# Environmental and Climate Change Risk Assessment

The Royal Mint Limited

21st January 2025

Project No.: SOL_24_PO61_RYM

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| Document Details | |
|---|---|
| Document title | Environmental and Climate Change Risk Assessment |
| Document subtitle | The Royal Mint Limited |
| Project No. | SOL_24_PO61_RYM |
| Date | 21st January 2025 |
| Version | QMS_7.5.38_TEM – Template – Report Long Form – New Style (Perm) v1 |
| Author | Jessica Easterbrook |
| Client Name | The Royal Mint Limited |

| Document History | | | | | |
|---|---|---|---|---|---|
| Version | Revision | Author | Reviewed by | Date | Comments |
| I1 | 01 | Jessica Easterbrook | Sophie Rainey | 21st January 2025 | 1st Issue to NRW |

Signature Page

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# Environmental and Climate Change Risk Assessment

## The Royal Mint Limited

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## Acronyms and Abbreviations

| Name | Description |
|---|---|
| ERA | Environmental Risk Assessment |
| EA | Environmental Agency |

# 1. INTRODUCTION

As part of an application for an environmental permit Operators must assess the risk to the environment and human health from the activities they seek to permit. This Environmental Risk Assessment has been undertaken in accordance with the online Environment Agency Guidance for undertaking environmental risk assessments. Environmental risks relevant to the activities proposed are:

- Air;
- Water;
- Land;
- Noise and vibration;
- Odour;
- Fugitive emissions;
- Fire;
- Incompatible Feedstock; and
- Climate change adaptation.

For each of the above environmental criteria the approach to the assessment has followed the following process:

- Identify the risks;
- Identify the receptors;
- Identify possible pathways;
- Assess the risks (assuming those control measures proposed are in place);
- Choose appropriate further measures to control these (if required); and
- Present the assessment.

Results of the assessments are provided in Table 2.1 and 2.2 below.

When completing this assessment, prevention and control measures proposed by The Royal Mint Ltd are assumed to be in place. Relevant details of these measures are identified within the assessment.

# 2. ENVIRONMENTAL RISK ASSESSMENT

*Table 2.1: Environmental Risk Assessment*

| Hazard | Receptor | Pathway | Risk Management Techniques | Probability of Exposure | Consequence | Overall Risk (following Mitigation) |
|---|---|---|---|---|---|---|
| Point Source \ Releases to Air | Atmosphere | Airborne | ▪ There will be two new emissions to air from this permit variation. These will include EP1 burn off oven and ERV an emergency release vent. Both have been considered in the updated AQA provided in *Annex D – Air Quality Assessment*.<br>▪ The number of emissions points to air will reduce with the following emission points being removed A1, A2, A3, A4, A7, A8, A9, A10, A15, A28, A17 - 26 (except A21 and A23), A27 and A35.<br>▪ It is concluded that there will be no adverse impacts to air emissions resulting from this permit variation. | Low: offsite receptor impacts | Air Pollution | VERY LOW due to the proposed processes on site |
| Emissions to Water | Groundwater / Geology / Surface Water | Waterborne | ▪ There are no process emissions to controlled waters as part of this permit variation.<br>▪ There are no proposed changes to the sites existing drainage arrangements.<br>▪ All process effluents, waste water and liquid effluent are contained and removed for further treatment using third party specialist waste contractors.<br>▪ Any releases to controlled water via W1 will remain as currently permitted.<br>▪ Any emissions to sewer via S1 will remain as currently permitted. All emissions to sewer will remain in accordance with the sites current Trade Effluent Discharge consent (Ref No. TE409).<br>▪ All new activities relating to the WEEE storage processing line are located within the former buildings and do not give rise to any contaminated or potentially contaminated discharges.<br>▪ All process and storage areas are fully enclosed, therefore any spillages / runoff will be effectively contained within the building and tankered off site. | Low: all runoff is controlled on site; therefore, the probability of exposure is low. | Contamination | VERY LOW due to the proposed management techniques and drainage arrangements |

