



Environmental Performance Report Bridgend Paper Mill 2022

Reporting Condition 4.2.2

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Date: 31st Jan 2023

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Permit Number: EP3738NG

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1.0 Introduction

The production of this report is a requirement of the Mill's EPR Permit section 4.2.2.

The aim of this document is to provide a summary report of Bridgend Paper Mill's performance for the calendar year 2022.

The report identifies performance parameters, emissions to air and water, waste disposal, water consumption and energy use information.

2.0 Summary

In 2022 there has been the completion of the major capital investment with the new paper machine (namely Neptune) beginning operation on 30th May 2022. Once the commissioning phase is fully complete an additional 75,000 tonnes will be produced annually.

The introduction of the Neptune machine has meant that the importation of paper reels to site is no longer required as the mill becomes self-sufficient. This has eliminated the large number of European lorries arriving at the mill often in convoy, which caused problems in offloading and storage.

Converting outputs have been consistent all year and with the new Neptune machine being introduced will result in the site becoming self-sufficient with little to no reliance on outside sources of parent reels.

Converting output was approx. 80,000 tonnes (gross) and papermaking approx. 69,000 tonnes (gross). The paper balance was filled by importing paper from sister mills in Europe and mills from some of our competitors, which will be eliminated from 2023 onwards.

General environmental performance from the site has been maintained throughout 2022 with no breaches of consent limits with data showing a performance well below those limits.

The site was audited against its ISO 14001 environmental management system during the year and received an external verification audit for the Greenhouse Gas (GHG) permit. No significant non-conformances were raised against these requirements.

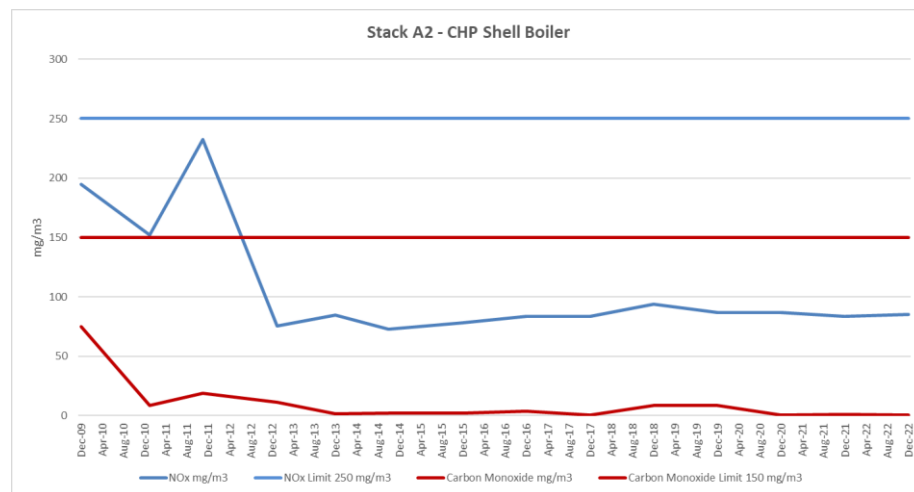
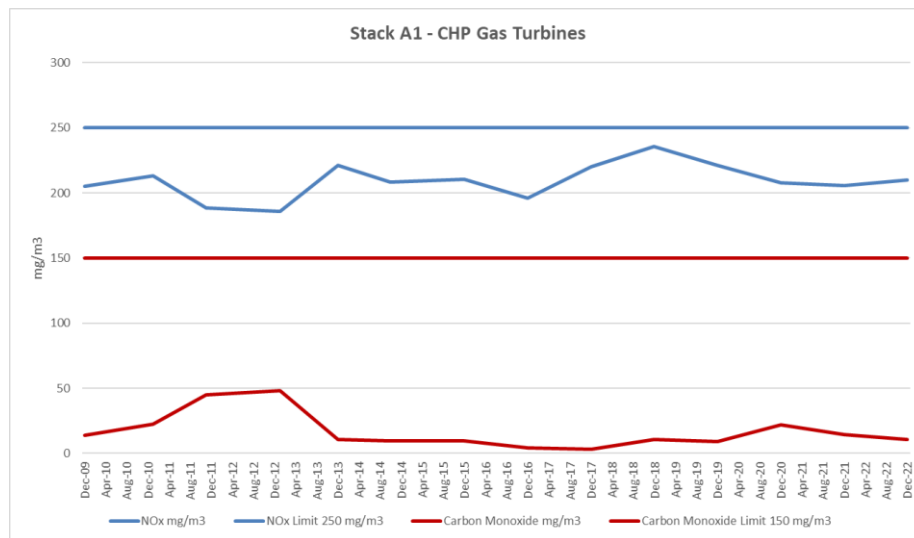
3.0 Performance Parameters

The quarterly returns for the performance parameters remained stable for all parameters throughout 2022.

