Environmental Risk Assessment

MEAD Construction (Cambridge) Limited

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SITE DETAILS

Wilbraham Chalk Quarry

Mill Lane

Great Wilbraham

Cambridge

Cambridgeshire

CB21 4HH

OPERATOR DETAILS

MEAD Construction (Cambridge) Limited

Liberty Barns Heath Road

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PERMIT REFERENCE

TBC

DOCUMENT REFERENCE

K311.2~09~006

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Prepared	24/01/2024	Rhianna Dawkes
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CONTENTS

TABLES

FIGURES

DRAWINGS

REFERENCE	TITLE	DATE
K311.2~20~003	Permit Boundary Plan (Rev A)	12/06/2023
K311.2~20~006	Site Setting Plan (1 km) (Rev A)	26/06/2023

APPENDICES

REFERENCE	TITLE	DATE
Appendix A	ERA Tables	06/09/2023
Appendix B	Groundsure Report (GS-SF6-YCA-Y2R-QER)	23/06/2023

1. INTRODUCTION

This document is the Environmental Risk Assessment (ERA) that accompanies the application for a permit application at Wilbraham Chalk Quarry, Mill Lane, Great Wilbraham, Cambridge, CB21 4HH. The site is located at National Grid Reference TL 5657 5462.

This application seeks to add a 'dry and wet recycling' activity to the existing site. This covers a soil washing facility, soil and aggregate screening operation and concrete crushing operation.

The application has been prepared by Wiser Environment Limited on behalf of the applicant MEAD Construction (Cambridge) Limited. The ERA has been produced in line with Environment Agency guidance, 'Risk assessments for your environmental permit'[1].

This ERA identifies potential environmental risks and proposes mitigating measures that can reduce adverse impacts and should be read in conjunction with the other supporting documents included within the application.

1.1. Scope

This risk assessment is based on the source-pathway-receptor approach. All potential sources of pollution associated with waste acceptance, storage and treatment for recovery activities have been assessed against the principal receptor types identified within the site's vicinity.

The requirement for risk management measures is then dependent on a viable pathway being present between the source and the receptor. Where such pathway exists, management measures are required to reduce risk.

1.2. Aims

This assessment aims to consider potential environmental hazards associated with the activity, to identify sensitive receptors which these may impact, and determine the influence management practice has on reducing risk.

2. SITE SETTING

2.1. Location

[1] Risk assessments for your environmental permit - GOV.UK (www.gov.uk), updated 31 August 2022

