

Hibaldstow Quarry Soil Treatment Facility

H1 Environmental Risk Assessment (ERA)

Document Ref: 243152/ERA June 2025



AA Environmental Limited
Units 4 to 8 Cholswell Court
Shippon
Abingdon
OX13 6HX
T01235 536042
F01235 532849
info@aae-ltd.co.uk
www.aae-ltd.co.uk

Report for:		Hibaldstow Quarry,
Welton Aggregatos L	imited	Redbourne Road
Welton Aggregates Li Rookery Farm	iriilea	Brigg
Welton Le Marsh		Lincolnshire
Spilsby		DN20 9NN
Lincolnshire		2.120 0.111
PE23 5SX		
Issue Date	Document Reference	
1 2005		
June 2025	243152/ERA	<u> </u>
Prepared By		
GBown	_	
Ed Brown BSc (Hon	s)	
Reviewed By		
AND		
Matthew Lawman M	Sc BSc (Hons)	
AA Environmental L Unit 4 to 8	imited (Registered Office)	
Cholswell Court		
Shippon		
Abingdon		
OX13 6HX		
T 01235 536042		
F 01235 532849		
E info@aae-ltd.co.ul	<u>k</u>	
www.aae-ltd.co.uk		
Company No. 847432	22	
Table of Revisions		
Issue	Description of status	

Contents

		Page No
1.0 INTRODU	JCTION	1
2.0 PHYSICA	AL AND ENVIRONMENTAL SETTING	1
3.0 RISK AS	SESSMENT	4
APPENDICES		
Appendix A	H1 Risk Assessment	
DRAWINGS		
243152/D001	Site Location Plan	
243152/D002	Permit Boundary Plan	
243152/D003	Site Receptor Plan	
243152/D006	Detailed Site Layout Plan	

1.0 INTRODUCTION

Overview

- 1.1 This Environmental Risk Assessment (ERA) has been produced to accompany the variation application by Welton Aggregates Limited (the Operator), to vary from a Standard Rules (SR2022 No. 1 previously SR2008 No. 11 75 kte) Permit (EPR/BB3300UM) to a bespoke permit. The variation includes a proposed extension of the permit boundary, and addition of a soil wash activity, for the permitted facility at Hibaldstow Quarry, Redbourne Road, Brigg, Lincolnshire, DN20 9NN.
- 1.2 As part of an application for the variation to the Permit, Operators must assess the risk to the environment and human health on the proposed extended area and activity.
- 1.3 The site is currently permitted to treat inert waste streams via sorting, separation, screening and crushing, prior to onward recovery and disposal. The permit variation enables a soil wash plant to operate at the site. The annual throughput is 200,000 tonnes per annum. The site layout is presented in drawing 243152/D/004 and 006.
- 1.4 The site is located within Hibaldstow Quarry, off the B1206 (Redbourne Road), surrounded by open farmland. The village of Redbourne is located approximately 600 m south of the centre of the site and the town of Hibaldstow approximately 1.5 km north of the centre of the site. Within 1 km of the centre of the site, there are arable fields, small farm buildings, and Hibaldstow Airfield to the east. The site location is presented in drawing 243152/D/001 and D/002.
- 1.5 This report establishes the baseline conditions of the site, identifies any potential risks associated with the bespoke permit in accordance with Environment Agency (EA) Horizontal Guidance H1 and outlines required controls.

2.0 PHYSICAL AND ENVIRONMENTAL SETTING

Site Location

2.1 The permitted wider Hibaldstow Quarry site is approximately 15 hectares (ha). The centre of the site is located approximately 500 m west of Hibaldstow Airfield. The site centre is at 497076 E and 400835 N (SE970008)¹.

Topography

2.2 The Hibaldstow Quarry site contains quarried areas and is between 10-20 m above Ordnance Datum (m AOD)². The permit boundary area is relatively flat and situated at approximately 20 m above Ordnance Datum².