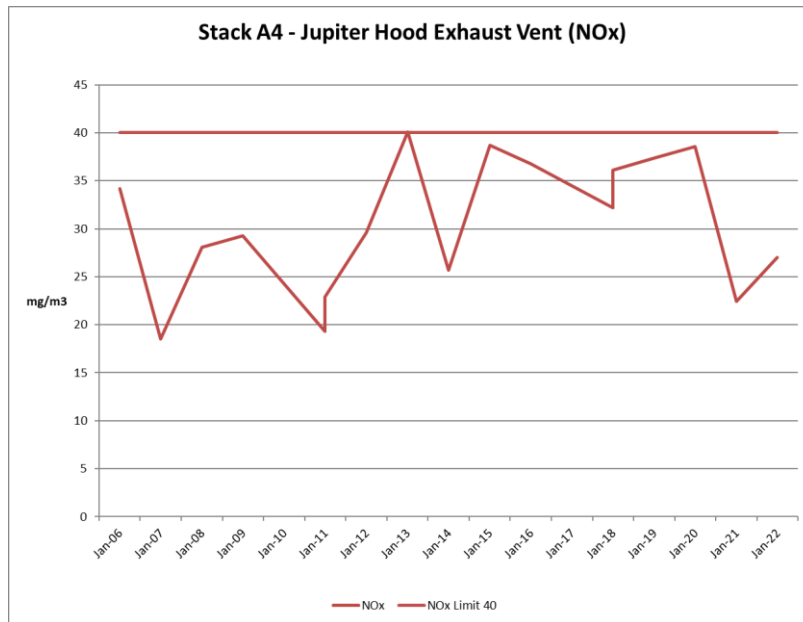
Parameter	Unit	Q1 2022	Q2 2022	Q3 2022	Q4 2022
NO _x /ADT	Tonnes/ADT	0.002	0.002	0.001	0.001
CO ₂ /ADT	Tonnes/ADT	0.790	0.808	0.633	0.729
BOD/ADT	kg/ADT	0.008	0.014	0.006	0.009
Suspended Solids/ADT	kg/ADT	0.121	0.114	0.023	0.088
Nitrogen nutrient (N) / ADT	kg/ADT	0.043	0.040	0.013	0.053
Phosphorus nutrient (P) / ADT	kg/ADT	0.002	0.001	0.001	0.001
COD / ADT	kg/ADT	0.315	0.307	0.120	0.303
AOX / ADT	kg/ADT	0.004	0.003	0.001	0.003

4.0 Emissions to Air

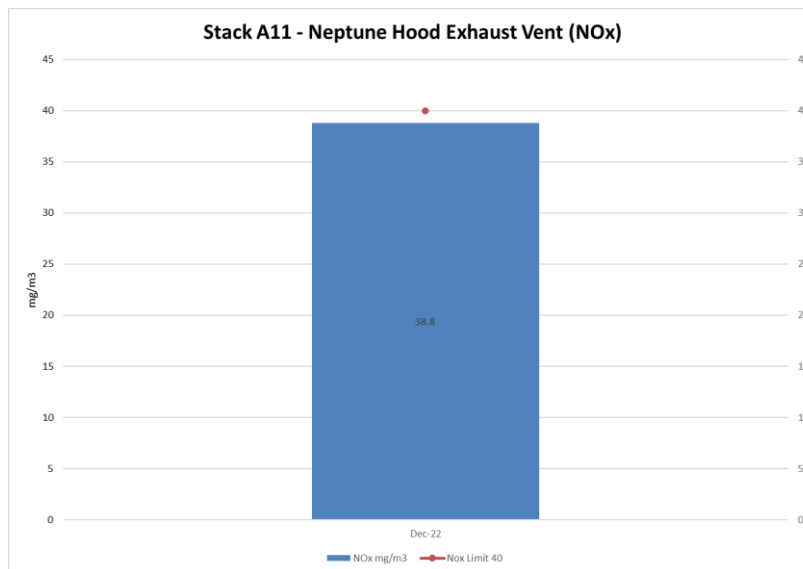
Annual emissions test results for Stack A1 (HRSG 1 & HRSG 2), which is contained within the CHP plant on site, were below permit limits as per previous years testing. All parameters for the CHP shell boiler (Stack A2) remain stable. The installation of Wet NOx abatement (on the gas turbines) could not be completed in 2022 as the final stage of completing pump installation and control panel modifications requires a 3-day shutdown per turbine. These shutdowns are to be planned and aligned with production in Q1 2023.



The NO_x emissions test result for Stack A4 (Jupiter Hood Exhaust Vent) was below the consent limit at 22.4mg/m³.

