



Date: 31st January 2023

Mr Tony Leahey
Natural Resources Wales
Rivers House
St Mellons
Cardiff
CF3 0EY

Dear Mr Leahey

Re: Permit Number EPR/BS6149IQ Monitoring Returns

Please find enclosed a performance report for 2022 in accordance with Condition 4.2.2 of the Permit.

Should you have any queries please do not hesitate to contact us.

Yours sincerely,

Samuel Brookes

Environmental Manager
samuel.edward.brookes@rockwool.com

- 4.2.2 A report or reports on the performance of the activities over the previous year shall be submitted to Natural Resources Wales by 31 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
 - (b) the annual production/treatment data set out in Schedule 4 Table S4.2
 - (c) the performance parameters set out in Schedule 4 Table S4.3 using the forms specified in table S4.4 of that Schedule

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- (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

Emissions to Air

(i) Continuous Measurements (A1, A2, A19)

ROCKWOOL plans to replace the existing in-house CEM spreadsheet data handling system with an MCERTS data acquisition and handling system (DAHS) during Q1 2023. The aim is to improve CEM reliability and quality assurance of data going forward and the DAHS will meet the requirements of the standard EN 17255.

Line 1 Cupola (A1)

Line 1 cupola (emission point A1) was operational on 182 days in 2022. The cupola was not used at all in November and December 2022. Emissions of nitrogen oxides, sulphur dioxide, carbon monoxide and particulate matter were within limits throughout the operational time other than the occasions described below.

The particulate result was 10.4 mg/Nm³ on the 6th March 2022. The cupola restarted at 10:00 on 6th March 2022 following a 2 day shutdown. Particulate matter readings were spiking following start-up of the combustion system. There were no faults showing on the CEMS unit but the cupola operators cleaned the probe which settled the readings to normal levels. There are only 28 half hourly valid averages for the relevant 24 hour period. **The daily average value is therefore invalid (a minimum requirement of 43 valid half hourly averages are needed for a valid daily average).**

Parameter	Line 1 Operational Days	No. of exceedances	% in Compliance
Particulate Matter	182	1	99.5
Nitrogen Oxides	182	0	100
Sulphur Dioxide	182	0	100
Carbon Monoxide	182	0	100

Line 2 Cupola (A2)

Line 2 cupola (emission point A2) was operational on 321 days in 2022. Emissions of nitrogen oxides, sulphur dioxide, carbon monoxide and particulate matter were within limits throughout this time other than the occasions described below.

The particulate result was 14.1 mg/Nm³ on the 6th May 2022. The cupola had a 14.5 hour down day between 04:00-18:30 on 6th May 2022. Particulate matter readings were spiking prior to and following start-up of the combustion system. There were no faults showing on the CEMS unit but the cupola operators cleaned the probe. Electrical Maintenance also took the probe out to check the wiring which was found to be fine. The probe was reinstalled and readings settled to a normal level. There are only 19 half hourly valid averages for the relevant 24 hour period. **The daily average value is therefore invalid (a minimum requirement of 43 valid half hourly averages are needed for a valid daily average).**

The SO₂ result was 2,236 mg/Nm³ on the 17th May 2022. The cupola restarted at 18:00 on 17th May 2022 following a 12 hour shutdown. SO₂ readings were spiking following start-up of the combustion system. Cupola Operators reported SO₂ spikes and adjusted process conditions to try to improve the situation. Readings started to stabilise approximately 03:00 on 18th May 2022. There are only 24 half hourly valid averages for the

relevant 24 hour period (00:00–06:00 and 18:00–00:00). **The daily average value is therefore invalid (a minimum requirement of 43 valid half hourly averages are needed for a valid daily average).**

The SO₂ result was 2,205 mg/Nm³ on the 21st June 2022. The cupola restarted at 15:00 on 21st June 2022 following a 36 hour shutdown. SO₂ readings were spiking following start-up of the combustion system. Cupola Operators adjusted process conditions which improved the situation. Readings started to stabilise approximately 18:00 on 21st June 2022. There are only 10 half hourly valid averages for the relevant 24 hour period (00:00–06:00 and 18:00–00:00). **The daily average value is therefore invalid (a minimum requirement of 43 valid half hourly averages are needed for a valid daily average).**

The SO₂ result was 2,255 mg/Nm³ on 29th June 2022, 24 hour average and **permit exceedance resulting in a Schedule 5 notification**. The process was adjusted in order to stabilise stack temperature. Product output and blast air were reduced to try to bring SO₂ within limit but the readings remained high. A decision was taken to change the charge recipe on the morning of 30th June to reduce sulphur sources such as coke, slag and cement.

