

MELTON ROSS WESTERN QUARRY AREA RESTORATION

Environmental Permit Variation Application

Amenity and Accident Risk Assessment

Prepared for: Singleton Birch Limited

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1.0 INTRODUCTION

SLR Consulting Limited (SLR) has been instructed by Singleton Birch Limited (SBL) to prepare an environmental permit variation application to add the restoration of the Western Quarry Area of the Melton Ross Quarry Complex, hereafter referred to as 'the Site', to SBL's Melton Ross Lime Works permit (ref. EPR/BL88051Z).

The environmental permit application seeks the use of inert waste in the restoration of the land to agricultural and nature conservation uses at the Site.

This Amenity and Accident Risk Assessment (AARA) supports the EP application by assessing risks to the environment as a result of the proposed activities. This report follows Environment Agency guidance Risk assessments for your environmental permit¹ (2020).

2.0 OPERATIONS

2.1 Current Status

The Site consists of a partially excavated chalk quarry.

The Site is now almost fully worked out of chalk that is of a suitable chemical quality for lime production within SBL's lime kilns. This chalk, known as Welton Chalk, is a distinct geological horizon which is separated from a lower chalk horizon, known as the Ferriby Chalk, by a layer of dark marl, known as the 'Black Band' or the Plenus Marl.

The Ferriby Chalk is not sufficiently pure to allow it to be used for lime manufacture. However, a trial excavation, in the southern part of the Site, through the Plenus Marl, and into the underlying Ferriby Chalk, has demonstrated that it is suitable for use as low-grade aggregate which can be used off site as a construction material, thus husbanding the reserves of high quality Welton Chalk for use in the company's lime kilns.

The northern part of the Site is being used to stockpile restoration materials including soils from the northern extension area as well as mining waste from this area.

2.2 Proposed Development

Following extraction of chalk from the Site, it is proposed that the Site will be progressively restored with inert materials under a deposit for recovery (DfR) scheme. Restoration will be conducted in a phased approach from north to south.

The restoration proposals, illustrated in Drawing RS2, aim to mimic the character and after uses that would be provided by the adjacent Camp Wood Landfill to produce an attractive landform including agricultural and nature conservation after uses.

The Western Quarry has been largely excavated to close to the base of the Welton Chalk, with typically 1 – 2m of in-situ chalk present beneath the base of the quarry. It is proposed to deepen the existing quarry in the south of the Site to excavate through the Black Band and to work the underlying Ferriby Chalk.

The Ferriby Chalk excavation will subsequently be backfilled using mining waste material (<22mm chalk scalplings), low-quality chalk extracted from the Northern Quarry and overburden/interburden material (i.e. the Black Band) to bring the elevation level with the base of the Welton Chalk. An attenuation layer will then be installed across the base and sidewalls of the Welton Chalk prior to the deposition of imported inert waste

¹ EA Guidance, Risk Assessments for your environmental permit, 2020, available at <https://www.gov.uk/guidance/risk-assessments-for-your-environmental-permit>, accessed in October 2020.

material to restoration level. The extraction and engineering of the Site is illustrated conceptually in Drawing EP7.

Key Points regarding the proposed restoration are as follows:

- Extraction of Welton Chalk, Plenus Marl and Ferriby Chalk is proposed in the southern part of the Site at the same time as restoration commences in the northern part of the Site;
- Restoration of the southern part of the Site will commence when extraction is completed, to catch up with deposits made in the northern part of the Site;
- Thereafter, restoration will be undertaken in lifts to achieve the restoration profile minus the top soil and subsoil layer;
- Approximately 340,000m³ of topsoil and subsoil stripped from the Northern Quarry Area will be spread over the surface of the landform to a depth of 1m to effect final restoration in line with Drawing RS2;
- It is estimated that approximately 4,817,385m³ of material is required to restore the Site. Of this a minimum of 1,889,000m³ will be provided by site-derived materials, reducing the imported inert waste requirement to a maximum of 2,928,385m³; a reduction of 40%; and
- Assuming an average density of 2.0 t/m³, the mass of imported inert waste materials will be approximately 5,856,770 tonnes.

The Site will accept up to 750,000 tonnes per annum of inert material for deposit for recovery. Inert materials for the restoration would be sourced from the local area and will be imported to the site through existing quarry infrastructure.