| | | | | | | |
|---|---|---|---|---|---|---|
| Emissions to Land | Groundwater / Geology | Spills / Leaks | ▪ There will be no emissions to land arising from the existing site and the proposed variation.<br>▪ All process and storage areas are fully enclosed, therefore any spillages / runoff will be effectively contained within the building and tankered off site.<br>▪ The newly proposed waste storage area is supported by a containment capacity of 160m$^3$, delivered as part of the existing COMAH area. This containment helps prevent pollution to ground from spillages or the generation of contaminated firewater.<br>▪ Spill kits are strategically located around site.<br>▪ Minor spills to be cleaned up immediately, using spill kits. Resultant materials to be placed in container for off-site disposal to appropriate facility, if necessary.<br>▪ Immediate action to be taken in event of any major spills. Spillage to be cleared immediately and placed in containers for offsite disposal. NRW to be informed.<br>▪ Although the risk from potentially polluting leaks and spillages at the site is low, in the event of a spillage immediate measures will be taken to contain and manage it in accordance with the above procedures. | Low: spills / leaks could potentially contaminate the ground / groundwater underneath the site. | Contamination | **VERY LOW** due to the proposed risk management techniques |
| Noise | Local Residents | Airborne | ▪ This permit variation is downscaling operations, therefore reducing potential noise sources.<br>▪ The processing plant and associated equipment has been designed in accordance with best practice and to ensure that internal noise does not present an issue to the employees at the site under the Control of Noise at Work Regulations and to ensure that noise breakout does not lead to noise nuisance at the identified sensitive receptors.<br>▪ Appropriate preventative maintenance will be provided for the plant to ensure no deterioration of plant or equipment that would give rise to increases in noise.<br>▪ The location of the site is in an active industrial site and therefore background noise levels are already high resulting in the impact from the proposed plant being minimal in comparison.<br>▪ Therefore, during normal operating conditions there are no potential emissions of noise or vibration that are | Medium: due to the nature of the activities, noise emissions from the plant are inevitable and could cause offsite receptor impacts | Nuisance | **LOW** due to the proposed risk management techniques |

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| | | | considered to have the potential to impact the environment. | | | |
| Odour | Local residents | Airborne | ▪ There are no odour emissions arising from this permit variation.<br>▪ Printed circuit boards (PCBs) are not odorous, and all processing takes place within existing buildings on site.<br>▪ Newly proposed waste types to be accepted on site, including laptops and similar WEEE waste, are also not considered odorous.<br>▪ There is potential of odour from the use of acetic acid which is used within the surface gold reactor however this will be controlled by the use of the scrubber. | Moderate: due to proximity of closest receptors | Nuisance | **VERY LOW –** due to the proposed management techniques |
| Dust | Local Residents | Airborne | ▪ Permitted waste types do not include dusts, powders or loose fibres.<br>▪ All processing activities take place within an enclosed building.<br>▪ The main processing equipment within the MRB Building is extracted via a dedicated dust extraction system. All dusts are returned back to the process to recover any precious metals content.<br>▪ Gathered dust from machinery is further recycled where possible and kept internally in lidded dumpy bags prior to disposal where recycling is not possible.<br>▪ Good housekeeping practices keep dust to a minimum with sweeping and cleaning of workstations as part of 'end of shift' good practice. | Moderate: the occurrence of dust processing is likely | Nuisance | **LOW** due to the proposed risk management techniques |
| Fire on site | Operator / Residential Properties | Windborne | ▪ This permit variation downscales process operations and increases the capacity and ability to process WEEE on site therefore fire risk is considered.<br>▪ The site currently accept PCBs. The PCBs are coated in bromine which is a fire retardant material resulting in there being a very low combustion risk from the material.<br>▪ Additional WEEE waste will be accepted on site and therefore a Fire Prevention Plan has been included as part of this permit variation and can be found In *Annex E – Fire Prevention Plan.*<br>▪ Arson by intruders is controlled via CCTV, 24/7 security and perimeter fencing. | Low: the occurrence of a fire taking place on site is highly unlikely | Fire | **VERY LOW** due to the proposed risk management techniques |

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| | | | ▪ The site is well lit and secured to prevent unauthorised access.<br>▪ Machinery is regularly cleaned to remove any dust, etc.<br>▪ All necessary equipment on site is equipped with dedicated fire suppression.<br>▪ A number of fire extinguishers are placed at strategic locations around the installation.<br>▪ The potential for sparks is regularly monitored by site staff.<br>▪ The risk of damaged or exposed electrical cables is controlled via the regular inspection and maintenance programme.<br>▪ Staff and visitors are only permitted to smoke within the designated smoking area. There is no smoking permitted within the operational area of the site.<br>▪ All contaminated firewater will be contained on site and tankered off site for removal. | | | |
| Incompatible Feedstock | Operator / Residential Properties | If incorrect waste is accepted on site, it could result in adverse emissions / breaking of equipment | ▪ The following methods will be implemented to ensure that incompatible feedstocks do not compromise the safe operation of the plant:<br>▪ All PCB's and WEEE accepted onto site have been subject to 'pre-acceptance' in accordance with the sites Environmental Management System;<br>▪ All incoming PCB's and WEEE are accepted in accordance with the sites Environmental Management System;<br>▪ Any non-conforming PCB's and WEEE will be quarantined and rejected from site in accordance with the sites Environmental Management System.<br>▪ Records of incidents involving incompatible substances will be kept on site together with a summary of the remedial action taken. | Low: offsite receptor impacts | Nuisance / Adverse Emissions | **VERY LOW** due to the proposed risk management techniques |

