



Environmental and Climate Change Risk Assessment

The Royal Mint Limited

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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 3.1 and 3.2 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. SITE DETAILS

The Royal Mint site is located at The Royal Mint, Pontyclun, Llantrissant, South Wales, CF72 8YT.

2.1 Sensitive Human Receptors

The location of potential sensitive human receptors are identified in Table 2.1 below.

Table 2.1 Sensitive Human Receptors

Receptor	Type	Easting	Northing
Rhiwfelin Fawr	Residential	303163	185915
Rhiwfelin Nursing Home	Nursing Home	303276	186124
Rhiwfelin Fach	Residential	304036	185512
Glanmychudd-Fach	Residential	304071	185111
Llantrisant Dialysis Centre	Medical Facility	304500	185110
Tal-y-fedw	Residential	304693	185336
Tyclwydau	Residential	304847	184161
Llwyncrwn Isaf	Residential	305459	184617
Ty'n-y-coed	Residential	305649	184240
Coed-yr-Escob Primary School	School	304482	183941
Graig-y-llan	Residential	303946	184107
Royal Glamorgan Hospital	Hospital	303610	184366
Glan-yr-ely	Residential	303378	184553
Signalmans Cottage	Residential	303047	184627
Dyffryn-isaf	Residential	303012	184754
Dyffryn-uchaf	Residential	303063	184907
Bedw	Residential	302567	185478
Royal Mint Experience	Leisure	303887	184825

2.2 Sensitive Habitat Receptors

Environment Agency (EA) H1 and H5 guidance states that the potential impacts of the site should be assessed for the following habitat sites within 10km of the site:

- Special Areas of Conservations (SACs) and candidate SACs (cSACs) designated under the EC Habitats Directive;
- Special Protection Areas (SPAs) and potential SPAs designated under the EC Birds Directive; and
- Ramsar Sites designated under the Convention of Wetlands of International Importance.

It is also stated that within 2km of the Source:

- Sites of Special Scientific Interest (SSSI) established by the 1981 Wildlife and Countryside Act;
- National Nature Reserves (NNR);

- Local Nature Reserves (LNR);
- Local Wildlife Sites (LWS), County Wildlife Sites (CWS) and potential wildlife sites (PWS);
- Sites of Importance for Nature Conservation (SINC); and
- Ancient Woodland.

Information from the Multi Agency Geographic Information for the Countryside (MAGIC) website (<http://magic.defra.gov.uk/>) has been used to obtain the above information.

There are multiple Local Wildlife Sites and Ancient Woodlands within 2km of the site and these are identified in Figure 2.1 below.