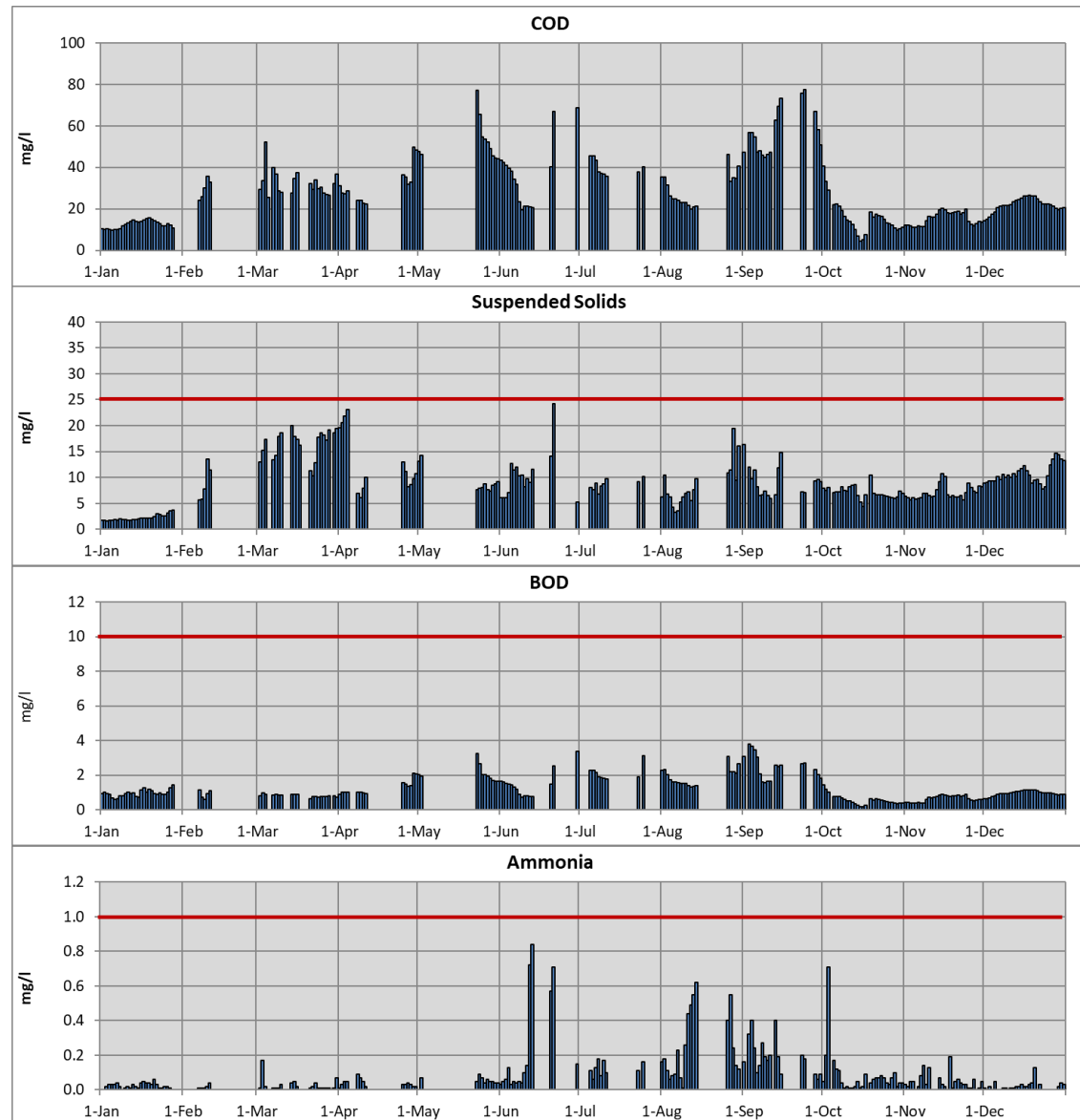


The NO_x emissions test result for Stack A11 (Neptune Hood Exhaust Vent) was below the consent limit at 38.8 mg/m³. The machine is still being commissioned and continued optimisation of the hood burner controls will continue in Q1 2023.

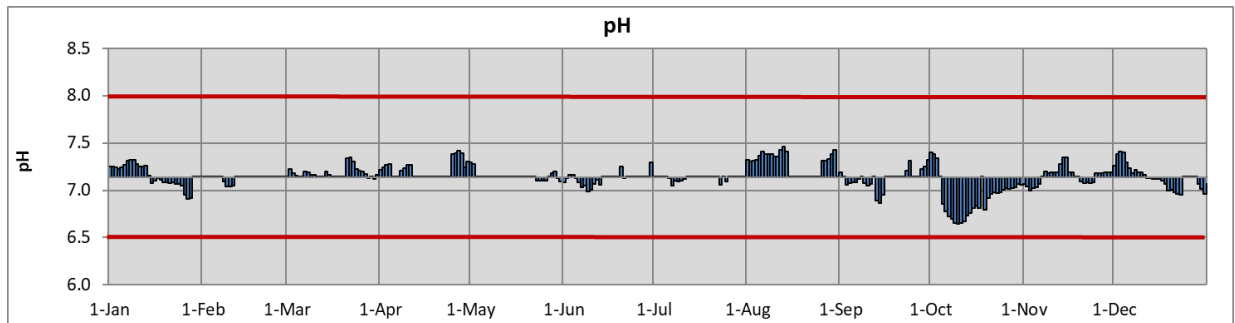


5.0 Emissions to Water

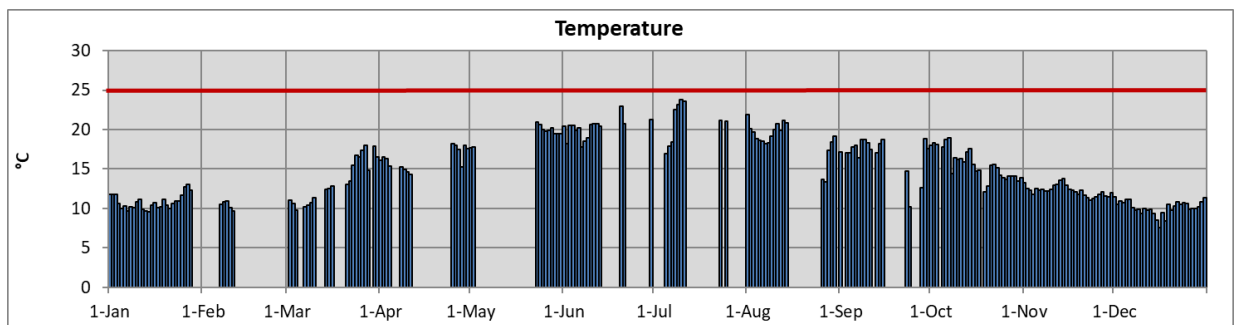
Emissions to water results for 2022 were all compliant with parameters being well below permit limits. This is evident in the graphs below:



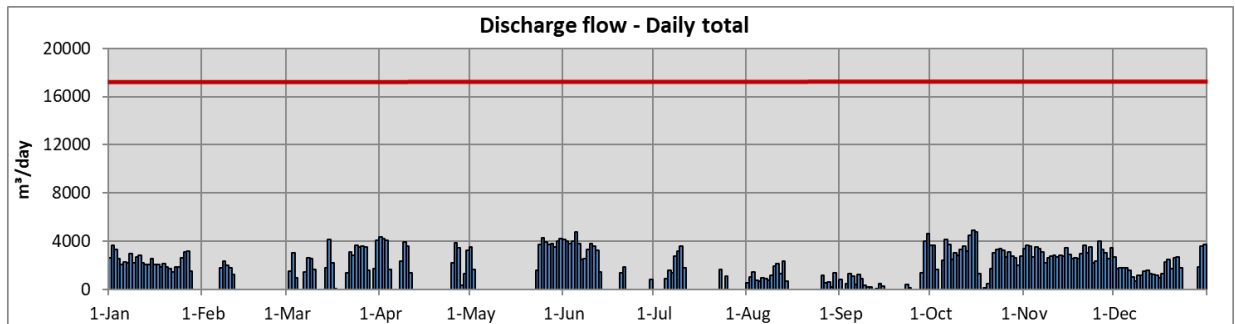
The pH of the effluent discharge to the River Llynfi was within the permit limits for 2022, as is shown in the graph below:



The discharge temperature has consistently been below the permit limit of 25°C.

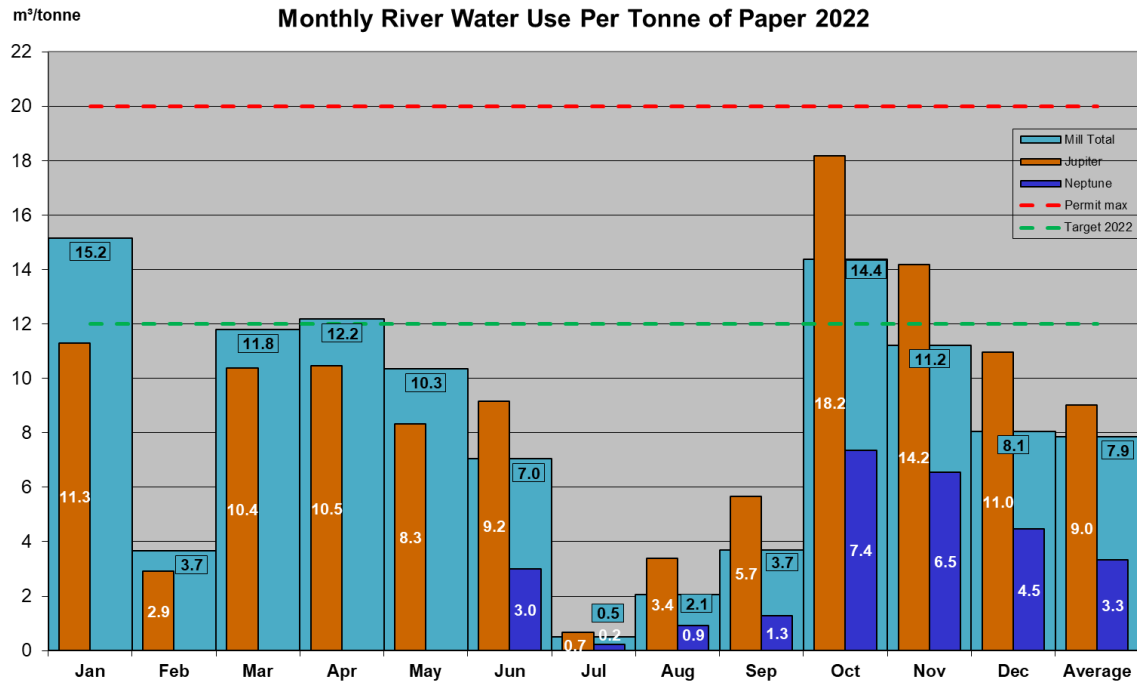


The daily effluent volumes discharged in 2022 were significantly below the permit limit of 17,500m³ per day and apart from the odd spike, typically less than 4,000m³ per day.