Parameter	Line 2 Operational Days	No. of exceedances	% in Compliance
Particulate Matter	321	1	99.7
Nitrogen Oxides	321	0	100
Sulphur Dioxide	321	3	99.1
Carbon Monoxide	321	0	100

Line 3 Cupola (A19)

Line 3 cupola (emission point A19) was operational on 326 days in 2022. Emissions of nitrogen oxides, sulphur dioxide, carbon monoxide and particulate matter were within limits throughout this time other than the occasions described below.

The CO result was 67 mg/Nm³ on 22nd June. The cupola shutdown at 01:00am in preparation for a 2-3 day stop. CO readings were spiking prior to the shutdown of the combustion system. There are only 2 half hourly valid averages for the relevant 24 hour period (00:00–06:00 and 18:00–00:00). **The daily average value is therefore invalid (a minimum requirement of 43 valid half hourly averages are needed for a valid daily average).**

The CO result was 70.2 mg/Nm³ on 12th August. The cupola had been shut down for a number of days before starting up at around midday on the 12th August. CO readings were spiking on start-up of melting. There are only 10 half hourly valid averages for the relevant 24 hour period (00:00–06:00 and 18:00–00:00). **The daily average value is therefore invalid (a minimum requirement of 43 valid half hourly averages are needed for a valid daily average).**

The CO result was 51.8 mg/Nm³ on 26th August. The cupola shutdown at 04:00am and started back up at 17:00pm. CO readings were spiking on start-up of melting. There are only 12 half hourly valid averages for the relevant 24 hour period (00:00–06:00 and 18:00–00:00). **The daily average value is therefore invalid (a minimum requirement of 43 valid half hourly averages are needed for a valid daily average).**

Parameter	Line 3 Operational Days	No. of exceedances	% in Compliance
Particulate Matter	326	0	100
Nitrogen Oxides	326	0	100
Sulphur Dioxide	326	0	100
Carbon Monoxide	326	3	99.1

(ii) Periodic Measurements

A total of 204 triplicate tests (612 individual tests) must be carried out in a year. A summary of 2022's performance is shown below:

Source (Emission Point)	No. Triplicate Tests	No. Exceedances	Details of Exceedances
Cupolas (A1, A2, A19)	24	0	
Spinning Chambers (A3, A4, A21)	36	2	Line 1 Spinning Chamber (A3) Particulates and Ammonia. See details below.
Curing Ovens (A5, A6, A22)	42	0	
Cooling Zones (A7, A8, A23)	36	0	
Pipe Section Machines (A12, A13a, A13b, A13c, A14)	40	0	
Dust Filters (A9, A10, A11, A18, A24)	10	0	
Cement Briquette Plant (A25)	6	0	

NB – 194 triplicate tests were undertaken in 2022 as RSM3 (A13c) was decommissioned in 2021, so was not tested during this period. All other emission points were tested as per the requirements of the Permit.

Biannual 1 air emissions testing showed that Line 1 Spinning Chamber (A3) **exceeded both the Particulates and Ammonia permit limit resulting in a Schedule 5 notification**. This prompted an internal investigation. For Particulates, the dual filtration system (hessian sack plus ROCKWOOL slabs) for the spinning process emissions were inspected and cleaned. For the Ammonia, the temperature control in the ducting of the spinning process exhaust was reviewed and additional water is now being added. Running at a cooler temperature should reduce the ammonia emissions.

Following these changes, Line 1 Spinning Chamber (A3) passed the Biannual 2 emissions for both Particulates and Ammonia tests.

(iii) Impact Monitoring

ROCKWOOL continues to monitor the ambient sulphur dioxide values in the local area by 2 different means; diffusion tubes and a continuous monitor.

The continuous monitor is located in Soar Chapel, downwind of the prevailing westerly wind. The diffusion tubes are located within a 2km radius in all directions from the factory.

Both methods typically show values of less than 10µg/m³, which is below the sulphur dioxide annual mean of 20µg/m³ in the Air Quality Strategy Volume 1 for the UK for the protection of vegetation and ecosystems (24 hour mean of 125µg/m³ for protection of human health).

Data is usually presented to residents at regular meetings. However, we have been unable to hold these due to Covid but the plan is to re-introduce them in 2023. The data is also sent to Bridgend County Borough Council.

