MUNDAYS HILL QUARRY RESTORATION

Environmental Permit Application

Environmental Risk Assessment

Prepared for: **Fox (Owmby) Limited**

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1.0 Introduction

Fox (Owmby) Limited (Fox) has instructed SLR Consulting Limited (SLR) to prepare an Environmental Permit (EP) application. The application seeks approval for the use of suitable waste in the restoration of Mundays Hill Quarry (the site), located near Heath and Reach, Bedfordshire LU7 9LE as a waste recovery operation under the Environmental Permitting (England and Wales) Regulations 2016.

1.1 Methodology

This ERA is an assessment of the risks to the environment and to human health from accidents, odour, noise and fugitive emissions that may be associated with the proposed operations at the site.

The assessment has been completed in accordance with the Environment Agency (EA) Technical Guidance *'Risk Assessments for your Environmental Permit'* dated August 2022[1]. The aim of the assessment is to identify any significant risks and demonstrate that the risk of pollution or harm will be acceptable by taking the appropriate measures to manage these risks.

This ERA uses the following approach for identifying and assessing the risks from the proposed operation:

Step 1 Identify risks and sources of risk from your activity.

Step 2 Where risks are identified from Step 1 then identify the receptors that could be affected.

Step 3 Identify potential pathways between the sources of risk and receptors.

Step 4 Assess the risks and check that they are acceptable. Justify appropriate measures to control your risks, if necessary.

Step 5 Submit your assessment.

Section 2.0 of this document is a screening step to identify the risks requiring consideration as part of this assessment.

Section 3.0 identifies people or parts of the environment that could be harmed (at potentially significant risk) by the activity. The ERA for an EP application requires all receptors that are near the site and could reasonably be affected by the activities to be identified and considered as part of the assessment.

For the purposes of this ERA the following distances have been used to identify potentially sensitive receptors:

- A 2km radius from the site's EP boundary has been used to identify potentially sensitive receptors of European ecological importance including RAMSAR sites, Special Areas of Conservation (SAC) and Special Protection Areas (SPA);
- A 2km radius from the site's EP boundary has been adopted in reviewing potentially sensitive receptors of ecological importance along with features such as sites of cultural and natural heritage. This includes National Nature Reserves (NNR), Local Nature Reserves (LNR) and Sites of Special Scientific Interest (SSSI), in line with EA guidance; and
- A radius of 500m from the site's EP boundary has been adopted for all other potentially sensitive receptors (for example, residential, commercial, industrial, agricultural and surface water receptors).

Section 4.0 of this document presents the assessment and demonstrates that any risks of pollution or harm will be mitigated to manage the risk.

This ERA should be read in conjunction with the following documents submitted with this EP application:

[1] Environment Agency - 'Risk Assessments for your Environmental Permit' August 2022, https://www.gov.uk/guidance/risk-assessments-for-your-environmental-permit, accessed March 2022.

- Non-Technical Summary;
- Waste Recovery Plan;
- Environmental Setting and Site Design;
- Emissions (Dust) Management Plan (DEMP);
- Stability Risk Assessment;
- Hydrogeological Risk Assessment; and
- Operating Techniques (OT) and Environmental Management System (EMS).

2.0 Identifying the Risks

Step 2 is a screening step to identify the potential risks to the environment from the development. The following are generally considered to require assessment for bespoke operations:

- Amenity and Accidents;
- Site Waste;
- Global Warming Potential;
- Odour;
- Noise; and
- Point source emissions to air, water and land.

There will be no point source emissions to groundwater, surface water, air or land resulting from the proposed application and neither will there be any site waste arising or global warming potential.

Excess clean, surface water discharge from the voids is pumped out into a ditch.

Therefore only 'Amenity and Accidents', remains applicable for assessment in this instance, and includes the consideration of odour, noise and vibration, fugitive emissions (including dust, mud, litter and pests) and accidents.

3.0 Site Setting and Receptors

3.1 Site Setting

Mundays Hill Quarry forms part of the Eastern Way Quarries which is a complex of active and worked mineral extraction sites along with their associated processing and manufacturing works. The site is situated approximately 700m east of the village of Heath and Reach and approximately 2000m north of the town of Leighton Buzzard. The total area of the site to be restored measures approximately 21 hectares. The site is accessed from a roadway off Eastern Way which runs to the north of the site. The National Grid Reference (NGR) for the site is SP 93611 28087.

The majority of the land surrounding the site is characterised by arable fields and working and disused sand quarries with their associated processing plant. Two geological Sites of Special Scientific Interest (SSSIs) are located within close proximity of the site. Nine Acres Pit SSSI (now backfilled as required by the ROMP) is located immediately to the south east of the western depression and Double Arches Pit SSSI is situated approximately 750m to the north. Kings and Bakers Woods and Heaths SSSI, which is designated for its broadleaved, mixed and yew woodland, lies approximately 1100m to the north west.

