

Report

Subject	Performance Report 2021
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Author	Martyn Grant
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1- Background

This report is produced by The Royal Mint in accordance with the Environmental Permit condition 4.4.2, which requires the following:

A report or reports on the performance of the activities over the previous year shall be submitted to Environment Agency (now Natural Resources Wales) by 31 January (or another date agreed in writing by the Environment Agency) 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: and
- (c) the performance parameters set out in schedule 4 table S4.3 using the forms specified in table S4.4 of that schedule.

2- Introduction

The Royal Mint's performance in 2021 has been reviewed in the context of digital payments increasing in the UK and the decline in demand for new coin in other countries. When people opt for different payment options, currency stays in circulation for longer, and reduces the need to mint new coins. In light of this, The Royal Mint has seen decline in production tonnages of circulating coins during the year.

This decline in production tonnage and the impact on staff due to the Covid-19 pandemic has impacted on the operational efficiency of the plant / equipment. Where possible plant and equipment have been shut down to reduce energy consumption.

However, the plating lines' operation carry a significant electrical base loading:

- The Nickel-Plating lines accounted for approximately 35% of the energy consumed on site during 2021.
- The Copper Plating Lines accounted for approximately 10% of the energy consumed on site during 2021.
- The Zinc Plating line accounted for approximately 5% of the energy consumed on site during 2021.

Over 65% of the gas consumed on site is used in the annealing and plating operations.

3- Monitoring and Assessment

3.1 Emissions to Air

The Royal Mint's Environmental Permit requires that emissions to air at emission point A14 are monitored and reported on an annual basis.

Emission point A14 is an emission point associated with the casting process at The Royal Mint. The casting process was halted at the end of January 2018.

During 2021 the casting line was decommissioned and the stack associated with A14 was removed through July and August 2021. During the decommissioning of the stack there was incident, which resulted in an isolated fire, of which Natural Resources Wales were notified of.

A permit variation was resubmitted to Natural Resources Wales in November 2021, to remove the casting process from The Royal Mint's Environmental Permit.

3.2.1 W1 One Pass Cooling Water

The Royal Mint's Environmental Permit requires that emission of one pass cooling water, to the river Ely from the annealing furnaces and surface water, is monitored by spot sample / 24-hour proportional sample monthly for the following parameters:

- Free Chlorine - limit 0.1 mg/l
- Suspended solids – limit 50 mg/l
- Temperature – limit 30 °C

The measurement of free chlorine and temperature are undertaken on site by The Royal Mint's analytical team.

The measurement of suspended solids is undertaken by an offsite UKAS and ISO 17025 accredited laboratory - Decus Research Limited based in Ammanford.

No reported results have been identified outside the specified limits.

The volume of one pass water reduced from 106987 m³ in 2020 to 93738 m³ in 2021.

3.2.2 W2, W3, W5, W6, W7 Uncontaminated Surface Water from Roadways and Roofs

The Royal Mint's Environmental Permit requires that emissions of surface water from roadways and roofs, to the Nant-Mychydd and river Ely are monitored by spot sample weekly for the presence of oil and that none is present.

Drain checks are undertaken by The Royal Mint's security team weekly to identify if any oils are present. No oil has been identified as present during the monitoring undertaken in 2021.

It was identified following the previously mentioned fire that there was a fugitive emission to W5 that has been estimated as the following:

- Copper 49 g
- Nickel 83 g
- Zinc 2.16 kg

The monitoring that The Royal Mint has undertaken on the Nant-Mychydd since 2021 has identified, the Mann Kendall test, that total petroleum hydrocarbons at the tributary of Nant Mychydd, where The Royal Mint's culverted surface water meets the Nant Mychydd are declining.

A report on this monitoring has been previously been submitted to NRW.

Emissions to Sewer

The Royal Mint's Environmental Permit requires that emissions to sewer are monitored by spot sample / hourly average monthly / continuously for the following parameters:

- Free Cyanide – limit 0.2 mg/l
- Copper and its compounds – limit 1.0 mg/l
- pH – limits: minimum 6 - maximum 11

The effluent discharge occurs by a batch process, effluent discharge tanks are filled and sampled and tested, by the effluent plant operators, at various points during filling to ensure compliance with the discharge limits. The tank is also sampled prior to discharge, by the effluent plant operators, to ensure compliance with the discharge limits.

If the tank is found outside defined limits, at any point, it is transferred to a holding tank to rework.

During discharge random samples are also taken by The Royal Mint's analytical team to ensure compliance.

The results that are reported quarterly to NRW are from samples analysed / reported by Decus Research Limited.

No reported results have been identified outside the specified limits.

Discharges to sewer were slightly reduced during 2021, in 2020 69,409 m³ was discharged and in 2021 it was 67,182 m³.

3.4 Performance Parameters

3.4.1 Production Tonnage

As previously stated, there was a decline in circulating coin production during 2021. The tonnage produced was 11,778 tonnes against 13,491.

3.4.2 Water Abstracted from River

The Royal Mint continues to look at opportunities to reduce the amount of water it abstracts from the river Ely for its current processes.

There was a reduction in the amount of water abstracted during 2021 205,884 m³ down from 247,825 m³ in 2020. This was in part to the reduced use of the annealing furnaces that use the one past cooling water.

3.4.3 Mains Water Use

There was slight increase in river water usage up from 83,264 m³ in 2020 to 84,666 m³ in 2021.

The reasons for this increase are complex but are believed to include leaks that have occurred due to the aging infrastructure on site, both in the river and mains water systems and an increase of personnel on site as pandemic restrictions lifted.

The Royal Mint undertakes corrective measures to ensure losses from leaks are eliminated as soon as possible.

3.4.4 Electricity Use

The total energy use during 2021 was less than 2020 this was in part due to The Royal Mint shutting off plant / equipment when practical in order to improve the efficiency of operation. Due to the significant base loading of the plating plants the energy use was higher per tonne of circulating coin.

Due to poor conditions The Royal Mint's wind turbine did not generate as much energy as in 2020.

3.4.5 Gas Use

There was an increase in gas use during 2021 partly due to the increased use of natural gas to create the inert gas required for operation of the annealing furnaces. Annealing furnaces cannot be turned off completely when not in use, as sudden changes in temperature can cause damage to the furnace and linings.

3.4.6 CO₂ / Final Product Tonnage

The Carbon Dioxide equivalent / tonne of circulatory coin increased in the year due to the increased gas use and the increased use of offsite generated electricity.

3.4.7 Total Wastage / Final Product Tonnage

The Royal Mint continues to look at opportunities to improve right first-time production and reduce waste from the processes.

There was an overall reduction in waste produced during 2021. The total waste produced during 2021 was 9807.5 tonnes against 10820 tonnes in 2020.

The significant change was a reduction in waste metal removed from site.

Disappointingly The Royal Mint has not been able to identify a new recovery / recycle route for the effluent treatment plant filtercake waste stream following closure of the previously used site in 2019. This waste stream is currently going to landfill for disposal.

3.5

Reporting Forms

These have been supplied separately.