Emissions to Surface Water

(i) Daily Measurements

The Permit requires daily tests to be carried out on water leaving site to stream. However, the discharge to sewer outlet now ensures that surface water to stream is kept at a minimum and only occurs on rare occasions of continuous very heavy rain. Daily visual checks are carried out but weekly water samples are carried out on the settlement tank for compliance to our discharge to sewer consent.

There were two occasions during 2022 where surface water was discharged to stream via the overflow, on the 11th May and 25th October. These were due to heavy rainfall but only a small sample volume was collected. This composite sample was tested in ROCKWOOL's own laboratory on the day of the overflow and no exceedances were recorded.

See a summary for 2022 below:

Parameter	No. Samples	No. Exceedances	% in Compliance
pH	2	0	100
Ammoniacal Nitrogen	2	0	100
Phenol	2	0	100
Suspended Solids	2	0	100

Note that ROCKWOOL plan to review the surface water discharge monitoring approach in Q1 2023 to address issues identified in the Water OMA report from May 2022.

(ii) Monthly Measurements

In addition, to the daily visual checks and weekly settlement tank samples (water being discharged to sewer) that are analysed in ROCKWOOL's own laboratory, a monthly stream sample can be sent to an external laboratory with ISO 17025 accreditation if sufficient quantities have been released to stream. Results for ammoniacal nitrogen, phenol, suspended solids, COD, formaldehyde and oil/grease can be provided. However, as we have not discharged surface water to stream in sufficient quantities in 2022, no samples have been provided.

(iii) Impact Monitoring

Two surveys measuring the quality of the stream that emission points W1 and W2 discharge into were carried out by a consultant in June and October 2022.

Conclusion from October report as follows:

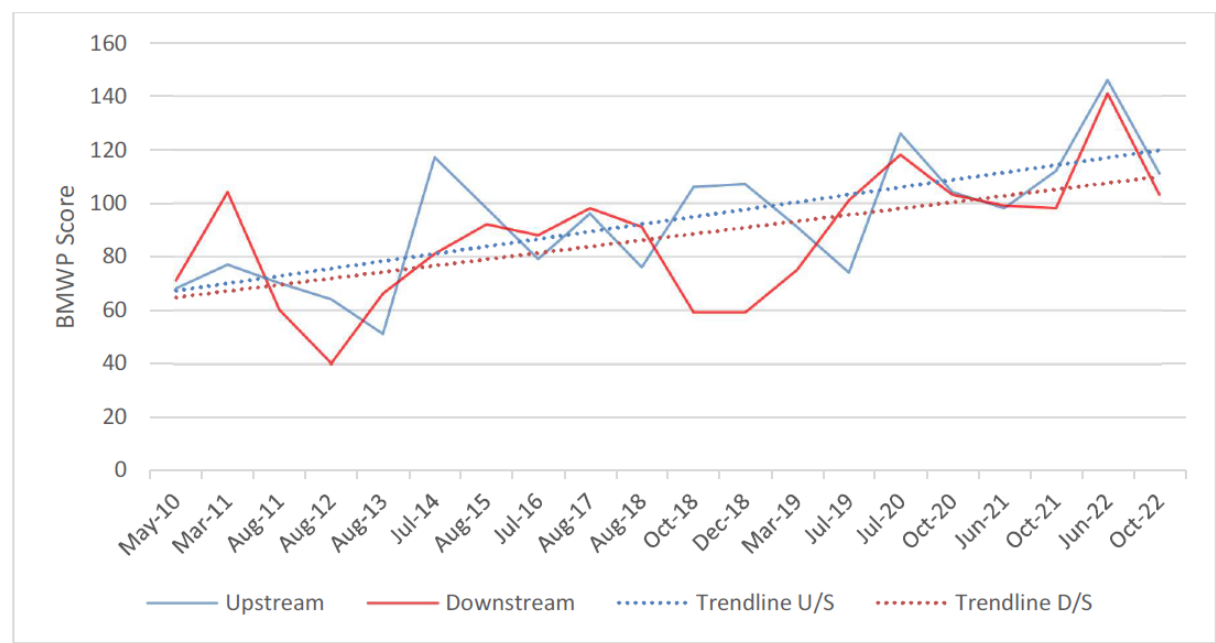
“Combined BMWP and combined No'. of Taxa data suggest a trend of general increase in water quality at upstream and downstream sites over the last few years. 2022 data are within that trend.”