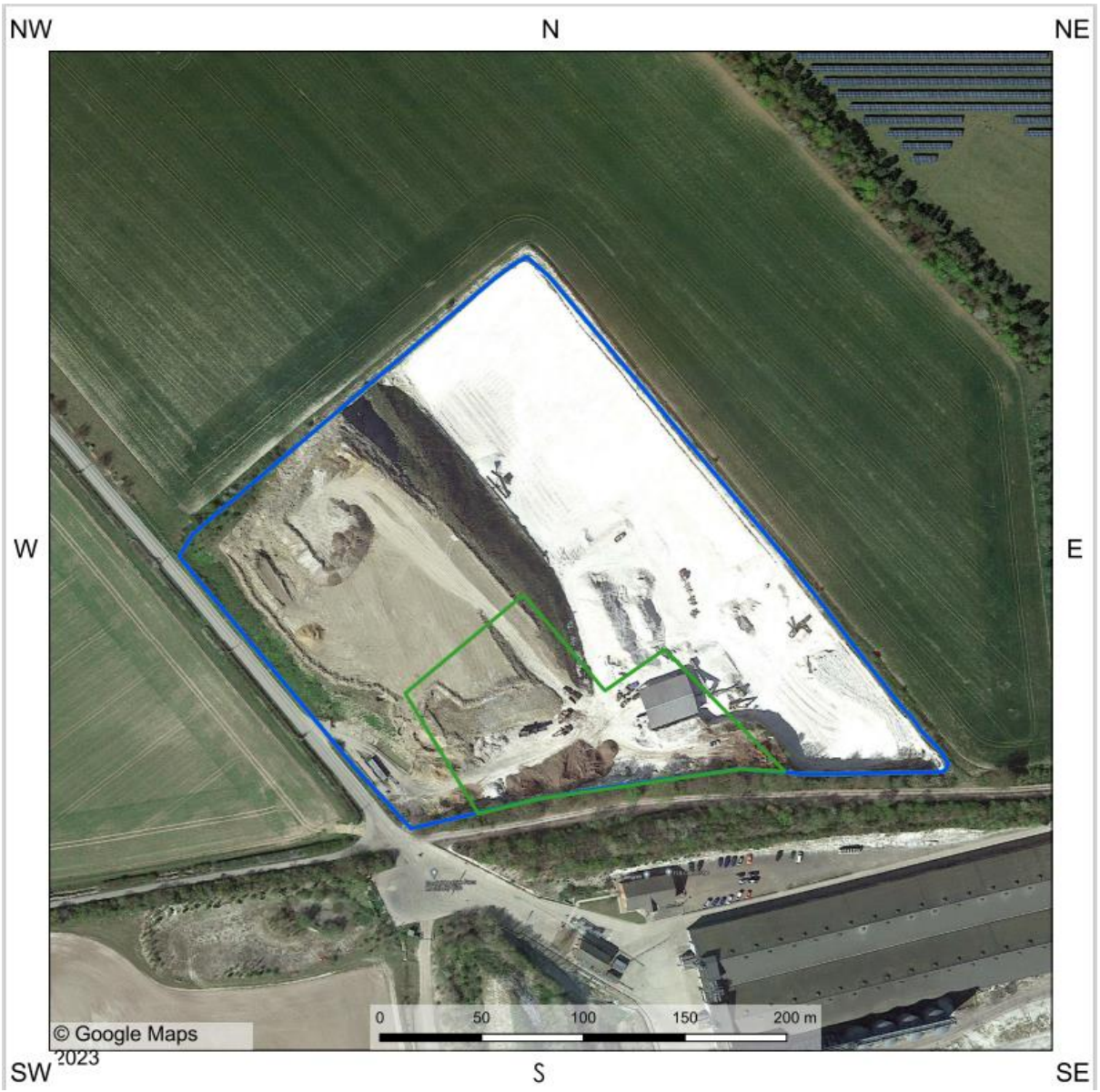

Figure 1 *Aerial image of the site, showing the permit boundary in green.*

The site is located approximately 2.8km Southwest of the village of Great Wilbraham and 8.5km East of Cambridge and is surrounded by agricultural land.

2.2. Humans and Property

The nearest commercial use receptor (ID1) is approximately 45m South of the permit boundary shown on the Site Setting Plan (K311.2~20~006). There are few residential dwellings surrounding the permit boundary, with the closest settling being Valley Farm Cottage and West Wrattling Valley Farm, located 350m West-Southwest of the site, followed by Upper Heath Farm, approximately 945m North of the site.

2.3. Environmentally Sensitive Sites

Environmentally sensitive sites include;

Sites of Special Scientific Interest (SSSI); Special Areas of Conservation (SAC); Special Protection Areas (SPA); RAMSAR sites; National Nature Reserves (NNR); Ancient Woodlands (AW); Local Nature Reserves (LNR): County Wildlife Sites (CWS); World Heritage Sites; Areas of Outstanding Natural Beauty (AONB); National Parks; and Biodiversity Action Plan (BAP) priority habitats.

2.3.1. Designated Environmental Receptors

There are no Sites of Ecological Interest within 1km of the site, shown on the Site Setting Plan (K311.2~20~006). However, sites of ecological interest within 2km of the site are summarised in the table below.

Table 1 Designated Sites

ID	DESCRIPTION	NEAREST LOCATION FROM SITE (APPROX.)	DIRECTION FROM SITE
2	Sites of Special Scientific Interest (SSSI) – Fleam Dyke	1.4km	SW
-	Sites of Special Scientific Interest (SSSI) – Fleam Dyke	1.6km	S
-	Sites of Special Scientific Interest (SSSI) – Fleam Dyke	1.7km	W

The closest site protected by a statutory designation is the Fleam Dyke SSSI located approximately 1.4km South West of the site. This SSSI location extends further South and West of the site, being the only SSSI within the 2km radius of the site.

2.3.2. Non-Statutory Designated Receptors

A series of non-statutory designated environmental sites are located within 1 km of the permit boundary and summarised in Table 1 below. The locations relative to the permit boundary are also shown on the Site Setting Plan (K311.2~20~006) with IDs that correspond to the Receptors Table (ERA2) in Section 3.2.