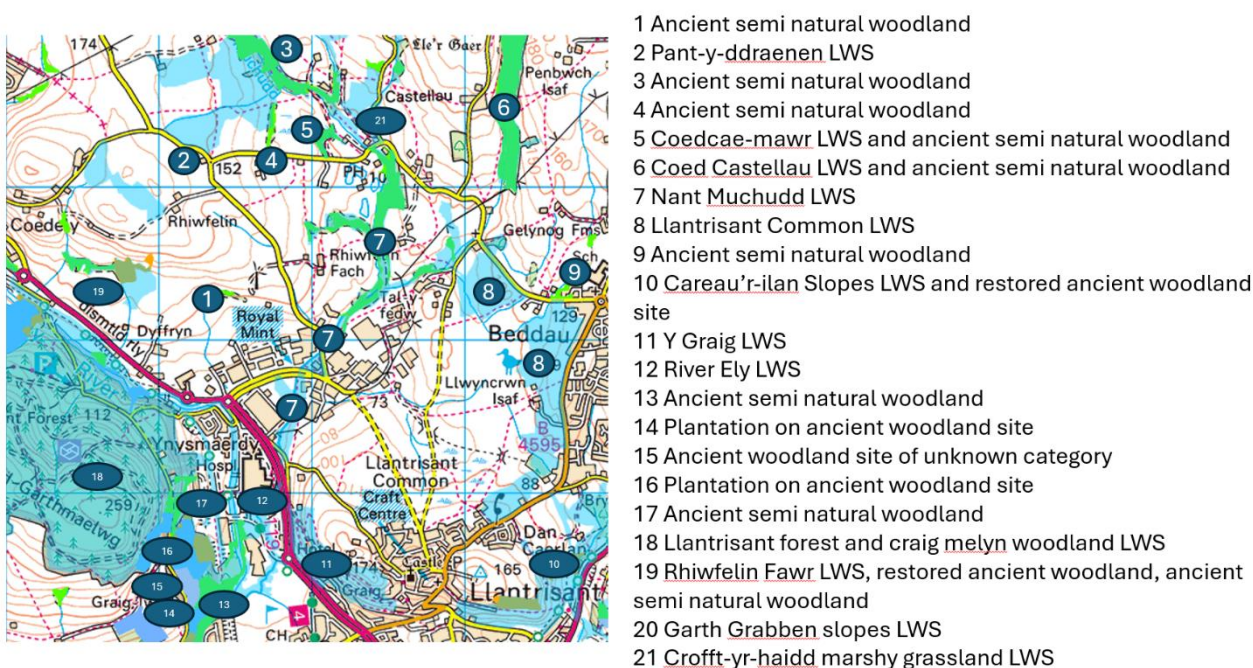


Figure 2.1 Local Wildlife and Ancient Woodland Sites within 2km

Table 2.2 below shows the estimate distances of the Local Wildlife Sites relevant to the site within 2km.

Table 2.2 Local Wildlife Sites within 2km of the site

Receptor	Approx. Location (Relative to Site)
Pant-y-ddraenen LWS	430m northwest
Coedcae-mawr LWS	1.20km north
Coed Castellau LWS	1.56km northeast
Nant Muchudd LWS	110m east
Llantrisant Common LWS	775m east
Careau'r-ilan Slopes LWS	2km southeast
Y Graig LWS	950m south

River Ely LWS	400m southwest
Llantrisant Forest and Craig Melyn Woodland LWS	600m southwest
Rhiwfelin Fawr LWS	840m northwest
Garth Grabben Slopes LWS	Unidentifiable
Crofft-yr-haidd marshy grasslands LWS	1.4km northeast

The remaining designated sites are shown below in Table 2.2.

Table 2.3 Location of Sensitive Habitat Receptors

Receptor	Primary Habitat	Approx. Location (Relative to Site)
Llantrisant Common and Pastures SSSI	Acid grassland and bogs	300 m south and southwest
Rhos Tonyrefail SSSI	Blanket bog	100 m northwest
Cardiff Beech Woods SAC	Beech Woodland	7.5 km east-southeast

Figure 2.2 below is a plan showing the locations of both the SSSIs and Ancient Woodlands relevant to the site within 2km.

