BAT Assessment - NOx

Table 1.4

BAT-associated emission levels (BAT-AELs) for channelled emissions to air of NO_X and indicative emission level for channelled emissions to air of CO from thermal treatment

Substance/Parameter	BAT-AEL (mg/Nm^3) (Daily average or average over the sampling period)
Nitrogen oxides (NO_X) from catalytic oxidation	5 -30 ([36])
Nitrogen oxides (NO_X) from thermal oxidation	5 -130 ([37])
Carbon monoxide (CO)	No BAT-AEL ([38])

The associated monitoring is given in BAT 8.

BAT 8. BAT is to monitor channelled emissions to air with at least the frequency given below and in accordance with EN standards. If EN standards are not available, BAT is to use ISO, national or other international standards that ensure the provision of data of an equivalent scientific quality.

Emissions to Air from the VCU are measured routinely vs the frequency within the environmental permit for substances including NOx. Analysis is taken by an MCerts accredited external company who measure NOx to EN 14792 standard as an average over the sample period. We are also certified to ISO14001 EMS.

Results to date following restart of the plant in 2022 for the VCU - NOx are below:

- December 2023 – 71mg/m3
- August 2022 – 104mg/m3

BAT Assessment – Total Phosphorus

Table 4.2: BAT-AELs for direct emissions of nutrients to a receiving water body

Parameter	BAT-AEL (yearly average)	Conditions
Total nitrogen (TN) ([1])	5.0–25 mg/l ([2]) ([3])	The BAT-AEL applies if the emission exceeds 2.5 t/yr.
Total inorganic nitrogen (N_{inorg}) ([1])	5.0–20 mg/l ([2]) ([3])	The BAT-AEL applies if the emission exceeds 2.0 t/yr.
Total phosphorus (TP)	0.50–3.0 mg/l ([4])	The BAT-AEL applies if the emission exceeds 300 kg/yr.

([1]) Either the BAT-AEL for total nitrogen or the BAT-AEL for total inorganic nitrogen applies.
([2]) The BAT-AELs for TN and N_{inorg} do not apply to installations without biological waste water treatment. The lower end of the range is typically achieved when the influent to the biological waste water treatment plant contains low levels of nitrogen and/or when nitrification/denitrification can be operated under optimum conditions.
([3]) The upper end of the range may be higher and up to 40 mg/l for TN or 35 mg/l for N_{inorg}, both as yearly averages, if the abatement efficiency is ≥ 70 % as a yearly average (including both pretreatment and final treatment).
([4]) The lower end of the range is typically achieved when phosphorus is added for the proper operation of the biological waste water treatment plant or when phosphorus mainly originates from heating or cooling systems. The upper end of the range is typically achieved when phosphorus-containing compounds are produced by the installation.

BAT 4. BAT is to monitor emissions to water in accordance with EN standards with at least the minimum frequency given below. If EN standards are not available, BAT is to use ISO, national or other international standards that ensure the provision of data of an equivalent scientific quality.

Total Phosphorus is monitored in accordance with EN ISO 15681-1 daily via a 24-hour flow proportional composite sample.

Average for 2023 was 3.94mg/l total with a net Total Phosphorus result of 2.94mg/l. This is due to at least 1mg/l coming into the process via the towns water feed to the cooling towers which enters the W1 clean trade export via the cooling water blowdown. The EA informed me that the net contribution is to be reported as instructed by sector leads.