Two depressions from past sand quarrying activities remain at the site. The western depression (Mundays Hill West) has an area of approximately 160,824m^2 and is irregularly shaped, covering an area of land that runs from Eastern Way to the north along the western edge of the quarry boundary and extends towards the southern edge of the quarry. The eastern depression (Mundays Hill East/Nash Hole) is smaller with an area of 48,683m^2. It is more regularly shaped and sits towards the north eastern end of Mundays Hill Quarry, close to Mile Tree Road. It is proposed that both areas will be regulated under the same EP but given the distance between the areas, each will have a distinct EP boundary as shown on Drawing 001.

The site's location is illustrated on Drawing 003, and the EP Boundary on Drawing 001.

The surrounding land uses and local receptors within 500m and ecological, cultural and natural heritage receptors within 2km are identified on drawing 003.

A summary of the site's immediate surrounding land uses is identified in Table 3-1 below.

Table 3-1
Surrounding Land Uses

Boundary	Description
North	Eastern Way, followed by areas of open ground and multiple quarries with their associated processing and manufacturing works including Riddys Quarry, Checkleywood Quarry, Double Arches Quarry, Reach Lane Quarry and Bryant's Lane Quarry.
East	Mile Tree Road runs in a north-south direction to the east of the site. A number of farms and a small number of residential properties are situated along this road. The closest is Kingsway Farm which lies approximately 15m from the site. Beyond this lies open ground and the A5.
South	Nine Acres Quarry (now backfilled as required by the ROMP) followed by open/agricultural land and Leighton Buzzard Household Waste and Recycling Centre. A small commercial/industrial area lies in this direction including BMI Group UK Limited, Stonehenge Work Station and Cash for Cars & Vans & Caravans. This is followed by Shenley Hill Road.
West	Open/agricultural land with small areas of woodland. Beyond this lies the village of Heath and Reach.

The immediate surrounding land uses are described in further detail below.

3.1.1 Quarries

The site is located within the Eastern Way Quarries complex and the two depressions to be restored form part of the wider Mundays Hill Quarry. Further areas lie between the two depressions and immediately to the north and south. A quarry owned by L. B. Silica Sand Limited lies approximately 70m north west of Mundays Hill West at its' closest.

3.1.2 Commercial/Industrial Premises

An area of commercial/industrial premises lies to the north and north east of Mundays Hill East. The area includes Aggregate Industries Garside Sands which is located approximately 20m north, Garden Machinery Services which lies approximately 150m north east, and Buckingham Aggregates Ltd which is situated approximately 240m north east.

An additional commercial/industrial including Cash for Cars & Vans & Caravans, Stonehenge Works Station, BMI Group UK Limited, and Redland Wincanton lies approximately 380m south east. Leighton Buzzard Household Waste & Recycling Centre is located approximately 370m south.

3.1.3 Residential Properties

A few residential properties lie along Mile Tree Road with the closest approximately 50m east of Mundays Hill East. Double Arches Farm, White Gates and Mile Tree Farm lie approximately 140m north east, 210m south and 310m south respectively. Further individual residential properties lie to the west and north west of Mundays Hill West, with the closest approximately 190m from the western EP boundary.

3.1.4 Local Transport Network

The site is accessed from a roadway off Eastern Way which runs in an east-west direction approximately 30m to the north, Mile Tree Road runs in a north-south direction approximately 140m to the east. A small track connects the two depressions.

3.1.5 Surface Water Features

A small stream runs approximately 50m east. Small ponds lie approximately 90m east and 430m west. Surface water features associated with the quarries in the area lie approximately 310m north west and 480m north.

3.1.6 Open/Agricultural Ground

Open/agricultural ground is found adjacent to the west of the site and approximately 200m east.

3.1.7 Woodland

Areas of broadleaf woodland and deciduous woodland designated as a priority habitat can be found to the north, south and east of the site. The closest areas in each direction are:

- North: Deciduous and Broadleaved woodland: 130m;
- East: Deciduous and Broadleaved woodland: 155m; and
- South: Deciduous and Broadleaved woodland: 200m.

3.2 Geology

A review of the British Geological Survey (BGS) map[2], reveals that the bedrock across the site comprises:

- Gault Formation Mudstone – around both parts of the site, except where it has been removed by quarrying of Mundays Hill West and East and other nearby quarries; and
- Woburn Sands Formation Sandstone – underlying the Gault Formation Mudstone and exposed in quarries at and near the site. The Woburn Sands outcrop at surface to the north and west of the site. BGS borehole SP92NW21 (400m north of the site) indicates a thickness of 62m Woburn Sands, while the BGS Hydrogeological Map (1984) indicates c. 50m thickness of Woburn Sands 3km south of the site.