Table 2 Non-Statutory Designated Sites

ID	DESCRIPTION	NEAREST LOCATION FROM SITE (APPROX.)	DIRECTION FROM SITE
1	Priority Habitat – Deciduous woodland	515m	NW
2	Priority Habitat – Deciduous woodland	520m	WSW
3	Priority Habitat – Deciduous woodland	910m	E

Within the 1km boundary of the site, there are three non-statutory designated sites of which are all priority habitat under the classification of deciduous woodland, located between 515 m and 910 m from the site.

2.4. Geology

2.4.1. Artificial Ground and Made Ground

One on site location of worked ground was identified within 500m of the site, located within the permit boundary, with the LEX code: WGR-VOID.

2.4.2. Superficial and Drift Geology

One superficial deposit was identified within 500m of the site (with the central point located 434m W of the permit boundary on site), consisting of clay, silt, sand and gravel formed during the Quaternary geological epoch.

2.4.3. Bedrock and Solid Geology

The bedrock geology on site consists of New Pit Chalk Formation – Chalk, formed during the Turonian Rock Age (NPCH-CHLK), and Holywell Nodular Chalk Formation – Chalk, formed during the Cenomanian Rock Age (HCK-CHLK). These are the only bedrocks detailed within 500m of the site.

2.5. Hydrogeology

A singular aquifer within superficial deposit is identified within 500m of site, located 434m W of the permit boundary, of which is classified as Secondary A:

“Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers.”

Two aquifers within bedrock deposits were identified within 500m of the site. One located on site and the other 190m N, both of the Principal classification:

"Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers."

2.6. Hydrology

No surface water features are identified within 250 m of site.

Table 3 Surface Water Features

DESCRIPTION	NEAREST LOCATION FROM SITE (APPROX.)	DIRECTION FROM SITE
Ditches along the A11 boundary with agricultural fields	500m	NW
Ditches along the A11 boundary with agricultural fields	525m	NE
Ditches along the A11 boundary with agricultural fields	575m	NE

2.7. Flood Risk

2.7.1. Risk of Flooding from Rivers and Sea

The site is located within a Flood Zone 1 meaning the land has a less than 1 in 1000 annual probability of river or sea flooding. There are no records within 50 m identified in relation to Risk of Flooding from Rivers and Sea (RpFRaS).

2.7.2. Surface Water Flooding

The highest risk of surface water flooding identified on site is a 1 in 30-year event to a depth greater than 1.0m. Within 50m of site the highest risk identified is a 1 in 30-year event to a depth greater than 1.0m.

2.7.3. Groundwater Flooding

There is an assigned 'Moderate' risk of groundwater flooding on site based on a 1 in 100-year return period and a 5m Digital Terrain Model (DTM).

2.8. Air Quality

The site does not lie within an Air Quality Management Area (AQMA).

2.9. Nature of Risk Assessment

This document provides a broad and general assessment of the risk factors considered to be of significance for the site, and an evaluation of the impact from the principal risk factors to receptors within the site vicinity.

3. METHODOLOGY

3.1. Hazard Identification

A hazard is something with potential to cause harm to something else. Table ERA1 below identifies the principal hazard types which may be associated with the proposed activity; and indicates where hazards are identified and determined to be of significant potential risk to determine further assessment. Potential hazards from this activity are as follows:

ERA1 Identified Hazard Types

PRINCIPAL HAZARD TYPE	SUB-HAZARD TYPE	POTENTIAL SOURCE	RISK	REQUIRES FURTHER ASSESSMENT
Odour	Odour	• None	• Waste types accepted at this site are not considered to be odorous and original permit applications were approved and continued variations since 11/06/2009. • Proposed developments on site are not considered to be odorous.	No
Point Source Emissions to Air		• None	• Due to the nature of the proposed development on the site, there is no increased potential risk of point source emissions to Air.	No
Fugitive Emissions to Air	Dust and Particulate Matter	• Waste and material delivery • Treatment processes • Material dispatch	• Dust and particulate matter liberated from external areas only during dry conditions.	ERA8 below
	Litter and Debris	• Waste and material delivery • Treatment processes • Material dispatch	• Loss of material during unloading, treatment and dispatch.	ERA 9 below
Fugitive Emissions – Pests	Pests, vermin, scavengers	• Storage	• There is a potential for material in the waste stored on site to attract pests.	ERA10 below
Fugitive Emissions – Mud and Debris	Mud & debris	• Waste and material delivery • Treatment processes • Material dispatch	• Loss of material during unloading, treatment and dispatch of material from site.	ERA11 below
Fugitive Emissions – to Water	Contaminated runoff	• Waste storage: run off from stored waste pre-treatment or post treatment • Surface water run off • Fire waters	• Contamination of surface water, ground water and land. • Discharge of contaminated waters.	ERA12 below