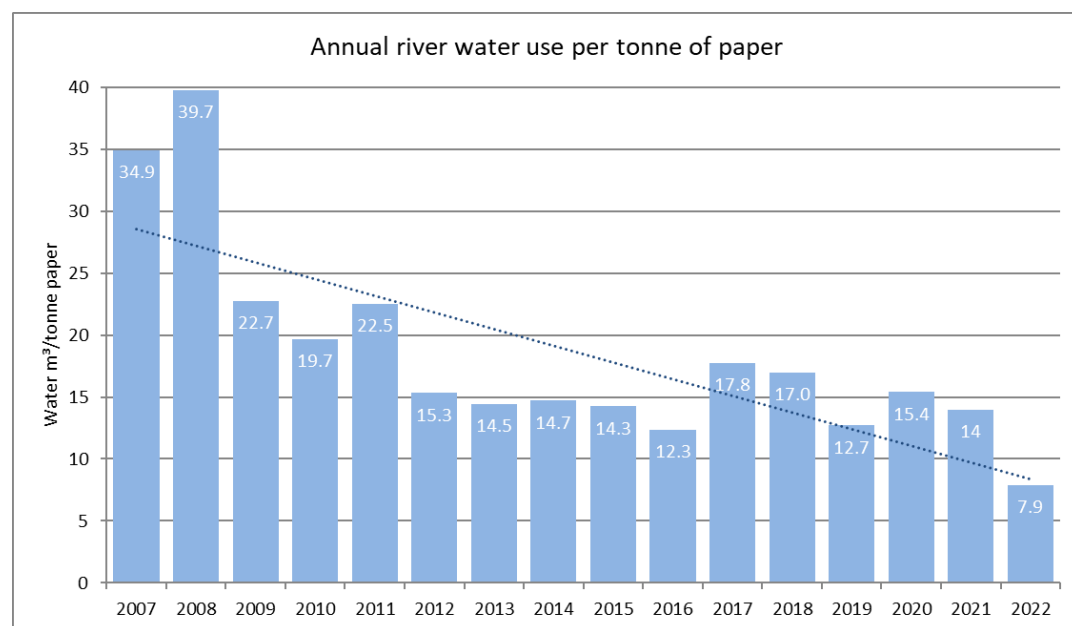


WATER USE CHARTS

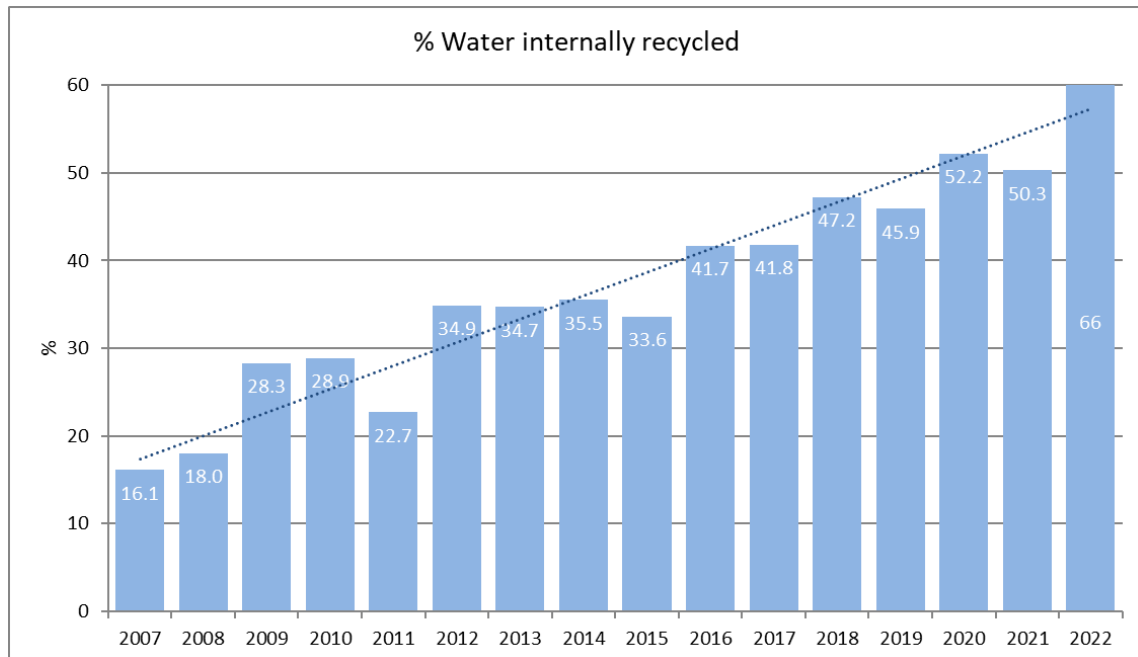
The trend in water use per air-dried tonne of paper (ADT) was consistently below the revised 2014 BREF target of 20m³/ADT. Low levels experienced in July period were as a result of being on increased recycling to manage the repair of the final settlement tank.



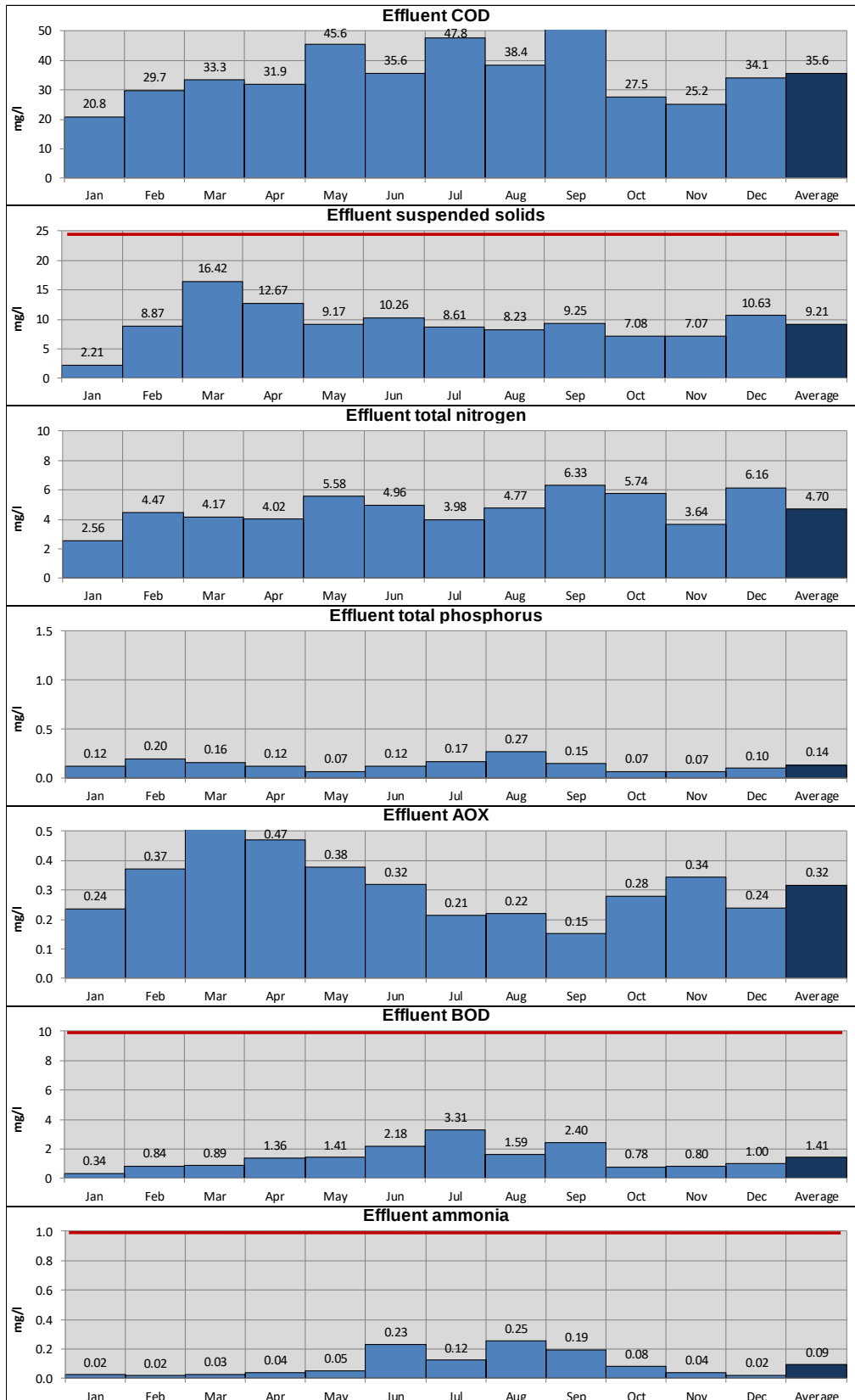
Historic trend demonstrates a downward curve, as can be seen from the graph below despite a slight upward movement in 2017 during commissioning on the new water plant. This downward trend is expected to continue with the introduction of the new (more efficient) Neptune machine in 2022 and beyond.