3.0 SITE SETTING AND RECEPTORS

3.1 Site Setting

The Melton Ross Quarry Complex is located within a predominantly agricultural landscape, approximately 17km to the east of Scunthorpe, within North Lincolnshire. It is located west of the village of Croxton, and north of the village of Melton Ross. Access to the complex is gained from the B1211 to the southeast.

The complex is bisected by the A180(T), which runs east – west between parts of the complex. The original quarry workings lie to the south of the A180(T) and a more recent quarry extension is being developed to the north of this road. The Western Quarry comprises the western part of the original quarry area to the south of the A180(T), centred on national grid reference TA 07288 11446. The Camp Wood landfill lies in the eastern part of the original quarry area to the south of the A180(T).

The location of the Site is illustrated on Drawing EP1 Site Location Plan, and its extent is visible on Drawing EP2 Environmental Permit Boundary.

The Site is located within an area which is predominantly agricultural and rural, within a local topography that is gently undulating. The nearest residential properties are situated approximately 280m south in the conurbation of Melton Ross, followed by a cluster of properties located approximately 345m north.

3.2 Surrounding Land Uses

Surrounding land-use and receptors are identified on Drawing EP5 Environmental Site Setting and EP6 Cultural and Natural Heritage. Immediate surrounding land uses are identified in Table 1 below.

Table 1 Immediate Surrounding Land Uses

Boundary	Description
North	A180 and Melton Ross Quarry Complex
East	Camp Wood Landfill
South	Agricultural Land
West	Local Road Network and Agricultural Land

The surrounding land use is described in further detail below.

Local Transport Network

The A180 lies adjacent to the Site's northern boundary, whilst an unnamed road is adjacent to the western boundary. Beyond this, the A18 lies approximately 220m south of the EP boundary.

A railway is situated 420m south of the Site.

Industrial & Commercial

The Site lies within the Melton Ross Quarry Complex, as illustrated on Drawing EP2.

Agricultural

There are multiple agricultural receptors within 500m of the Site. Agricultural fields lie adjacent to the southern and eastern borders of the Site and are located in close proximity to the northern and western borders also, at distances of 50m and 20m respectively.

Additionally, there are several farms within the vicinity of the Site. Hall Farm lies 170m south, whilst Oaks Farm is located 470m south.

Residential

The nearest residential properties are 280m south in Melton Ross, followed by a cluster of properties approximately 345m north.

Woodland and Open Land

There is one section of woodland within 500m of the Site; Melton High Wood, located approximately 245m north of the Site.

Religious

One religious receptor lies within 500m of the Site; the Church of the Holy Ascension located 365m south.

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.

A review of the MAGIC map and Drawing EP3 Environmental Site Setting, revealed that there are two ecologically important receptors within 2km of the EP boundary;

- Melton Ross Quarry Local Wildlife Site, located 700m east; and
- Ancient Woodland, located 1.3km southwest.

MAGIC confirmed that there are none of the following within 2km of the Site:

- Areas of Outstanding Natural Beauty;

- Local Nature Reserve;
- National Nature Reserve;
- Ramsar;
- Site of Special Scientific Interest;
- Special Area of Conservation;
- Special Protection Area;
- National Forest;
- RSPB Reserve;
- Marine Conservation Zone;
- Special Areas of Conservation (Marine Components); and
- Special protection Area (Marine Components).

3.3 Cultural Heritage

A search on the MAGIC map revealed numerous receptors of cultural importance within 2km of the Site:

- Four Scheduled Monuments
 - Yarborough Camp Large Univallate Hillfort, 730m northeast;
 - Moated Site and Fishpond 200m Southeast of Melton Hall, 535m south;
 - Roman Settlement, 1990m east;
 - Medieval Settlement of Croxton, 1830m northeast;
- Four Listed Buildings
 - Church of the Holy Ascension, 365m south;
 - Melton Hall, 485m south;
 - High Wood Farmhouse, 360m northwest; and
 - Pump House Approximately 10m North of High Wood Farmhouse, 390m northwest.

The search confirmed there are none of the following within 2km of the EP boundary:

- Registered Battlefields
- Registered Parks and Gardens
- World Heritage Sites

3.4 Receptors

Local Receptors within 500m of the Site are identified in Table 2, along with cultural and ecological receptors within 2km.