“ASPT, the more reliable metric of water quality, demonstrates a trend of increasing convergence between the upstream and downstream sampling locations suggesting that water quality is not adversely impacted by inputs from the ROCKWOOL plant.”

Consultant agreed to review the frequency of testing as the trend over the last 10 years or so is one of continued improvement with only seasonal fluctuations (see figures 1, 2 and 3).

Survey to be planned if there is a large discharge to the stream, or to check every few years to ensure the standards have been maintained.

**Figure 1 Comparison of Combined Upstream and Combined Downstream Outflow
BMWP scores May 2010 – October 2022.**



**Figure 2 Comparison of Combined Upstream and Combined Downstream ASPT scores
May 2010 – October 2022.**

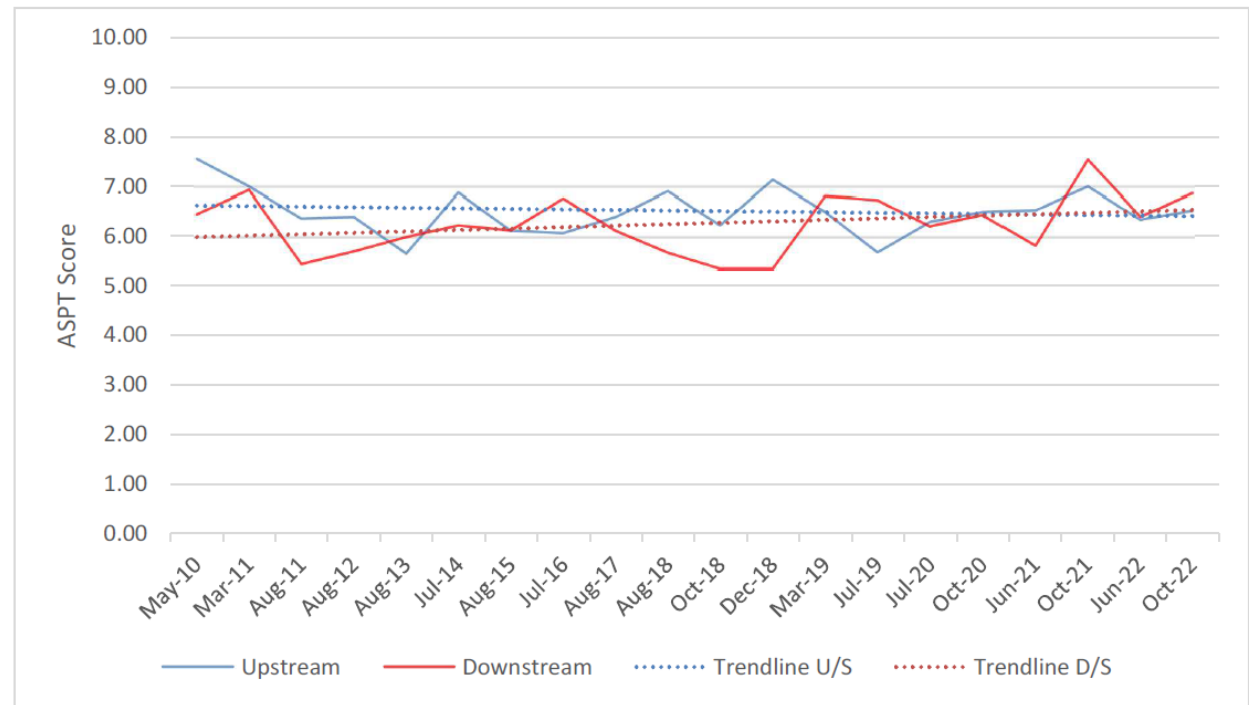
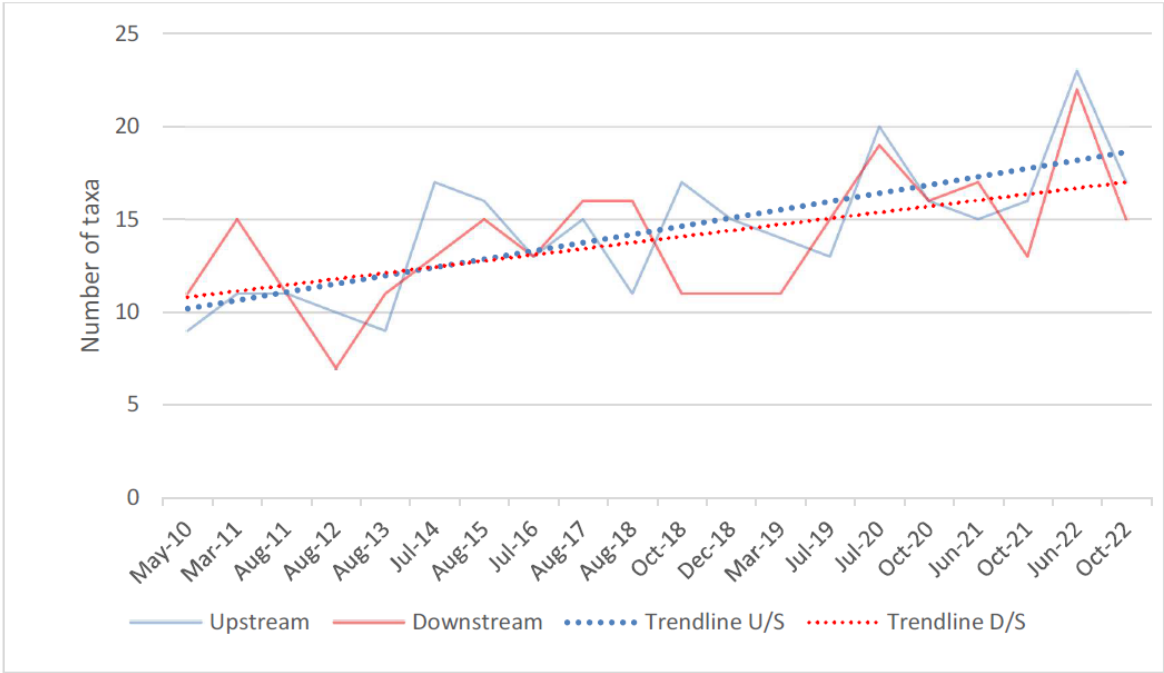