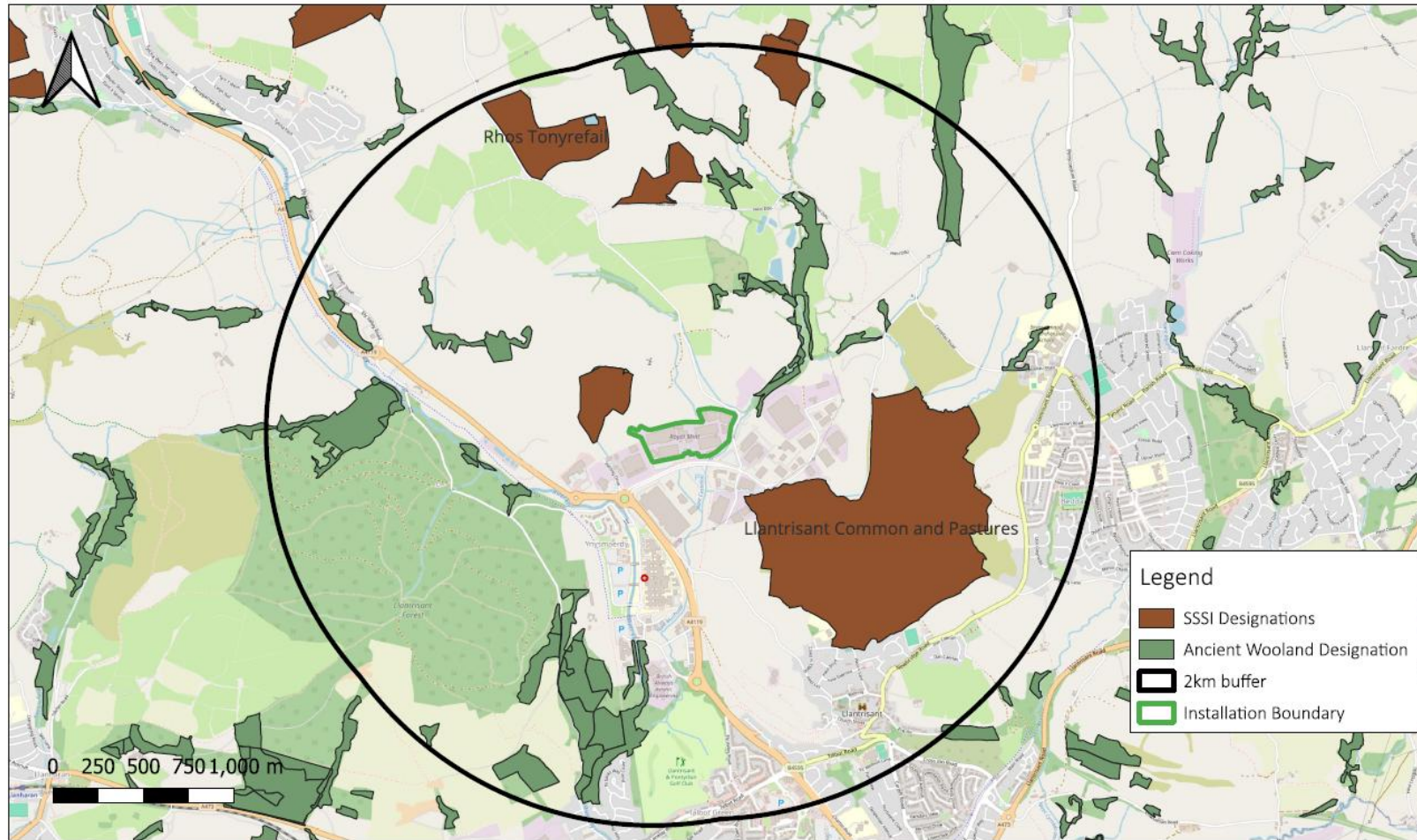


Figure 2.2 Sites of Special Scientific Interest (SSSIs) and Ancient Woodlands (AW) within 2km of the Site

3. ENVIRONMENTAL RISK ASSESSMENT

Table 3.1 Environmental Risk Assessment

Hazard	Receptor	Pathway	Risk Management Techniques	Probability of Exposure	Consequence	Overall Risk (following Mitigation)
Point Source \ Releases to Air	Atmosphere	Airborne	<ul style="list-style-type: none"> 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 <i>Annex D – Air Quality Assessment</i>. 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. 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	<ul style="list-style-type: none"> There are no process emissions to controlled waters as part of this permit variation. There are no proposed changes to the sites existing drainage arrangements. All process effluents, waste water and liquid effluent are contained and removed for further treatment using third party specialist waste contractors. Any releases to controlled water via W1 will remain as currently permitted. 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). 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. 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	<ul style="list-style-type: none"> ▪ There will be no emissions to land arising from the existing site and the proposed variation. ▪ All process and storage areas are fully enclosed, therefore any spillages / runoff will be effectively contained within the building and tankered off site. ▪ The newly proposed waste storage area is supported by a containment capacity of 160m³, delivered as part of the existing COMAH area. This containment helps prevent pollution to ground from spillages or the generation of contaminated firewater. ▪ Spill kits are strategically located around site. ▪ 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. ▪ 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. ▪ 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	<ul style="list-style-type: none"> ▪ This permit variation is downscaling operations, therefore reducing potential noise sources. ▪ 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. ▪ 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. ▪ 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. ▪ 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