Table 2 Identified Receptors

Receptor Name	Receptor Type	Direction from Ste	Distance from EP Boundary (metres)
Local Receptors within 500m as identified on Drawing 003 Sources Pathways and Receptors			
A180	Local Transport Network	North	Adjacent
Camp Wood Landfill	Industrial	East	Adjacent
Local Roads	Local Transport Network	West	Adjacent
Agricultural Fields	Agricultural	North, East, South and West	Adjacent
Drains	Surface Water	West	35
Man-made ponds	Surface Water	East	50
Open Land	Open Land	East	75
Pond	Surface Water	East	120
Hall Farm	Agricultural	South	170
A18	Local Transport Network	South	220
Melton High Wood	Woodland	North	245
Melton Ross	Residential	South	280
Residential Properties	Residential	North	345
Church of the Holy Ascension	Religious	South	365
Railway	Local Transport Network	South	420
Oaks Farm	Agricultural	South	470
Pond	Surface Water	South	480
Melton Hall	Listed Building	South	485
Ecological and Cultural Receptors within 2km as identified on Drawing 004 Cultural and Natural Heritage			
High Wood Farmhouse	Listed Building	Northwest	360
Church of the Holy Ascension	Listed Building	South	365
Pump House approximately 10metres north of high wood farmhouse	Listed Building	Northwest	390
Melton Hall	Listed Building	South	485
Moated Site and Fishpond 200m Southeast of Melton Hall	Scheduled Monument	South	535
Melton Ross Quarry Local Wildlife Site	Local Wildlife Site	East	700
Yarborough Camp Large Unvallate Hill Fort	Scheduled Monument	Northeast	730
Ancient & Semi-Natural Woodland	Ancient Woodland	West	1300
Medieval Settlement of Croxton	Scheduled Monument	Northeast	1830
Roman Settlement	Scheduled Monument	East	1990

3.5 Geology, Hydrogeology and Hydrology

3.5.1 Geology

A review of the British Geological Survey² mapping revealed that the Site is underlain by the following geological strata:

- Superficial Deposits – None recorded; and
- Bedrock – Welton Chalk Formation Chalk.

3.5.2 Hydrogeology

The Multi-Agency Geographical Information for the Countryside (MAGIC) map³ confirms that the Site is underlain by a bedrock which is designated as a Principal Aquifer. This is defined as “*geology that exhibit high permeability and or provide a high level of water storage. They may support water supply and or river base flow on a strategic scale*”.

The superficial deposits at the Site are not classified and deemed unproductive.

The Site lies within an area classified Source Protection Zone III – Total Catchment, according to the MAGIC website.

3.5.3 Hydrology

There are no surface water features within the EP boundary. The nearest surface water feature to the Site are drains 35m west. Beyond this, man-made ponds associated with the quarry complex lie 50m east followed by another pond 120m east. A further pond is 480m south.

The Site lies within the Humber River Basin District⁴. Its eastern side is located within the Ancholme operational catchment area, whilst its western side is within the Becks Northern operational catchment area.

The Site lies within a Flood Zone 1, which is defined as land having a less than 1 in 1,000 annual probability of river or sea flooding⁵.

3.6 Wind Rose

Data has been obtained from the Humberside Airport meteorological station for 2016, located approximately 850m to the northwest. The predominant wind direction is from the southwest.

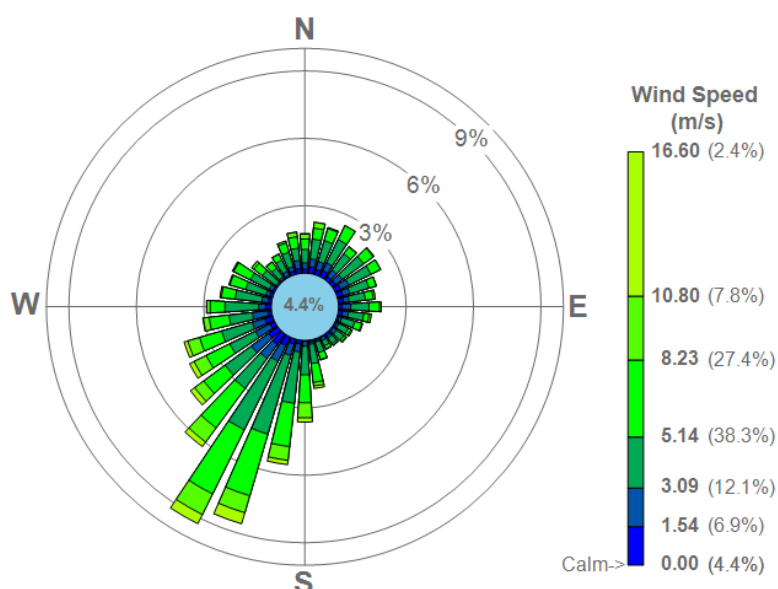
² British Geological Survey, available at www.bgs.ac.uk, accessed in July 2019