According to BGS online mapping and Defra mapping of historic landfills[3], the superficial deposits present across the site comprise:

- Made Ground – the south eastern end of Mundays Hill West is surrounded by an area designated by Defra as 'historic landfill', understood[4] at this location to be reworked overburden from nearby quarrying;
- Head deposits (<2m thick) of poorly sorted clay, silt, sand and gravel – around the eastern half of Mundays Hill East; and
- Diamicton (Oadby Member) of silty clay – surrounding all of Mundays Hill West except the south eastern end.

3.3 Hydrogeology

3.3.1 Aquifer Designations

The Gault Formation Mudstone is classified by the EA as Unproductive Strata. However, the Woburn Sands Formation is classified by the EA as a 'Principal' Aquifer, described as:

> *"Layers of rock or drift deposits that have high intergranular and/or fracture permeability - meaning they usually provide a high level of water storage. They may support water supply and/or river base flow on a strategic scale. In most cases, principal aquifers are aquifers previously designated as major aquifer."*

The Woburn Sands Formation in the vicinity of the Site is determined by the EA as a Principal Aquifer with High vulnerability. The high vulnerability reflects the lack of any overlying geology restricting recharge of any potential pollutants.

The superficial deposits underlying the site are classified as Secondary (Undifferentiated), with some areas classified as Unproductive.

3.3.2 Source Protection Zones

The site does not lie within a Source Protection Zone (SPZ), except for the south eastern corner of Munday's Hill West, which is located in a SPZ3, defined as: *'the total area needed to support the abstraction or discharge from the protected groundwater source'.*

[2] British Geological Survey Geology of Britain Viewer – Available at: Geology of Britain viewer - British Geological Survey (bgs.ac.uk), accessed April 2022.
[3] Defra mapping of Historic Landfills at Defra Spatial Data Download
[4] Mundays Hill Proposed Inert Landfills Preliminary Hydrogeological Risk Assessment, Firth Consultants (2019)

The EA has provided[5] details of three licenced groundwater abstractions within a 3km radius of the site, the nearest of which is located 1.5km from the site. Details of the licenced groundwater abstractions are presented in Table 2 below.

Table 2 Licensed Groundwater Abstractions

Licence Number	Holder	Distance from site	Purpose	Annual Vol (m3)
6/33/07/G/0014	Anglian Water	1.5km N	Public Water Supply	1,591,000
6/33/07/G/0015		1.5km E of Mundays Hill E	Public Water Supply	1,818,000
6/33/08/G/0028	Arnold White	1.6km SW of Mundays Hill W	Mineral Washing	21,821

Central Bedfordshire Council has also provided details of the only two private abstractions they are aware of within a 2km radius of the site. Both are located within 1.5km NNW of Mundays Hill West and abstract less than 10m^3/day for domestic use.

3.4 Hydrology

The Woburn Sands Formation in the vicinity of the site is determined by the EA as a Principal Aquifer with High Vulnerability. The EA mapping has five risk categories (High, Medium-High, Medium, Medium-Low and Low) based on the likelihood of a pollutant reaching the groundwater (i.e. the vulnerability), the types of aquifer present and the potential impact (i.e. the aquifer designation status). The high vulnerability reflects the lack of any overlying geology restricting recharge of any potential pollutants.

3.4.1 Flooding

The site lies within Flood Zone 1 and therefore has a low probability of flooding.

3.5 Ecology

The MAGIC map website has been accessed to determine the presence of any European or Internationally designated sites within a 2km radius from the site's boundary.

3.5.1 Sites of Special Scientific Interest (SSSI)

Two geological SSSIs are located within close proximity of the site. Nine Acres Pit SSSI (now backfilled as required by the ROMP) is located immediately to the south east of Mundays Hill West and Double Arches Pit SSSI is situated approximately 750m to the north. Kings and Bakers Woods and Heaths SSSI, which is designated for its broadleaved, mixed and yew woodland, lies approximately 1100m to the north west.

3.5.2 National Nature Reserve

Kings Wood and Rushmere National Nature Reserve (NNR) lies approximately 1,100m north west.

3.5.3 Ancient Woodland

Bragenham Wood Ancient & Semi-Natural Woodland lies approximately 1,100m north west and Home Wood Ancient Replanted Woodland is located approximately 1,530m to the north east. Bushycommon Wood lies approximately 1,900m north.