			considered to have the potential to impact the environment.			
Odour	Local residents	Airborne	<ul style="list-style-type: none"> There are no odour emissions arising from this permit variation. Printed circuit boards (PCBs) are not odorous, and all processing takes place within existing buildings on site. Newly proposed waste types to be accepted on site, including laptops and similar WEEE waste, are also not considered odorous. 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	<ul style="list-style-type: none"> Permitted waste types do not include dusts, powders or loose fibres. All processing activities take place within an enclosed building. 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. Gathered dust from machinery is further recycled where possible and kept internally in lidded dumpy bags prior to disposal where recycling is not possible. 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	<ul style="list-style-type: none"> This permit variation downscales process operations and increases the capacity and ability to process WEEE on site therefore fire risk is considered. 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. 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 <i>Annex E – Fire Prevention Plan</i>. 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

			<ul style="list-style-type: none"> ▪ The site is well lit and secured to prevent unauthorised access. ▪ Machinery is regularly cleaned to remove any dust, etc. ▪ All necessary equipment on site is equipped with dedicated fire suppression. ▪ A number of fire extinguishers are placed at strategic locations around the installation. ▪ The potential for sparks is regularly monitored by site staff. ▪ The risk of damaged or exposed electrical cables is controlled via the regular inspection and maintenance programme. ▪ 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. ▪ 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	<ul style="list-style-type: none"> ▪ The following methods will be implemented to ensure that incompatible feedstocks do not compromise the safe operation of the plant: ▪ All PCB's and WEEE accepted onto site have been subject to 'pre-acceptance' in accordance with the sites Environmental Management System; ▪ All incoming PCB's and WEEE are accepted in accordance with the sites Environmental Management System; ▪ Any non-conforming PCB's and WEEE will be quarantined and rejected from site in accordance with the sites Environmental Management System. ▪ 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

4. CLIMATE CHANGE RISK ASSESSMENT

Table 4.1 Climate Change Risk Assessment¹

Hazard	Risk	Vulnerability	Consequence(s)	Risk Management and Adaption Techniques	Likelihood of Occurrence after Adaption	Overall Risk (following Mitigation)
<p>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.</p>						
<p>Impact 1: Greater potential for increased waste reactions and fires involving heat-sensitive or combustible waste.</p>	<p>LOW 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.</p>	<p>LOW The site has a comprehensive Fire Prevention Plan implemented on site to ensure that the risk of fire is minimised.</p>	<p>Potential for fire resulting in potentially uncontrolled emissions to air, land and water.</p>	<ul style="list-style-type: none"> ▪ Waste pre-acceptance, acceptance and rejection procedures; ▪ Effective Fire Prevention Plan; and ▪ Regular site inspections. ▪ Batteries are removed from accepted WEEE waste as soon as possible to further minimise the risk of fire ▪ Damaged or leaking batteries are quarantined in a container and stored under cover away from the waste storage area ▪ Waste is processed as soon as possible to reduce storage times and minimise the risk of fire 	<p>LOW</p>	<p>LOW</p>
<p>Impact 2: There could be an increase in high temperature expansion and stress of plant, pipework and fittings.</p>	<p>LOW All pipework and fittings are regularly monitored.</p>	<p>LOW Regular site maintenance.</p>	<p>Potential failures may cause emissions to air.</p>	<ul style="list-style-type: none"> ▪ Certified by BSI for an integrated Management system for Environment, Quality and Energy; 	<p>LOW</p>	<p>LOW</p>