# 3. CLIMATE CHANGE RISK ASSESSMENT

*Table 3-1 : Climate Change Risk Assessment*[1]

| Hazard | Risk | Vulnerability | Consequence(s) | Risk Management and Adaption Techniques | Likelihood of Occurrence after Adaption | Overall Risk (following Mitigation) |
|---|---|---|---|---|---|---|
| Summer Daily Maximum Temperature: EA state that this may be around 7°C higher compared to average summer temperatures now, with the potential to reach extreme temperatures as high as over 40°C with increasing frequency based on today's values. | | | | | | |
| ***Impact 1:*** Greater potential for increased waste reactions and fires involving heat-sensitive or combustible waste. | LOW<br>All waste accepted on site is in accordance with the sites waste acceptance procedures, which ensures no incompatible or unstable wastes are accepted on site. | LOW<br>The site has a comprehensive Fire Prevention Plan implemented on site to ensure that the risk of fire is minimised. | Potential for fire resulting in potentially uncontrolled emissions to air, land and water. | ▪ Waste pre-acceptance, acceptance and rejection procedures;<br>▪ Effective Fire Prevention Plan; and<br>▪ Regular site inspections.<br>▪ Batteries are removed from accepted WEEE waste as soon as possible to further minimise the risk of fire<br>▪ Damaged or leaking batteries are quarantined in a container and stored under cover away from the waste storage area<br>▪ Waste is processed as soon as possible to reduce storage times and minimise the risk of fire | LOW | LOW |
| ***Impact 2:*** There could be an increase in high temperature expansion and stress of plant, pipework and fittings. | LOW<br>All pipework and fittings are regularly monitored. | LOW<br>Regular site maintenance. | Potential failures may cause emissions to air. | ▪ Certified by BSI for an integrated Management system for Environment, Quality and Energy; | LOW | LOW |

[1] Hazardous waste and treatment: examples for your adapting to climate change risk assessment - GOV.UK

| Hazard | Risk | Vulnerability | Consequence(s) | Risk Management and Adaption Techniques | Likelihood of Occurrence after Adaption | Overall Risk (following Mitigation) |
|---|---|---|---|---|---|---|
| | | | | ▪ Regular monitoring of all pipework and fittings; and<br>▪ All electrical equipment is installed with safety devices for overheating. | | |
| ***Impact 3:*** Potential increased dust emissions from, for example external hazardous waste soil treatment areas. | LOW<br>No external storage of waste. | LOW<br>The nature of the waste accepted on site is not deemed to be dusty. | Potential for an increase in dust emissions from the site. | ▪ Integrated Management System in Place;<br>▪ Regular preventive maintenance for all plant and equipment;<br>▪ Dust extraction implemented where necessary on site;<br>▪ Visual inspections of potential dusty activities on site; and<br>▪ Speed limits limited on site to 5mph to reduce dust plumes from vehicle tracks | LOW | LOW |
| Winter Daily Maximum Temperature: EA state that this could be 4°C high than the current average with the potential for more extreme temperatures, both warmer and cooler than present. | | | | | | |
| ***Impact 1:*** Lower winter temperatures could increase risk of pipework and other external equipment freezing. | LOW<br>There is minimal external pipework located at site. | LOW<br>Any external pipework is lagged and protected. | Extreme low temperatures are unlikely to create issues with icing.<br><br>Blockage of some surface water and process water drainage systems may occur during extreme cold periods. | ▪ Extreme swings of temperature will generally not affect the site and / or processes;<br>▪ All equipment is stored and operated indoors. Plant and equipment operated externally primarily include vehicles designed for external use; and<br>▪ Regular site maintenance and inspections of all pipework and equipment is | LOW | LOW |

| Hazard | Risk | Vulnerability | Consequence(s) | Risk Management and Adaption Techniques | Likelihood of Occurrence after Adaption | Overall Risk (following Mitigation) |
|---|---|---|---|---|---|---|
| | | | | undertaken to detect, as early as possible, signs of freezing and/or other forms of damage | | |
| ***Impact 2:*** Lower winter temperatures could reduce the performance of effluent treatment plants. | LOW<br>There is minimal external pipework located at site. | LOW<br>Any external pipework is lagged and protected. | Potential faults/breakdown of the effluent treatment plant. | ▪ Extreme swings of temperature will generally not affect the site and / or processes;<br>▪ All equipment is stored and operated indoors. Plant and equipment operated externally primarily include vehicles designed for external use; and<br>▪ Regular site maintenance and inspections of all pipework and equipment is undertaken to detect, as early as possible, signs of freezing and/or other forms of damage | LOW | LOW |
| Daily Extreme Rainfall: EA state that rainfall intensity could increase by up to 20% on today's values and Average winter rainfall; EA State that the Average winter rainfall may increase by over 40% on today's averages. | | | | | | |
| ***Impact 1:*** Potential for increased site surface water flooding | MEDIUM<br>The site is largely excluded from flood risk zones; however, some areas of the site are recorded as being potentially highly vulnerable to surface water flooding. | LOW<br>All processing and storage takes place internally. | Potential for offsite releases of pollution | ▪ All process effluents, waste water and liquid effluent are contained and removed for further treatment using third party specialist waste contractors.<br>▪ All process and storage areas are fully enclosed, therefore any spillages / | LOW | LOW |