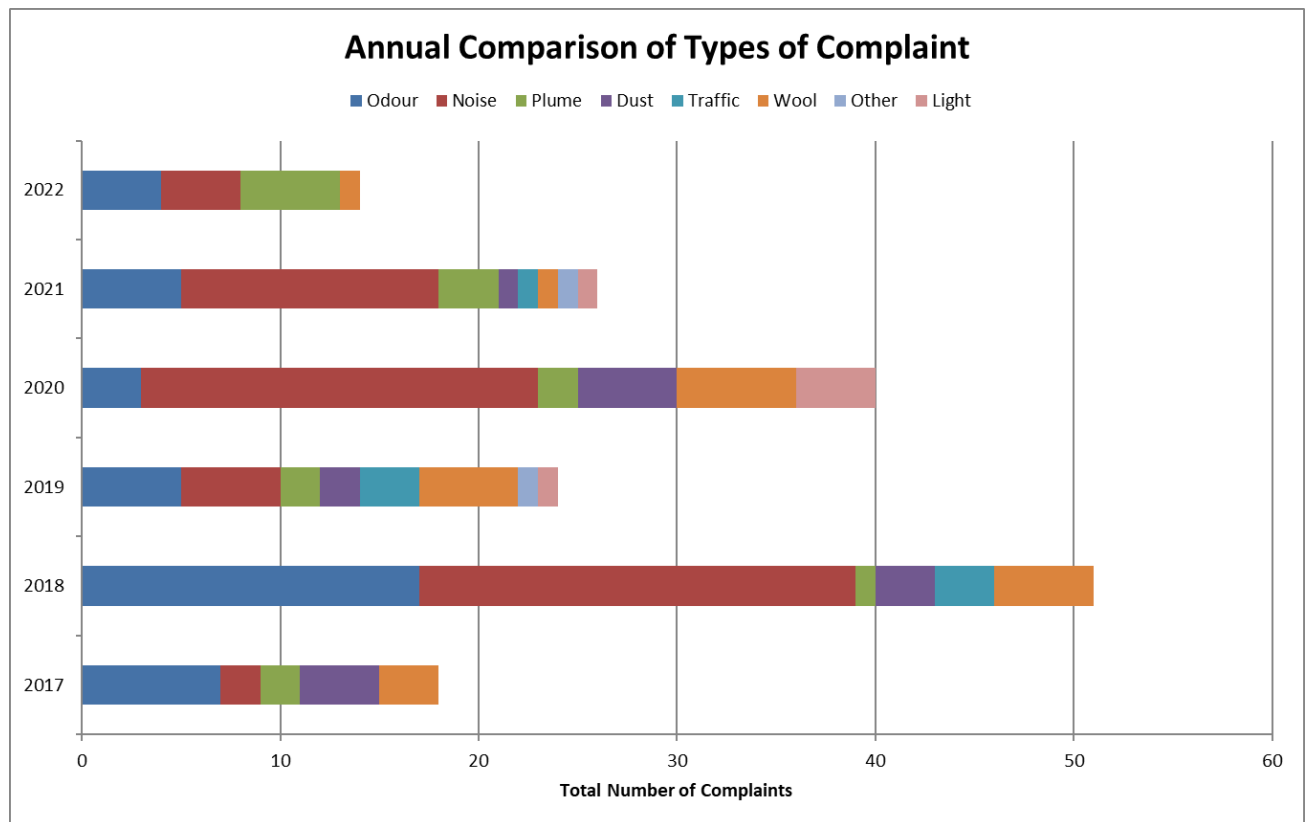
Figure 3 Comparison of Combined Upstream and Combined Downstream No'. of Taxa
May 2010 – October 2022.