[5] Presented in Mundays Hill Proposed Inert Landfills Preliminary HRA, Firth Consultants (2019)

The searches on MAGIC confirmed that there are none of the following within 2km of the site's boundary:

- National Parks;
- Local Nature Reserves (LNR);
- Areas of Outstanding Natural Beauty (AONB);
- Special Areas of Conservation (SAC);
- RAMSAR sites; or
- Special Protection Areas (SPA).

3.6 Cultural and Heritage

3.6.1 Scheduled Monuments

Bowl Barrow East of the Knowlls scheduled monument was identified approximately 1,525m south west of the site.

3.6.2 Listed Buildings

Multiple Grade II listed buildings are situated within a 2km radius of the site as illustrated on Drawing 003. The majority are located within the village of Heath and Reach, the closest of which is Little Thatch which lies approximately 630m north west of the site.

3.6.3 Registered Parks and Gardens

A registered park and garden called Battlesden Park is situated approximately 900m north east.

The searches on MAGIC confirmed that there are none of the following within 2km of the site's boundary:

- Registered Battlefields;
- World Heritage Sites; or
- National Parks;

3.7 Identified Receptors

Table 3-2 below shows the locations of receptors that are considered to be potentially sensitive and could reasonably be affected by the operations carried out on site.

Table 3-3
Identified Receptors

Receptor Name	Receptor Type	Direction from Site	Approximate Distance from Site Boundary (in metres)
Local receptors located within 500m of the site boundary as shown on Drawing 003			
Wider Mundays Hill Quarry	Quarry	All Directions	Adjacent

Receptor Name	Receptor Type	Direction from Site	Approximate Distance from Site Boundary (in metres)
Open/Agricultural Ground	Open/Agricultural Ground	West	Adjacent
Aggregate Industries, Garside Sands	Commercial/Industrial	North	20m
Eastern Way	Local Transport Network	North	30m
Residential Property	Residential	East	50m
Small Stream	Surface Water Feature	East	50m
L. B Silica Sand Limited	Quarry	North west	70m
Small Pond	Surface Water Feature	East	90m
Deciduous and Broadleaved Woodland	Woodland	North	130m
Double Arches Farm	Residential	North east	140m
Mile Tree Road	Local Transport Network	East	140m
Garden Machinery Services	Commercial/Industrial	North east	150m
Deciduous and Broadleaved Woodland	Woodland	East	155m
Residential Property	Residential	West	190m
Deciduous and Broadleaved Woodland	Woodland	South	200m
Open/Agricultural Ground	Open/Agricultural Ground	East	200m
White Gates	Residential	South	210m
Buckingham Aggregates Ltd	Commercial/Industrial	North east	240m
Mile Tree Farm	Residential	South	310m
Surface Water Feature Associated with Quarry	Surface Water Feature	North west	310m
Leighton Buzzard Household Waste & recycling Centre	Commercial/Industrial	South	370m
Commercial/Industrial area including Cash for Cars & Vans & Caravans, Stonehenge Works Station, BMI Group UK Limited and Redland Wincanton	Commercial/Industrial	South east	380m
Small Pond	Surface Water Feature	West	430m

Receptor Name	Receptor Type	Direction from Site	Approximate Distance from Site Boundary (in metres)
Surface Water Feature Associated with Quarry	Surface Water Feature	North	480m
Ecology and Cultural and Natural Heritage identified within 2km of the site boundary as shown on Drawing 003			
Nine Acres Pit SSSI (now backfilled as required by ROMP)	SSSI	South east	Adjacent
Little Thatch	Listed Building	North west	630m
Double Arches Pit SSSI	SSSI	North	750m
Battlesden Park	Registered Parks and Gardens	North east	900m
Kings and Bakers Woods and Heaths SSSI	SSSI	North west	1100m
Kings Wood and Rushmere NNR	NNR	North west	1100m
Bragenham Wood Ancient & Semi-Natural Woodland	Ancient Woodland	North west	1100m
Bowl Barrow East of the Knowlls	Scheduled Monument	South west	1525m
Home Wood Ancient Replanted Woodland	Ancient Woodland	North east	1530m
Bushycommon Wood	Ancient Woodland	North	1900m

3.8 Windrose

Figure 3-1 shows the wind patterns from 2015 - 2019 as identified by the Luton meteorological station, which is the closest weather station lying 20.6km east of the site. The most prominent wind direction is from the south west to the north east with winds from other directions being more infrequent.