³ Multi-Agency Geographical Information for the Countryside Map – www.magic.defra.gov.uk, accessed in July 2020

⁴ Catchment Data Explorer, available at <https://environment.data.gov.uk/catchment-planning/>, accessed in July 2019

⁵ Flood Map for Planning, available at www.flood-map-for-planning.service.gov.uk, accessed in July 2019

Figure 1 Humberside Airport Meteorological Station, 2016



4.0 RISK ASSESSMENT

4.1 Overview and Approach

This section outlines the procedure that has been followed in the undertaking of the AARA for the Site:

- | | |
|-------------------|--|
| Step One | Identify risks and their sources for the Site |
| Step Two | Identify receptors at risk from the Site |
| Step Three | Identify pathways between sources and receptors |
| Step Four | Assess risks relevant to the Site activities and determine if they can be screened out |
| Step Five | State measures proposed to control unacceptably high risks |
| Step Six | Present your assessment |

Step One is a screening step to identify the potential risks to the environment from the proposed development. The EA Guidance identifies areas that the EA considers would likely require assessment for most Sites as follows:

- Amenity and Accidents
- Surface Water
- Air
- Site Waste
- Global Warming Potential
- Groundwater

Amenity and accidents are considered to be applicable for assessment in this instance, and include the consideration of discharge, odour, noise and vibration, fugitive emissions (including dust, mud, litter and pests) and accidents in relation to the proposed development.

It is not proposed that there will be any emissions to surface water as a result of the activities nor will significant quantities of waste be generated. There will be no point source emissions to air from the activities and the global warming potential is low given the restoration involves the use of waste materials as opposed to primary materials.

Risks to groundwater are considered in the Hydrogeological Risk Assessment (ref. 416.00075.00104/HRA, October 2020).

Step two identifies people or parts of the environment that could be harmed (at potentially significant risk) by the activity.

Step three identifies the potential pathways between source and receptor and where appropriate, the assessment demonstrates how the risk of pollution or harm can be mitigated by measures to manage these risks and/or block the pathways (Steps four and five).

Tables 3 - 5 present the assessment in terms of hazards posed, receptors and pathways, along with management and residual risks for the hazards.

Table 3 Amenity 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
Noise & Vibration	Human and ecological receptors identified in Table 2.	Air	<p>The activities on Site are not expected to give rise to significant levels of noise. The activities proposed for the Site will be temporary and cease once restoration is achieved.</p> <p>Furthermore, the Site is in a predominantly agricultural area.</p> <p>To prevent unacceptable noise levels, all mobile plant will be equipped with noise reducing technology such as silencers, where available.</p> <p>A speed limit will be implemented on Site to minimise noise. Traffic calming measures will be implemented to enforce the speed limit.</p> <p>Furthermore, haul roads will be maintained regularly to avoid excessive noise from uneven surfacing.</p> <p>All visitors will be made aware of the Site’s commitment to minimising noise.</p> <p>Site machinery will be operated to minimise noise and in accordance with the manufacturer’s specifications.</p>	Low	Nuisance	Low