PRINCIPAL HAZARD TYPE	SUB-HAZARD TYPE	POTENTIAL SOURCE	RISK	REQUIRES FURTHER ASSESSMENT
Accidents	Transferring substances	• Waste delivery • Treatment process • Material dispatch	• Loss of waste from vehicles. • Spillages from processing equipment.	ERA13 below
	Plant or equipment failure	• Material delivery • Failure of processing equipment and machinery	• Spillages from vehicles involved in the transfer of materials/waste. • Spillages from vehicles involved in on site processing. • Leakage from waste fuel/oil tanks.	
	Flooding	• Risk of Flooding from Rivers and Sea (RoFRaS) • Surface water flooding • Ground water flooding	• Site is located within Flood Zone 1 (less than 1 in a 1000 annual probability of flooding from sea or rivers). • 1 in a 30 year at a depth of more than 1.0m risk of Surface Water Flooding. • 'Moderate' potential for ground water flooding.	
	Vandalism	• Unauthorised access	• Risk of damage to machinery vital for processes on site or storage containment.	
	Fire	• Stored waste • Mobile plant/process equipment	• Uncontrolled emissions of smoke and fire water.	
Noise and Vibration		• Delivery of waste • Treatment processes • Material dispatch	• Vehicle movement/idling engines. • Nuisance to closest sensitive receptors.	ERA14 below

Where a hazard with the potential for environmental impact has been identified within the process these critical points have been identified as Environmental Risk Points (ERP). These are identified on ERA7 *Environmental Risk Points* presented in Section 4 of this ERA Document.

3.2. Receptors

A receptor is the object (e.g., person, organism, resource, or property) impacted by a hazard. For example, odour may cause offence to a human (the receptor). When identifying receptors which may be at risk from the site, the following have been considered:

- Ancient woods
- Locations used to grow food or to farm animals or fish
- Drain and sewer systems
- Factories and other businesses
- Fields and allotments used to grow food

- Footpaths
- Roads and railways
- Groundwater beneath the site
- Homes, or groups of homes
- Playing fields and playgrounds
- Private drinking water supplies
- Regionally important geological sites
- Schools, hospitals, and other public buildings
- Water
- Conservation and habitats protected areas and areas of scientific interest

Sensitive receptors within 1 km of the permit boundary are shown on the Sensitive Receptors Plan (K311.2~20~006). The IDs on the Site Setting Plan correspond to the Receptors Table (ERA2) below.

ERA2 Receptors

RECEPTOR TYPE	ID	DESCRIPTION	DISTANCE	DIRECTION
HUMANS AND PROPERTY	-	Site Workers	On site	-
	-	Site Visitors	On site	-
		INHABITANTS OF RESIDENTIAL PROPERTIES		
	1	Valley Farm Cottage and West Wrattling Valley Farm	460 m	WSW
	2	Upper Heath Farm	1.1 km	N
	3	Great Wilbraham Hall Farm and Neighbouring Properties	1.3 km	WNW
	4	Lower Heath Farm	1.4 km	N
	5	Dungate Farm	1.45 km	SSW
	6	Beach Tree Cottages	1.55 km	W
	7	Lark Hall New Cottages - West Six Mile Bottom Road	1.7 km	E
	8	Lark Hall Corner Residential Properties	1.7 km	ESE
	9	Hall Farm Cottages	1.9 km	NNW
		SENSITIVE PUBLIC USE		
		N/A		
		COMMERCIAL USE		
	1	Camgrain	45 m	S
	1	FLB Cambridge	45 m	S
	1	Cambs Farm Machinery Club	45 m	S
	2	Great Wilbraham Solar Farm	245 m	N
	3	HQ Nights Christmas Parties Commercial Business and Surrounding	1.4 km	WNW
		RECREATIONAL USE		
		N/A		
		CRITICAL INFRASTRUCTURE		
		N/A		
		ROADS AND RAILWAYS		
	-	A11	620 m	NW
	-	Cambridge Coldham Lane Junction and Haughley Junction Line - Railway Line	1675 m	N
		PUBLIC RIGHTS OF WAY		
	-	Bridleway Along London Road towards A11	55 m	W
	-	Public Footpath through agricultural fields East of Great Wilbraham Solar Farm	1.55 km	NE
	-	Public Footpath along Fleam Dyke SSSI	1.6 km	SW
WATER		**SURFACE WATER**		