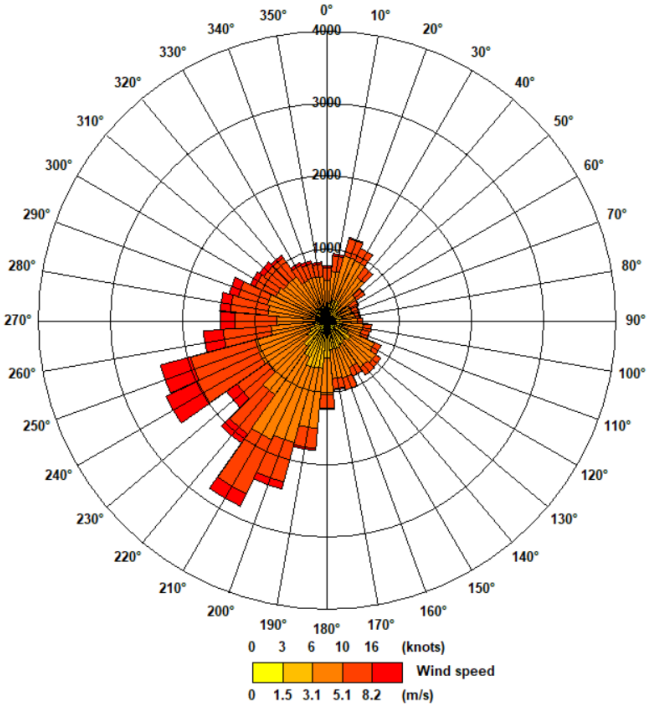

Figure 3-1
Luton Meteorological Station, 2015 - 2019

4.0 Environmental Risk Assessment

4.1 Amenity and Accidents Risk Assessment

The following tables (4.1 - 4.4) in this section assess the site in terms of potential hazards posed to amenity and by accidents, the associated receptors and pathways, along with measures to manage the identified risks.

The probability of exposure is the likelihood of the receptors being exposed to the hazard, and is defined as low, medium or high. These terms are qualified as follows;

- Low: exposure is unlikely, barriers in place to mitigate against exposure.
- Medium: exposure is fairly probable, barriers to exposure less controllable.
- High: exposure is probable, direct exposure likely with few barriers.

The methodology outline in Section 1.1 of this report is the basis on which it is determined whether the proposed operations will lead to significant impacts on the surrounding environment. Where a conclusion of 'not significant' has been reached, it is proposed that the mitigation and management measures that will be in place at the site will be sufficient to ensure that there will be no impact at the surrounding environment.

There will be no point source emissions to surface water, groundwater or air resulting from the proposed development and neither will there be any site waste arising or global warming potential. Therefore, it is only considered to be applicable for standard assessment in this instance, and includes the consideration of odour, noise and vibration, fugitive emissions (including dust, mud, litter and pests) and accidents in relation to the proposed development.

Table 4-1 Odour Risk Assessment and Management Plan

What do you do that can harm and what could be harmed		Managing the Risk		Assessing the Risk		
Hazard	**Receptor**	**Pathway**	**Risk management**	**Probability of exposure**	**Consequence**	**What is the overall risk**
What has the potential to cause harm?	What is at risk what do I wish to protect?	How can the hazard get to the receptor?	What measures will you take to reduce the risk? – Who is responsible for what?	How likely is this contact?	What is the harm that can be caused?	What is the risk that still remains? The balance of probability and consequence
From the acceptance and deposition of waste.	Sensitive receptors as listed in Table 3-2, including, commercial/industrial, residential, ecological and cultural receptors.	Air	Waste accepted on-site for general fill of the quarry will only consist of suitable waste materials and suitable imported waste topsoil material. These materials are not odorous in nature. The waste acceptance procedures on site will be enforced to ensure that no unauthorised waste will be accepted on site. This will minimise the chance of odorous waste being on site.	Low	Odour nuisance	**Not significant**

Table 4-2 Noise Risk Assessment and Management Plan

What do you do that can harm and what could be harmed		Managing the Risk		Assessing the Risk		
Hazard	**Receptor**	**Pathway**	**Risk management**	**Probability of exposure**	**Consequence**	**What is the overall risk**
What has the potential to cause harm?	What is at risk what do I wish to protect?	How can the hazard get to the receptor?	What measures will you take to reduce the risk? – Who is responsible for what?	How likely is this contact?	What is the harm that can be caused?	What is the risk that still remains? The balance of probability and consequence
Engine noise from vehicles entering/exiting site. Receiving and depositing of waste.	Sensitive receptors as listed in Table 3-2, including, commercial/industrial, residential, ecological and cultural receptors.	Air	A Noise Impact Assessment has been produced in support of the associated planning permission and concluded that during the infilling operations, the calculated site noise levels are not predicted to exceed the current permissible ambient noise level (55 dB $L_{Aeq, 1\,hr}$) for individual plant operations at any receptor. Few residential receptors are located within close proximity of the site. The closest residential receptor lies approximately 50m to the east of the site (with prevailing winds from the south west). The site is located within an area dominated by areas of open/agricultural land and working and disused sand quarries with their associated processing plant.	Low	Noise nuisance during operational hours.	**Low**