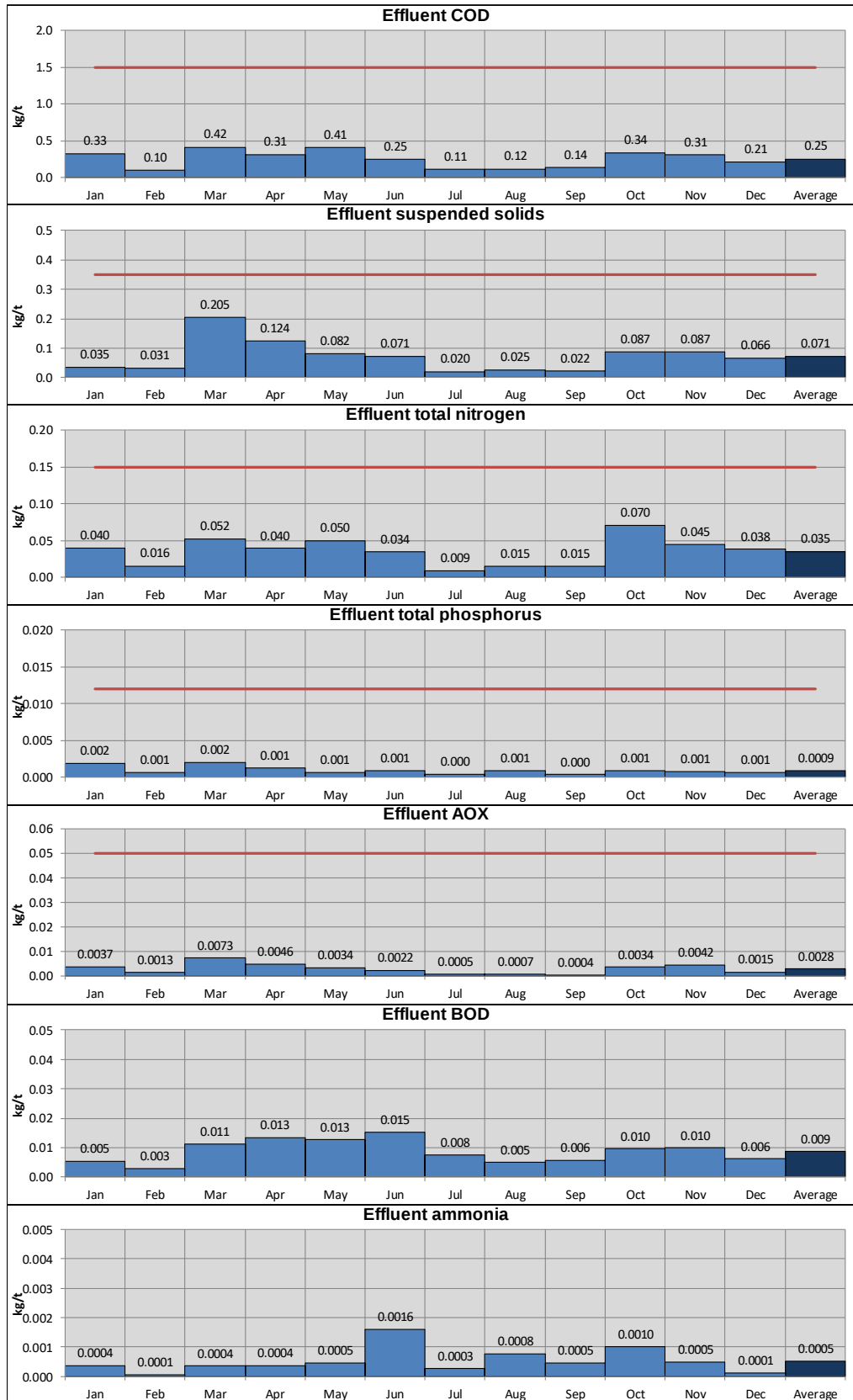
The declining trend in water usage is reflected in the quantity of water that is recycled as shown in the graph below.