	-	Surface Water - Ditches along the A11 boundary with agricultural fields	630 m	NW
	-	Surface Water - Ditches along the A11 boundary with agricultural fields	670 m	N
	-	Surface Water - Ditches along the A11 boundary with agricultural fields	740 m	N
	GROUNDWATER			
	-	Superficual Aquifer - Secondary A	440 m	W
	-	Bedrock Aquifer - Principal Aquifer	On site	
ENVIRONMENTALLY SENSITIVE SITES	**DESIGNATED SITES**			
	1	Fleam Dyke - SSSI	1.45 km	SW
	2	Fleam Dyke - SSSI	1.65 km	S
	3	Fleam Dyke - SSSI	1.8 km	W
	NON-DESIGNATED SITES			
	1	Priority Habitat - Deciduous Woodland	545 m	WSW
	2	Priority Habitat - Deciduous Woodland	645 m	NW
	3	Priority Habitat - Deciduous Woodland	975 m	E
	4	Priority Habitat - Deciduous Woodland	1.2 km	S
	5	Priority Habitat - Deciduous Woodland	1.3 km	S
	6	Priority Habitat - Deciduous Woodland	1.5 km	NNE
	7	Priority Habitat - Deciduous Woodland	1.7 km	NW
	8	Priority Habitat - Deciduous Woodland	1.8 km	S
	9	Priority Habitat - Deciduous Woodland	1.8 km	SE
	HERITAGE SITES			
	1	Scheduled Monument - Fleam Dyke	1.5 km	SW
	2	Scheduled Monument - Mutlow Hill Tumulus	1.85 km	W

3.3. Prevailing Wind Direction

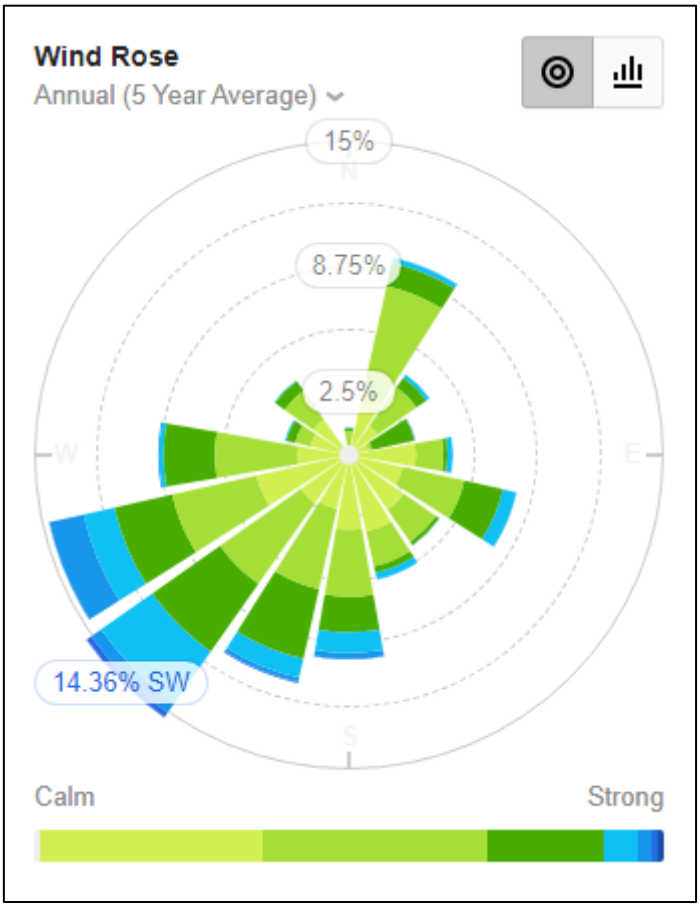

Figure 2 Lark Hall wind rose. Annual 5-year average, 2018-2023 *(willyweather.co.uk).*

The closest observing station where wind statistic data is available is at Lark Hall, approximately 1905 m East of the permit boundary. Figure 2 presents the wind statistics on a wind rose as an annual average using data from the previous 5 years (2019 to 2024). The wind rose indicates that any sensitive receptors located towards the Northeast of the site are potentially at greatest risk from hazards transmitted through the air.

3.4. Pathways

The pathway is the means by which the hazard reaches the receptor and forms the link between the two. For example, a dust hazard may reach a receptor by travelling through air, with the air therefore being the pathway.

The source-pathway-receptor link must be present for there to be a risk. Management measures applied at the site act to minimise the overall risk by impeding or removing the pathway.