What do you do that can harm and what could be harmed		Managing the Risk		Assessing the Risk		
Hazard	**Receptor**	**Pathway**	**Risk management**	**Probability of exposure**	**Consequence**	**What is the overall risk**
What has the potential to cause harm?	What is at risk what do I wish to protect?	How can the hazard get to the receptor?	What measures will you take to reduce the risk? – Who is responsible for what?	How likely is this contact?	What is the harm that can be caused?	What is the risk that still remains? The balance of probability and consequence
			Any site operations including vehicles and site machinery will be restricted to only operate between the hours of 07:00 and 19:00 Monday to Friday and between 07:00 and 13:00 on Saturdays. No operations will be undertaken on Sundays and Bank Holidays. On average 75 loads per day will be delivered to the site. This equates to 150 two-way movements per day. Whilst there could be daily fluctuations above/below the average, an upper limit is proposed of 100 loads on any one day (200 two-way movements). All site plant will be operated and maintained in accordance with manufacturers specification, to reduce any unnecessary noise pollution. On-site plant will be turned off when not in use. Plant will be fitted with noise silencers if necessary. Speed limits (20 mph) will be implemented for vehicles on site and traffic calming measures introduced to help enforce these speed limits.			

What do you do that can harm and what could be harmed		Managing the Risk		Assessing the Risk		
Hazard	**Receptor**	**Pathway**	**Risk management**	**Probability of exposure**	**Consequence**	**What is the overall risk**
What has the potential to cause harm?	What is at risk what do I wish to protect?	How can the hazard get to the receptor?	What measures will you take to reduce the risk? – Who is responsible for what?	How likely is this contact?	What is the harm that can be caused?	What is the risk that still remains? The balance of probability and consequence
			Site access and operational areas will be maintained and repaired to an appropriate standard, to reduce any unnecessary noise emissions due to uneven/poor surfacing. Drop heights for waste deposition will be minimised to minimise noise emissions. All visitors and haulage companies will be made aware of the noise procedures. Auditory inspections will be carried out daily by site operatives and in response to complaints. If noise levels are deemed a nuisance, then a full investigation of mitigation measures will be carried out. The Site Manager will be responsible for implementing risk management measures in conjunction with the OT and EMS.			

Table 4-3 Fugitive Risk Assessment and Management Plan

What do you do that can harm and what could be harmed		Managing the Risk		Assessing the Risk		
Hazard	**Receptor**	**Pathway**	**Risk management**	**Probability of exposure**	**Consequence**	**What is the overall risk**
What has the potential to cause harm?	What is at risk what do I wish to protect?	How can the hazard get to the receptor?	What measures will you take to reduce the risk? – Who is responsible for what?	How likely is this contact?	What is the harm that can be caused?	What is the risk that still remains? The balance of probability and consequence
To Air:						
Dust Dust emissions from waste deposition/tipping operations and vehicle movements.	Sensitive receptors as listed in Table 3-2, including, commercial/industrial, residential, ecological and cultural receptors.	Air	The site will be managed in accordance with the DEMP (ref: 416.00583.00012/DEMP) which is included as Section 8 of this EP application.	Medium	Nuisance and harm to human health.	**Low**
To Water						

What do you do that can harm and what could be harmed		Managing the Risk		Assessing the Risk		
Hazard	**Receptor**	**Pathway**	**Risk management**	**Probability of exposure**	**Consequence**	**What is the overall risk**
What has the potential to cause harm?	What is at risk what do I wish to protect?	How can the hazard get to the receptor?	What measures will you take to reduce the risk? – Who is responsible for what?	How likely is this contact?	What is the harm that can be caused?	What is the risk that still remains? The balance of probability and consequence
Runoff from the site Runoff from site surfaces, including the access roads and haul roads. Percolation of contaminated water.	Sensitive receptors as listed in Table 3-2, including, commercial/industrial, residential, ecological and cultural receptors. Groundwater – low and unproductive groundwater vulnerability in the area.	Land and surface water. Percolation through the ground.	The site is only permitted to accept uncontaminated suitable waste. This poses minimal risk as contaminated runoff and leachate will not be generated. However, measures will be put in place to ensure risk of runoff from site is managed: • Strict waste acceptance procedures in place will ensure no unauthorised materials are accepted on to site; • The site will only accept and deposit waste, no storage or treatment will be undertaken; • Vehicles will undergo preventative maintenance to prevent any leaks of fuel/oil; • Spill kits will be stored on site containing appropriate absorbent	Low	Contamination of surrounding land and water (surface water and groundwater)	**Not significant**