			<p>Any complaints will be investigated immediately and responded to within two working days. If the Site is found to give rise to unacceptable levels of noise, repairs will be carried out as necessary. If required, operations will cease until a suitable solution can be implemented.</p> <p>Site personnel will conduct daily auditory inspections at the Site's perimeter.</p> <p>The Site Manager will be responsible for monitoring and managing noise and vibrations on Site.</p>			
Odour	Human receptors identified in Table 2.	Air	<p>The Site will not accept any biodegradable or odorous materials. A strict Waste Acceptance Procedure will be implemented to ensure that only inert waste types listed in the EP will be accepted. As only inert waste will be accepted on Site, no degradation of material is expected and thus no odorous gases will be generated.</p> <p>In the event that odorous material is identified on Site it will be isolated in a sealed container and sent off Site to a suitably licenced facility for disposal or recovery.</p> <p>Site personnel will conduct daily olfactory inspections at the Site's perimeter.</p> <p>The Site Manager will be responsible for monitoring, managing and recording odour on Site.</p>	Low	Nuisance	Low
Percolation of contaminated material through ground	Principal aquifer and source protection zone	Groundwater, Soil	<p>A strict Waste Acceptance Procedure will be implemented to ensure that only inert waste types listed in the EP will be accepted. As only inert waste will be accepted on Site, it is not expected that there will be any generation of contaminated leachate nor its percolation through ground.</p> <p>The sloping of the Site has been designed to allow drainage of water to soakaways located on the quarry complex's floor post restoration.</p>	Low	Contamination of land and groundwater	Low

			<p>SBL's management system will identify and minimise risks, detailing how machinery will be stored safely and maintained to prevent liquids from leaking.</p> <p>Spill kits will be provided at suitable distances across the Site.</p> <p>In the event of any spillages, the spill kits will be used to clean them up immediately and prevent the liquids from percolating into the ground.</p> <p>There will be no storage of fuel on Site.</p> <p>The Site Manager will be responsible for ensuring the above measures are in place.</p>			
<p>Pests and scavenging animals, including flies, birds and mammals</p>	<p>Human and agricultural receptors identified in Table 2.</p>	<p>Air, Land, Water</p>	<p>The Site will not accept biodegradable materials and as such the potential for attracting pests / flies / birds is minimal. Strict Waste Acceptance Procedures will ensure that only waste types listed in the EP will be accepted onto the Site. Nonetheless, mitigation measures will be in place to manage pests on Site.</p> <p>The Site will benefit from good housekeeping. Roads will be swept daily, and plant/ equipment kept in a clean state.</p> <p>The Site Manager or a nominated Site personnel will inspect the Site daily for signs of pests. Any pests identified will be logged in the Site Diary and the source of their attraction will be identified.</p> <p>If necessary, a pest control company will be contacted to remove the pests from the Site.</p>	<p>Low</p>	<p>Nuisance</p>	<p>Low</p>
<p>Dust</p>	<p>Human, surface water and ecological receptors</p>	<p>Air</p>	<p>The site is located in a remote area away from sensitive receptors.</p>	<p>Medium</p>	<p>Nuisance, harm to animal and human health</p>	<p>Low based on the mitigation measures in place.</p>

	identified in Table 2.		<p>Strict Waste Acceptance Procedures will ensure that only waste types listed in the EP will be accepted onto the Site.</p> <p>Materials accepted onto Site for DfR has the potential to release dust. Additionally, activities such as vehicle movement and tipping may mobilise dust particles. To manage this, the following measures will be implemented:</p> <ul style="list-style-type: none"> • All vehicles will be sheeted where required; • Traffic calming measures including a speed limit are implemented to reduce mobilisation of dust particles; • Haul roads will be maintained regularly to minimise dust emissions; • The Site will benefit from water bowsers to dampen dusty areas on Site; • Meteorological conditions will be taken into account. If conditions are likely to mobilise dust, operations will be halted until conditions improve or works will be carried out with bowsers and screens if necessary. <p>Site personnel will conduct daily visual inspections of operational areas and results are logged in the Site diary.</p> <p>The Site Manager will be responsible for monitoring and managing dust on Site.</p>			
Mud	Human receptors and transport networks identified in Table 2.	Land	<p>Strict Waste Acceptance Procedures will ensure that only waste types listed in the EP will be accepted onto the Site. The waste types accepted on Site are unlikely to yield significant quantities of mud.</p>	Low	Nuisance, loss of amenity, road traffic accidents	Low

