back to reset the flow which restored function to the unit.

Considering the age of the dust monitor and its failings over the past year, CELSA is in the process of upgrading the monitor to a newer model which will have particulate detection standards that are equivalent to or better than the existing unit at Willows High School. CELSA will notify NRW in advance of the monitor being replaced.

1.2.6 The review of annual production/treatment data set out in Schedule 4 Table S4.2

A1 Monthly Average Concentrations

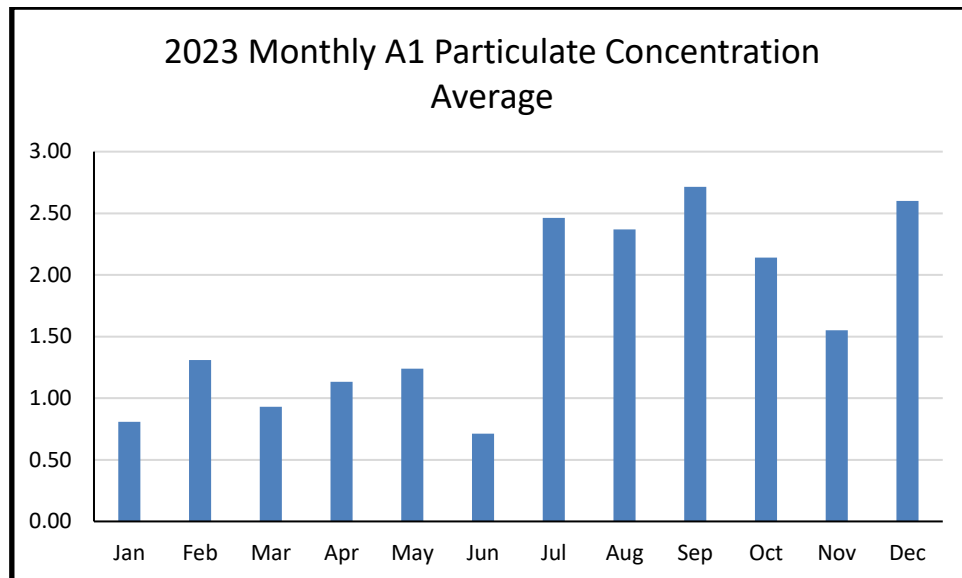


Figure 8: 2023 Meltshop A1 stack monthly average concentration of continuous particulate monitoring (mg/m³).

CELSA’s A1 continuous emissions are monitored and analysed throughout each shift and discussed in the daily morning meetings with the Meltshop senior managers, production personnel and engineers. Investigations are conducted to identify any issues that could contribute to negative data trends and any permit breaches.

There were two incidents in 2023 where the CEMS particulate monitor on the A1 stack failed to record data. In the first incident on the 13th of November, the CEMS monitor software was restarted following a crash. The monitor was reading live results to the operations team in the control room, but the background program that allows the data to be retained by the data storage unit did not reboot, resulting in a data gap. The second incident was caused by a complete loss of power to the site on 25th November which caused the probe to shut off. The background software restart issue had not yet been resolved, which resulted in a second data gap. The Meltshop Engineering Department are currently investigating how the CEMS particulate monitor can be added to an uninterruptable power supply to prevent future reoccurrence of this issue. The background software problem has now been resolved following a site visit by the CEMS maintenance contractor.

The daily average particulate concentration limit was exceeded once for emissions arising from the A1 stack in 2023. On the 21st of December a daily average of 6.1mg/m³ was recorded. An investigation is underway into the root cause of this limit exceedance. NRW will be notified as soon as the cause has been determined.

There were two breaches reported in 2023 associated with A5 stack emissions from the asphalt plant operated by SteelPhalt under CELSA’s environmental permit. The first incident was a data loss that occurred on 25th November because of the loss of power to site previously mentioned. Investigation into the issue found that the lithium battery had been damaged, preventing the system from restarting. SteelPhalt now carry out pre-start inspections of the data logger monitor to ensure that it is recording data prior to operating the plant.

CELSA Manufacturing (UK) Ltd Registered Office: Building 58, Castle Works, East Moors Road, CARDIFF CF24 5NN. Registration Number: 04577881

The second breach associated with asphalt plant operations was an exceedance of the hourly average particulate concentration limit of 20mg/m³ as stated in the permit. On the 11th of December a value of 30mg/m³ concentration was detected and the plant operations immediately suspended to allow an investigation to be completed. A mechanical check identified that the transfer screw gearbox for the bag filter house had failed. Following this incident, the inspection schedule for this equipment has been reviewed and shortened from once every 10 weeks to once every 5 weeks to prevent this issue from happening again in future.

Conclusion

In summary, improvements have been made in several areas, especially natural gas consumption. As CELSA looks to progress on its journey to Net Zero, ongoing improvements in resource efficiency will be continued. Despite a volatile energy market in 2023, we were able to reduce our energy consumption from the year before through chemical energy optimisation and the introduction of LED lightbulbs. CELSA's wastewater continues to be monitored and remains within the permitted limits applied by NRW.

The Environmental Induction Training provided to all new members of the company continues to be actively improved upon to ensure that individuals can make educated decisions with respect to environmental matters from their first day with the company onwards. Training refreshers on specific topics are also sent out and communicated once a month to refresh and update existing employees on the importance of the environment, and how their actions can have an impact. In 2024, CELSA will continue to manage and improve environmental impacts through the Environment Management System and strive to achieve the challenging targets set.

If you require any further information, please do not hesitate to contact the Environmental Department.

Yours sincerely,