EMISSIONS TO WATER (mg/l)



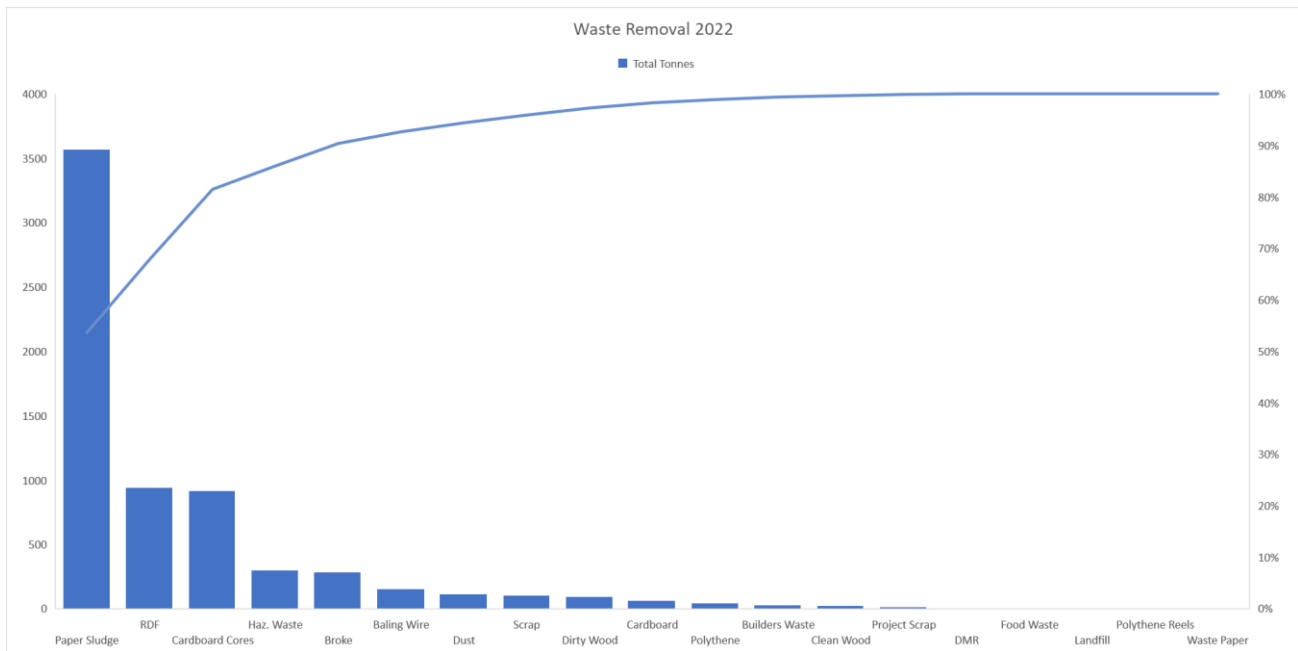
EMISSIONS TO WATER (monthly kg/tonne)



6.0 Waste

The following list is typical of waste streams emanating at Bridgend mill and their respective disposal routes:

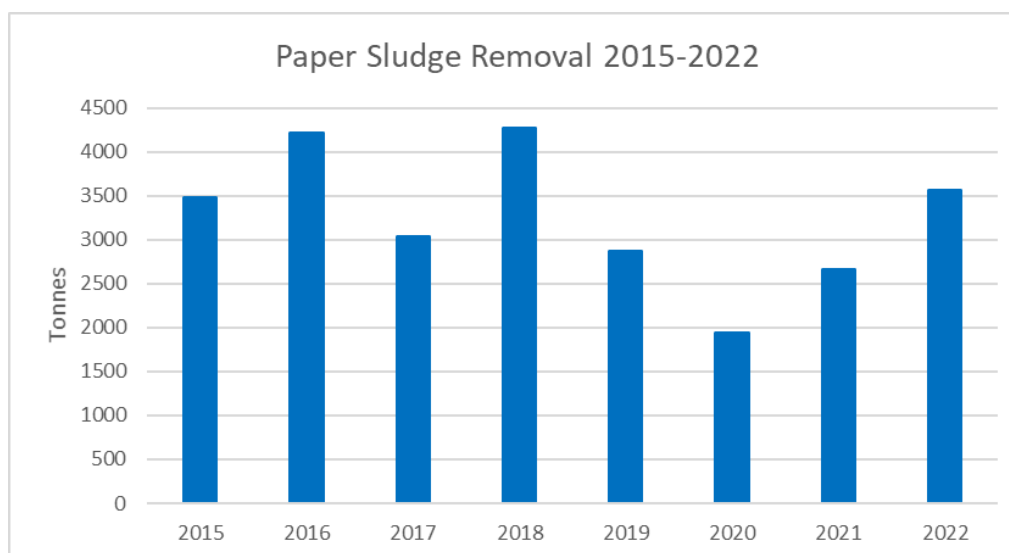
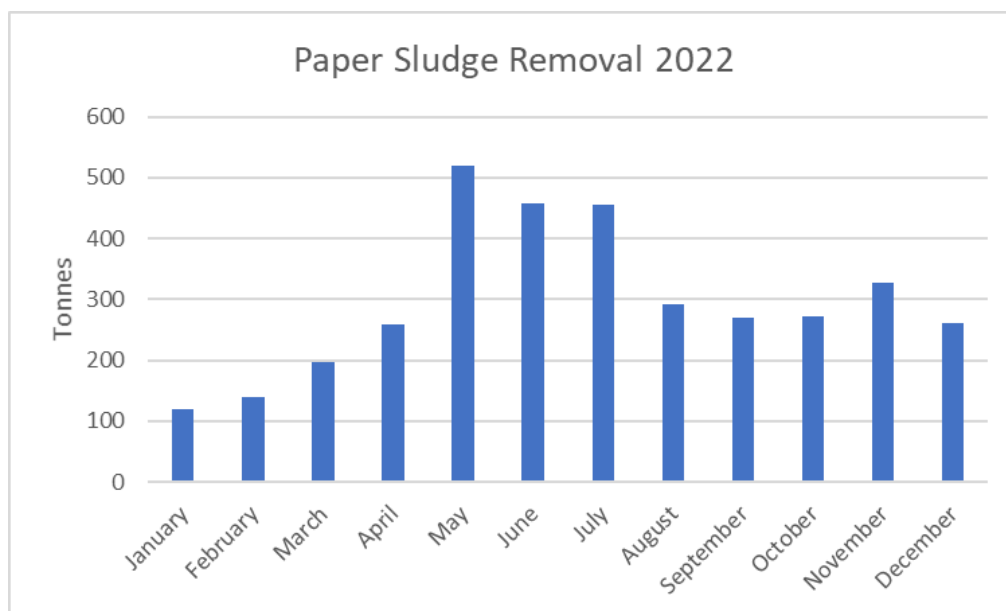
1. Paper sludge – primarily cattle bedding
2. General Waste – Treated (Recyclables segregated from general waste) or Recovered (Refuse Derived Fuel Plant)
3. Metals – Recycled
4. Oils – Recovered
5. Cardboard and Polythene – Recycled following separation.
6. Building rubble – Recycled
7. Polythene – Recycled
8. Wood –Recycled
9. Non-standard waste, which includes both hazardous and non-hazardous and have varying disposal routes. These wastes typically include:
 - Batteries
 - Hazardous wastes
 - Paints and solvents
 - Process and other chemicals
 - PC monitors (W.E.E Waste)
 - Fluorescent tubes etc.