¹ [Hazardous waste and treatment: examples for your adapting to climate change risk assessment - GOV.UK](https://www.gov.uk/guidance/hazardous-waste-and-treatment-examples-for-your-adapting-to-climate-change-risk-assessment)

Hazard	Risk	Vulnerability	Consequence(s)	Risk Management and Adaption Techniques	Likelihood of Occurrence after Adaption	Overall Risk (following Mitigation)
				<ul style="list-style-type: none"> Regular monitoring of all pipework and fittings; and 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 No external storage of waste.	LOW The nature of the waste accepted on site is not deemed to be dusty.	Potential for an increase in dust emissions from the site.	<ul style="list-style-type: none"> Integrated Management System in Place; Regular preventive maintenance for all plant and equipment; Dust extraction implemented where necessary on site; Visual inspections of potential dusty activities on site; and 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 There is minimal external pipework located at site.	LOW Any external pipework is lagged and protected.	<p>Extreme low temperatures are unlikely to create issues with icing.</p> <p>Blockage of some surface water and process water drainage systems may occur during extreme cold periods.</p>	<ul style="list-style-type: none"> Extreme swings of temperature will generally not affect the site and / or processes; All equipment is stored and operated indoors. Plant and equipment operated externally primarily include vehicles designed for external use; and 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 There is minimal external pipework located at site.	LOW Any external pipework is lagged and protected.	Potential faults/breakdown of the effluent treatment plant.	<ul style="list-style-type: none"> Extreme swings of temperature will generally not affect the site and / or processes; All equipment is stored and operated indoors. Plant and equipment operated externally primarily include vehicles designed for external use; and 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 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 All processing and storage takes place internally.	Potential for offsite releases of pollution	<ul style="list-style-type: none"> All process effluents, waste water and liquid effluent are contained and removed for further treatment using third party specialist waste contractors. 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 Not applicable to site operations. There are no wastes stored onsite which would have a water-reactive reaction with severe implications.	NOT APPLICABLE 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 Site is not located in the immediate vicinity to the sea.	NOT APPLICABLE 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 Site is not located in the immediate vicinity to the sea.	NOT APPLICABLE 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 Potential increased use or reliance on mains water for dust suppression, cleaning and fire water.	LOW The site does not use vast quantities of water for dust suppression, cleaning and fire water.	LOW The site does not have significant reliance on water for dust suppression.	N/A	<ul style="list-style-type: none"> Availability of water at site not considered to be a high risk. 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)
				<ul style="list-style-type: none"> 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.						
<p>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.</p>	<p>LOW</p> <p>There is no discharge to watercourse from onsite processes. Any waste water / effluent is contained and transferred off site for further treatment using third party specialist waste contractors.</p>	<p>LOW</p> <p>No discharge from site.</p>	<p>Potential for an uncontrolled discharge in potential flood events.</p>	<ul style="list-style-type: none"> Any waste water / effluent is contained and transferred off site for further treatment using third party specialist waste contractors. 	<p>LOW</p>	<p>LOW</p>
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.						
<p>Impact 1</p> <p>Storms and high winds could damage building structures with increased potential for fugitive emissions.</p>	<p>LOW</p> <p>The site is a generally well-constructed industrial facility. All buildings are inspected regularly by site services team.</p>	<p>LOW</p> <p>There are no high rise buildings with a considerable number of buildings becoming redundant following this permit variation.</p>	<p>Potential disruption to processes and fugitive emissions released beyond the site boundary.</p>	<ul style="list-style-type: none"> Site maintenance team responsible for inspection and upkeep of all buildings. 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. 	<p>LOW</p>	<p>LOW</p>

Hazard	Risk	Vulnerability	Consequence(s)	Risk Management and Adaption Techniques	Likelihood of Occurrence after Adaption	Overall Risk (following Mitigation)
				<ul style="list-style-type: none"> ▪ 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. 		