Environmental Complaints

The total number of complaints received in 2022 decreased compared to 2021.

See the annual comparison graph for complaints below:



The majority of the complaints received in 2022 referenced plume (5), odour (4) and noise (4).

All complaints are registered on an internal RockSHE system which aims to identify the root cause and allows the user to assign corrective actions. This is monitored by both ROCKWOOL Limited and our parent company ROCKWOOL Group.

2022 saw a significant decrease in the number of complaints compared to 2021. Noise monitors have been procured to continuously monitor noise levels at the site boundary and will be installed in Q1 2023.

Energy, Water & Waste

In 2022, ROCKWOOL Ltd maintained certification to ISO 14001 and ISO 50001.

Sustainability goals are a priority for ROCKWOOL, with monthly energy analysis (gas, electricity and CO₂) and an associated internal report helping maintain the focus on these key areas.

Electricity consumption in 2022 was similar to 2021. Electricity efficiency across all lines improved on the previous year. Several project improvements, such as voltage optimisation, have helped to improve the electricity consumption and efficiency figures.

Gas consumption increased in 2022 compared to 2021. Gas efficiency on all lines worsened slightly compared to 2021 possibly due to several periods of cold weather, particularly in Q4, and all three lines were running before Line 1 was shut down in October for the foreseeable future.

Coke consumption and efficiency was very similar to the figures reported last year due to a continuation of the use of the same quality of the coke as seen in 2021.

All energy efficiencies will continue to be monitored over the course of 2023.

Water used in the process is supplemented where possible by rainfall, so mains water use remains as low as possible. There is also a dedicated process water storage room on site to store more water for reuse within the process. However, in 2022 our public water consumption increased compared to the usage in 2021, and the water efficiency also worsened, possibly due to an increase in production.

The only waste stream on site that goes to landfill continues to be conveyor belts and recycling options are considered when they arise. As previously documented in the South Wales with Both Eyes Open report (August 2020 – July 2021), conveyor belt recycling was highlighted as a common issue within South Wales and there are ongoing discussions between NRW and Welsh Government as to potential solutions.

The “RockCycle” recycling scheme accepted 1,568 tonnes of stone wool from external sources (waste product and off-cuts) for on-site processing and recycling in 2022. This tonnage increased from the previous year, due to an increase in returns from customers. All wool returned to site is milled and then mixed with other materials to form a cement briquette. Cement briquettes are then melted with basalt and slag in the cupola to form completely new stone wool products. None of the returned wool is landfilled – it is all used to create new products. This is an offering which is highly rated by our customers as it assists them with their waste management plans.

The ROCKWOOL Group has established Sustainability Goals covering energy (CO₂), water and waste that apply to the global company with target dates of 2022 and 2030. Additionally, Group have supplemented existing sustainability targets with a decarbonisation goal that has been approved by the Science Based Targets initiative (SBTi). ROCKWOOL UK has aligned its targets accordingly.

(b) the annual production/treatment data set out in Schedule 4 Table S4.2

In 2022, ROCKWOOL produced 155,775 tonnes of mineral wool.

(c) the performance parameters set out in Schedule 4 Table S4.3 using the forms specified in table S4.4 of that Schedule

The appropriate annual forms for water usage, energy usage, waste produced and recycled ROCKWOOL were sent to NRW on 27th January 2023.