The above graph depicts the annual trend of wastes generated at the Bridgend site during 2022.

7.0 Sludge removal

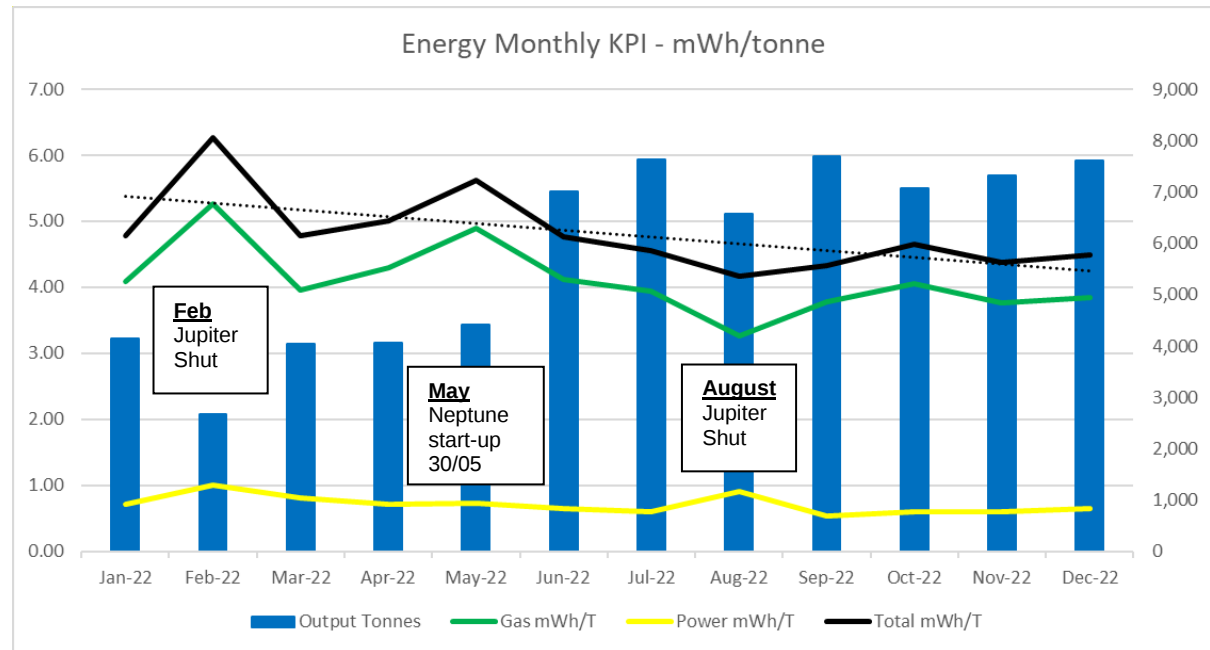
The graph below shows the amount of sludge removed from site in 2022 per month and the graph below that shows sludge removal over the last 7 years.



8.0 Energy

Bridgend Paper Mill is a member of a Climate Change Levy Agreement negotiated scheme (Confederation of Paper Industries).

The mill is also registered with the UK Emissions Trading Scheme. This is verified by the Natural Resources Wales through the Mill's Greenhouse Gas (GHG) Emissions Permit as well as the online ETSWAP reporting system. No major non-conformances have been reported in this calendar year.



Energy consumption per tonne of paper was pretty consistent throughout the first six months of the year. Then once the new Neptune paper machine came online (end of May) the efficiency ratio of the site improved with a step change in energy consumed per tonne of paper produced. The focus for 2023 is to improve the efficiency of Jupiter with a number of potential initiatives proposed, including replacement of the hood blowbox, swapping vacuum pumps for a turboblower and replacing a number of motors/drives for higher rated efficiency.