ERA3 Pathways

RECEPTOR	HAZARD	PATHWAY
Humans and Property	Odour	Transmitted through the air
	Dust and Particulate Matter	Transmitted through the air
	Noise	Transmitted through the air
	Birds, Vermin & Insects	Physical travel
	Fire	Physical contact and spread
Groundwater	Contaminated runoff	Infiltration through the ground
Surface Water	Contaminated runoff	Direct discharge from site
Environmentally Sensitive Sites	Dust and Particulate Matter	Transmitted through the air
	Noise	Transmitted through the air
	Fire	Physical contact and spread
Atmosphere	Dust and Particulate Matter	Transmitted through the air

3.5. Risk

Assessment of risk is based on the probability of receptor exposure to the identified hazards and the consequences of such exposure. The initial assessment of risk is made assuming no risk management practices are applied.

A matrix is used to determine overall risk and uses the following definitions:

ERA4 Probability of Exposure

PROBABILITY OF EXPOSURE
HIGH – *exposure is probable:* direct exposure likely with no / few barriers between hazard, source and receptor.
MEDIUM – *exposure is fairly probable*: feasible exposure possible, barriers to exposure less controllable.
LOW – *exposure is unlikely*: several barriers exist between hazards source and receptors to mitigate against exposure.
VERY LOW – *exposure is very unlikely*; effective, multiple barriers in place to mitigate against exposure.

ERA5 Consequences of Exposure

CONSEQUENCES OF EXPOSURE
HIGH – *the consequences are severe:* sufficient evidence that short or long term exposure may result in serious damage.
MEDIUM – *consequences are significant;* sufficient evidence that exposure to hazard may result in damage that is not severe in nature and reversible once exposure ceases (e.g. irritant).
LOW – *consequences are minor;* damage not apparent though reversible adverse changes may occur.

CONSEQUENCES OF EXPOSURE
VERY LOW – *consequences are negligible;* no evidence of adverse changes following exposure.

Comparison between probability and consequence provides the overall risk which is reached as follows:

ERA6 Assessing Overall Risk

		CONSEQUENCES			
		Very Low	**Low**	**Medium**	**High**
LIKELIHOOD	**High**	Low	Medium	High	High
	Medium	Low	Medium	Medium	High
	Low	Low	Low	Medium	Medium
	Very Low	Very Low	Low	Low	Low

3.6. Risk Management

Risk management practices for the key hazards identified above are summarised in Section 4 of this ERA. The information presented below is supported by various documents and this is clearly indicated within each table presented. In addition, risk management measures have been developed with reference to relevant guidance documents, the following being of particular note:

- Environmental Management – Guidance: Risk assessment for your environmental permit[2]
- Guidance: Noise and vibration management: environmental permits[3]
- Guidance: Control and monitor emissions for your environmental permit[4]
- Sector Guidance Note S5.06: Recovery and disposal of hazardous and non-hazardous waste.[5]
- Best Available Techniques (BAT) Reference (BREF) Document for Waste Treatment.

[2] Risk assessments for your environmental permit - GOV.UK (www.gov.uk), Updated 31 August 2022
[3] Noise and vibration management: environmental permits - GOV.UK (www.gov.uk), Updated 31 January 2022
[4] Control and monitor emissions for your environmental permit - GOV.UK (www.gov.uk), Updated 24 November 2022
[5] Sector Guidance Note S5.06: recovery and disposal of hazardous and non-hazardous waste - GOV.UK (www.gov.uk), Updated 10 October 2018

This risk assessment details the key management measures for identified risks.

3.7. Residual Risk

The application of management practice results in a residual risk which is detailed in Section 4 of this document.

4. RISK ASSESSMENT

The key hazards identified for the activity have been subject to a risk assessment against management practice. Each hazard is assessed in a separate table (Appendix A). The information presented is, as appropriate, supported by other documents and these are referenced.

Many of the hazards identified in the tables located in Appendix A relate to 'Environmental Risk Points (ERP)' identified throughout the processes:

ERA7 Environmental Risk Points (ERP)

REFERENCE	PROCESS
ERP1	Material receipt
ERP2	Material storage pending treatment
ERP3	Production processes
ERP4	Material dispatch

5. APPENDICES

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Appendix A

Environmental Risk Assessment Tables

K311.2~09~009

(04/01/2024)

Appendix B

Groundsure Report (GS-SF6-YCA-Y2R-QER)

(23/06/2023)

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