| Hazard | Risk | Vulnerability | Consequence(s) | Risk Management and Adaption Techniques | Likelihood of Occurrence after Adaption | Overall Risk (following Mitigation) |
|---|---|---|---|---|---|---|
| | | | | runoff will be effectively contained within the building and tankered off site. | | |
| ***Impact 2:*** There is potential for increased incidents involving water-reactive wastes. | **NOT APPLICABLE**<br>Not applicable to site operations. There are no wastes stored onsite which would have a water-reactive reaction with severe implications. | **NOT APPLICABLE**<br>N/A | N/A | N/A | **NOT APPLICABLE** | **NOT APPLICABLE** |
| Sea level rise: The EA state that sea level rise which could be as much as 0.6m higher compared to today's level. | | | | | | |
| ***Impact 1:*** If located near the coast, a site could experience increased: Risk of flooding and associated impacts; Corrosion due to increase in saltwater spray | **NOT APPLICABLE**<br>Site is not located in the immediate vicinity to the sea. | **NOT APPLICABLE**<br>N/A | N/A | N/A | **NOT APPLICABLE** | **NOT APPLICABLE** |
| ***Impact 2:*** There could be localised issues with surface water discharge leading to backing up and worsening site flooding. | **NOT APPLICABLE**<br>Site is not located in the immediate vicinity to the sea. | **NOT APPLICABLE**<br>N/A | N/A | N/A | **NOT APPLICABLE** | **NOT APPLICABLE** |
| Drier Summers: The EA state that summers could see potentially up to 40% less rain than now. | | | | | | |
| ***Impact 1***<br>Potential increased use or reliance on mains water for dust suppression, cleaning and fire water. | LOW<br>The site does not use vast quantities of water for dust suppression, cleaning and fire water. | LOW<br>The site does not have significant reliance on water for dust suppression. | N/A | ▪ Availability of water at site not considered to be a high risk.<br>▪ Dedicated fire ring main for fire water. | LOW | LOW |

| Hazard | Risk | Vulnerability | Consequence(s) | Risk Management and Adaption Techniques | Likelihood of Occurrence after Adaption | Overall Risk (following Mitigation) |
|---|---|---|---|---|---|---|
| | | | | ▪ Waste accepted on site is not deemed dusty in nature. Potentially dusty processes have mitigation measures implemented to avoid dust externally, e.g. internal processing and extraction systems. | | |
| River Flow: The EA state the flow in the watercourses could be 50% more than now at its peak, and 80% less than now at its lowest. | | | | | | |
| ***Impact 1:*** There is a potential increased impact of discharge to watercourse from on-site effluent treatment plant due to reduced low flow and effluent dilution. | LOW<br>There is no discharge to watercourse from onsite processes.<br>Any waste water / effluent is contained and transferred off site for further treatment using third party specialist waste contractors. | LOW<br>No discharge from site. | Potential for an uncontrolled discharge in potential flood events. | ▪ Any waste water / effluent is contained and transferred off site for further treatment using third party specialist waste contractors. | LOW | LOW |
| Storms: Storms could see a change in frequency and intensity. The unique combination of increased wind speeds, increased rainfall, and lightning during these events provides the potential for more extreme storm impacts. | | | | | | |
| ***Impact 1***<br>Storms and high winds could damage building structures with increased potential for fugitive emissions. | LOW<br>The site is a generally well-constructed industrial facility.<br><br>All buildings are inspected regularly by site services team. | LOW<br>There are no high rise buildings with a considerable number of buildings becoming redundant following this permit variation. | Potential disruption to processes and fugitive emissions released beyond the site boundary. | ▪ Site maintenance team responsible for inspection and upkeep of all buildings.<br>▪ Significant damage to buildings will be treated with urgency to protect the site's plant, equipment, processes and staff, as well as prevent the damage resulting in serious or adverse emissions to the environment. | LOW | LOW |

| Hazard | Risk | Vulnerability | Consequence(s) | Risk Management and Adaption Techniques | Likelihood of Occurrence after Adaption | Overall Risk (following Mitigation) |
|---|---|---|---|---|---|---|
| | | | | ▪ All buildings are inspected daily as part of the site checks, and all identified signs of damage are reported and corrective actions taken to prevent further damage or adverse environmental impacts. | | |