What do you do that can harm and what could be harmed		Managing the Risk		Assessing the Risk		
Hazard	**Receptor**	**Pathway**	**Risk management**	**Probability of exposure**	**Consequence**	**What is the overall risk**
What has the potential to cause harm?	What is at risk what do I wish to protect?	How can the hazard get to the receptor?	What measures will you take to reduce the risk? – Who is responsible for what?	How likely is this contact?	What is the harm that can be caused?	What is the risk that still remains? The balance of probability and consequence
			materials to use in the event of a spillage; • No fuels, chemicals or hazardous substances will be stored on site; and • Groundwater quality monitoring will be conducted on site using the existing network of monitoring boreholes (Please see Hydrogeological Risk Assessment, Ref: 416.00583.00012/HRA). Site operations will be inspected daily for signs of spillages. The Site Manager will be responsible for implementing risk management measures in conjunction with the OT and EMS.			
Pests						

What do you do that can harm and what could be harmed		Managing the Risk		Assessing the Risk		
Hazard	**Receptor**	**Pathway**	**Risk management**	**Probability of exposure**	**Consequence**	**What is the overall risk**
What has the potential to cause harm?	What is at risk what do I wish to protect?	How can the hazard get to the receptor?	What measures will you take to reduce the risk? – Who is responsible for what?	How likely is this contact?	What is the harm that can be caused?	What is the risk that still remains? The balance of probability and consequence
Birds, vermin and pests	Sensitive receptors as listed in Table 3-2, including, commercial/industrial, residential, ecological and cultural receptors.	Land and air.	No biodegradable or putrescible waste will be accepted on site and strict waste acceptance procedures will ensure that no unauthorised wastes are accepted. Therefore, the wastes on-site will not attract birds, vermin and pests.	Low	Nuisance, potential risk to human health.	**Low**
Mud/Litter						
Mud from vehicle movements	Site access road. Local road network (Eastern Way and Mile Tree Road).	Land – transfer of mud to roads from vehicle wheels.	Access to the site is not located within the EP boundary. The site will be accessed from a roadway off Eastern Way to the north of the site. An adequate area of hard surfaced road between site activities and the site entrance/exit will be maintained. These measures will reduce the amount of mud and dirt the vehicles leaving site can pick up.	Medium	Nuisance from mud and dirt on roads. Dangerous conditions on roads.	**Low.**

What do you do that can harm and what could be harmed		Managing the Risk		Assessing the Risk		
Hazard	**Receptor**	**Pathway**	**Risk management**	**Probability of exposure**	**Consequence**	**What is the overall risk**
What has the potential to cause harm?	What is at risk what do I wish to protect?	How can the hazard get to the receptor?	What measures will you take to reduce the risk? – Who is responsible for what?	How likely is this contact?	What is the harm that can be caused?	What is the risk that still remains? The balance of probability and consequence
			The site will benefit from good housekeeping and all areas of the site will be maintained and cleaned daily, to minimise the transfer of mud from site. The wider Mundays Hill Quarry will benefit from wheel cleaning facilities on site. Wheel cleaning facilities will be utilised if checks reveal it is necessary. Daily inspections of the site will be conducted by site personal to identify if there are any problems associated with mud or waste debris. If any issues are raised, these will be cleaned up as soon as possible. The result of any inspections or investigations due to a complaint, will be recorded. The Site Manager will be responsible for implementing risk management measures in accordance with appropriate procedures in the OT and EMS.			

What do you do that can harm and what could be harmed		Managing the Risk		Assessing the Risk		
Hazard	**Receptor**	**Pathway**	**Risk management**	**Probability of exposure**	**Consequence**	**What is the overall risk**
What has the potential to cause harm?	What is at risk what do I wish to protect?	How can the hazard get to the receptor?	What measures will you take to reduce the risk? – Who is responsible for what?	How likely is this contact?	What is the harm that can be caused?	What is the risk that still remains? The balance of probability and consequence
Litter from waste	Sensitive receptors as listed in Table 3-2, including, commercial/industrial, residential, ecological and cultural receptors.	Air	The proposed waste types to be accepted on site will not generate litter. Site waste acceptance procedures will be followed to ensure that no unauthorised waste is accepted on site.	Low – due to the nature of the waste accepted on site.	Nuisance from litter. Loss of amenity. Dangerous conditions on roads.	**Not significant.**