			<p>Wheel wash stations will be in place at the entry to the Melton Ross Quarry Complex.</p> <p>The Site's operational areas will benefit from regular maintenance and good housekeeping to prevent mud.</p> <p>Site personnel will inspect the operational areas, perimeter and surrounding roads daily. If Site-derived mud is identified it will be cleaned up as soon as practicable.</p> <p>The Site Manager will be responsible for monitoring and managing dust on Site.</p>			
Litter	Human, surface water, agricultural and ecological receptors identified in Table 2.	Land	<p>Strict Waste Acceptance Procedures will ensure that only waste types listed in the EP will be accepted onto the Site. The Site will not accept litter-yielding materials. Furthermore, there is no infrastructure on the Site that could yield litter e.g. welfare cabins.</p> <p>The management system will have procedures contained within it to remove and contain any litter on Site.</p> <p>Bins for the use of Site personnel will be provided off Site, at company owned facilities.</p> <p>The Site and its perimeter will be inspected daily by the Site personnel and any litter will be removed immediately.</p> <p>The Site Manager will be responsible for monitoring and managing litter on Site.</p>	Low	Nuisance, loss of amenity, harm to animal health.	Low

Table 4 Accidents 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
Fire	All sensitive receptors identified in Table 2.	-	<p>Strict Waste Acceptance Procedures will ensure that only waste types listed in the EP will be accepted onto the Site. The Site will only accept inert materials with a low risk of combustion, reducing the potential for a fire to occur.</p> <p>In the event of a small fire Site personnel will attempt to extinguish it. If they are unable to extinguish it they will evacuate the Site and call the fire brigade and then Environment Agency.</p> <p>In the event of a large fire Site personnel will evacuate the Site and call the fire brigade and then the Environment Agency,</p> <p>Staff will receive training in fire identification and management when they join. They will receive refresher training annually and in response to any incidents.</p> <p>No burning of waste or smoking will take place on Site.</p> <p>The Site Manager will be responsible for monitoring and managing fire on Site</p>	Low	Harm to human health	Low

Flooding	All sensitive receptors identified in Table 2.	Land	<p>The Site lies within a flood zone 1, which is defined as having a less than 1 in 1000 annual probability of river or sea flooding.</p> <p>The final proposed restoration landform in the Site will be to a gently sloping, dished landform. This ensures drainage of water to soakaways located on the quarry complex's floor and access by agricultural and forestry machinery.</p> <p>The Site Manager will be responsible for monitoring and managing flooding on Site.</p>	Low	Harm to human health	Low
Security and Vandalism	Trespassers, site workers	Air, Land, Surface Water	<p>The Site will benefit from fencing, hedges and security gates around the perimeter to exclude unauthorised visitors. Security is in place across the Melton Ross Quarry Complex.</p> <p>All visitors will be required to sign a visitor's book on arrival and departure.</p> <p>The Site will only accept waste at low risk of combustion to minimise the risk of fires caused by arson. In the event of arson, the measures above (under fire) will be followed.</p> <p>Security infrastructure will be inspected daily. In the event that infrastructure is broken, repairs will be made the same day as they are noticed, due to safety implications.</p> <p>The Site Manager will be responsible for monitoring and managing security on Site.</p>	Low	Harm to human health, breakdown of mobile plant, release of pollutants e.g. through smoke	Low
Acceptance of Unauthorised materials	All sensitive receptors identified in Table 2.	-	<p>Strict waste acceptance procedures are in place to prevent unauthorised materials being accepted onto Site and deposited for recovery.</p> <p>The waste acceptance procedures are included in Section 10 of this application.</p>	Low	Contamination	Low

			<p>In the event that any unauthorised materials are accepted in error, they will be isolated and removed from Site at the expense of the waste supplier, to a suitably licenced facility for disposal or recovery.</p> <p>The Site Manager will be responsible for monitoring and managing waste deposits on Site and for logging non-compliant waste.</p>			
Spillage or Leakage	Principal aquifer and source protection zone, surface water	Land, Groundwater and Surface Water	<p>There will be no liquids accepted onto or stored on Site.</p> <p>Spill kits will be distributed around the Site in the event of spillage of fuel from delivery vehicles.</p> <p>The Site Manager will be responsible for monitoring and managing spillages on Site</p>	Low	Contamination	Low

5.0 CONCLUSION

It is concluded that the operations at the Site will have a negligible impact on the environment, provided that the risk management measures detailed in this document are adhered to.

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