Table 4-4 Accidents Risk Assessment and Management Plan

What do you do that can harm and what could be harmed		Managing the Risk		Assessing the Risk		
Hazard	**Receptor**	**Pathway**	**Risk management**	**Probability of exposure**	**Consequence**	**What is the overall risk**
What has the potential to cause harm?	What is at risk what do I wish to protect?	How can the hazard get to the receptor?	What measures will you take to reduce the risk? – Who is responsible for what?	How likely is this contact?	What is the harm that can be caused?	What is the risk that still remains? The balance of probability and consequence
<u>Spillage and Leakage</u> Spills and leaks of fuels and oils.	Local land quality. Groundwater – low and unproductive vulnerability in the area. Surface water.	Runoff and percolation through ground.	No fuel or oil tanks will be stored within the proposed EP boundary. Fuel and oil storage will be within the wider Mundays Hill Quarry (outside of the EP boundary). All vehicles and mobile plant will be subject to a programme of planned preventative maintenance in accordance with the manufacturer's recommendations to prevent oil/fuel leaks from vehicles. Spill kits will be kept on site and in the event of any minor spillages associated with vehicles or plant machinery will be cleaned up immediately using appropriate materials such as sand or absorbent material and afterwards placed in suitable sealed containers. Daily visual inspections will be carried out to identify any evidence of spillages or leakages from vehicles or plant machinery.	Low	Contamination of local land, groundwater and surface waters.	**Not significant.**

			The results of any inspections or investigations will be recorded. The Site Manager will be responsible for implanting risk management measures in accordance with the appropriate procedures as outlined in the OT and EMS.			
Fire	Sensitive receptors as listed in Table 3-2, including, commercial/industrial, residential, ecological and cultural receptors.	Air (smoke). Ground (spillages and firewater).	The waste types authorised to be accepted on site are 'inert' in nature and therefore will not readily burn or self-combust. Site waste acceptance procedures will be followed to ensure that no unauthorised waste is accepted on site. Waste will not be stored or treated within the EP boundary. The Site Manager will be responsible for implementing risk management measures detailed within the OT and EMS.	Low	Harm to human health and the environment and nuisance.	**Low.**
Vandalism/Security	Sensitive receptors as listed in Table 3-2, including, commercial/industrial, residential, ecological and cultural receptors.		The site will benefit from the security measures in place at the wider Mundays Hill Quarry and will be adequately secured using gates and fencing to prevent and deter any unauthorised entrance. The site will benefit from operational procedures, including regular inspections, to ensure continual monitoring of security provision. Security infrastructure will be inspected at the commencement of each working day to identify any deteriorations and need for repairs. If deterioration or damage is found, then actions will be taken to prevent unauthorised access and temporary repairs	Low	Theft. Harm to human health.	**Not significant.**

			made within 24 hours. Permanent repairs will then be made as soon as practically possible after this. All visitors to site will be required to sign in and out of the visitors book. This minimises the risk of unauthorised visitors gaining access to the site. The Site Manager will be responsible for implementing risk management measures in accordance with appropriate procedures outlined in the OT and EMS.			
Flooding	Sensitive receptors as listed in Table 3-2, including, commercial/industrial, residential, ecological and cultural receptors.	Flood waters over land.	The site lies within a flood zone 1 and therefore has a low probability of flooding.	Very low.	Contaminated flood waters impacting land in residential, ecological and commercial local areas.	**Negligible.**
Unauthorised Waste	Sensitive receptors as listed in Table 3-2, including, commercial/industrial, residential, ecological and cultural receptors.	Air, land and water	The site-specific waste acceptance procedures and criteria will be implemented on site with strict enforcement, to ensure no unauthorised waste is accepted. Only waste authorised by the permit will be accepted. These procedures will include; pre-acceptance checks, an approved suppliers list, basic characterisation and visual checks against the declaration on the waste transfer note. In the event that unauthorised waste is delivered to the site, then waste will be	Low	Odour nuisance. Water contamination.	**Not significant.**

			segregated and stored in a designated quarantine area before being exported from site. The Site Manager will be responsible for implementing risk management measures in accordance with appropriate procedures as outlined in the OT and EMS.			

5.0 Conclusion

This ERA has been undertaken in accordance with EA guidance. The assessment is provided as part of the application for an EP for the Mundays Hill Quarry restoration for Fox (Owmby) Limited.

This qualitative risk assessment has considered odour, noise, fugitive emissions, dust, releases to water, litter and potential for accidents and incidents.

The assessment concluded that with the implementation of the risk management measures described above, potential hazards from the application are not likely to be significant and no further assessment is required.

However, the EA's guidance[6] requires that all facilities for the 'recovery of household, commercial or industrial waste by deposit for recovery' are located 'within 500m of a sensitive receptor such as a home', need a DEMP to be prepared in support of an EP application.

Therefore, to support this ERA a DEMP has been prepared and is included in Section 8 of this EP application.

[6] Control and monitor emissions for your environmental permit - GOV.UK (www.gov.uk)

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