Geology

- 2.3 The site is located over the solid bedrock of Hibaldstow Limestone Formation³.
- 2.4 There is one British Geological Survey (BGS) borehole record at the site (at the entrance to Hibaldstow Quarry), Hibaldstow LS 7 (ref SE90SE59). This borehole log reveals 'silty material' to 4 ft deep, underlain by 'limestone-brown, oolitic, weathered in top 3 ft. Ooliths of variable size at the top but do become smaller and less abundant down.'. This limestone extended to 25 ft below ground level. The borehole was drilled to 84 ft deep with layers of limestone and marl, a sandstone layer at 83 ft below ground level and terminated in a 'Marl-pale grey, silty'4.

¹ Grid Ref Finder, Grid Reference Finder, accessed 16th June 2025.

² MAGIC Map Tool, Magic Map Application, accessed 16th June 2025.

³ BGS Viewer <u>BGS Geology Viewer (BETA)</u>, accessed 16th June 2025.

⁴ BGS Mapping Tool, <u>GeoIndex - British Geological Survey</u>, accessed 16th June 2025.

- 2.5 The site itself, as part of Hibaldstow Quarry, is an active mineral extraction site for the Hibaldstow Limestone Formation as well as for recycled secondary aggregate.
- 2.6 The site is in an area that might not be affected by coal mining with no hazards relating to coal mining⁵.
- 2.7 The is classed as being at 'Very Low' hazard potential for collapsible ground stability, ground dissolution stability and landslide ground stability, and 'No Hazard' for compressible ground stability and shrinking or swelling clay ground stability, as detailed in the Envirocheck report⁵.

Soil

- 2.8 The Soil Map of England and Wales⁶ has been consulted to classify and describe the near-surface soil (namely topsoil and sub-soil):
 - Aberford: Permian, Jurassic and Eocene limestone. Shallow, locally brashy, well drained calcareous fine loamy soils over limestone. Some deeper calcareous soils in colluvium.
- 2.9 BGS have developed a data base of existing contamination levels within the soil within the area. Table 1 outlines the record ranges in concentrations provided within the Envirocheck report⁵.

Table 1 BGS recorded contamination levels

Contaminant	Proximity to site	Concentrations
Arsenic	On Site	15-25 mg/kg
Cadmium	On Site	<1.8 mg/kg
Chromium	On Site	40-60 mg/kg
Lead	On Site	<100 mg/kg
Nickel	On Site	15 - 30 mg/kg

Hydrogeology

- 2.10 Superficial deposits onsite are not designated as an aquifer. The Hibaldstow Limestone Formation bedrock is classified as a Principle Bedrock Aquifer (High Vulnerability). The Envirocheck report⁵ highlights the site as presenting a significant soluble rock risk (groundwater vulnerability) but with 'Low Possibility'.
- 2.11 There are no water abstractions on the site⁵. The nearest is 768 m north of the centre of the site obtained by A M Borrill & Son for the abstraction of groundwater for general farming and domestic purposes⁵. The site is within both a Zone 2 (Outer Protection Zone) and a Zone 3 (Total Catchment) zone⁵.
- 2.12 There are 3 active discharge consents within 1 km of the centre of the site, with the closest located 898 m to the south east of the centre of the site⁵. The consent is obtained by Anglian Water Services Limited for the discharge of sewage discharges from the pumping station to a freshwater stream/river. A second is recorded 953 m south of the centre of the site as held by Ralph Day Ltd for the discharge of agricultural and surface trade discharge to land/soakaway. The third is 994 m south of the centre of the site for J Owen Day Ltd for the discharge of agricultural and surface trade discharge to land/soakaway.

 $^{^{\}rm 5}$ Envirocheck report, accessed 10th June 2025 (ref: 378702540_1_1).

⁶ Soil Survey of England and Wales 1983. Soil Map of England and Wales 1:250,000 Sheet 4.

Hydrology and fluvial flood risk

- 2.13 The site is located within the Ancholme Water Framework Directive catchment⁵. The site is not located within any flood zones.
- 2.14 BGS records in the Envirocheck report⁵ state the site has 'the potential for groundwater flooding of property situated below ground level' to occur. The Flood Map for Planning⁷ note that the site is not located within a Flood Zone. The nearest Flood Zones 2 and 3 are located approximately 900 m south of the centre of the site. It is also not located within an area of flood risk from rivers and seas (either with or without defences) but it does have areas with potential for flooding from surface waters with 1% (1 in 100) chance of flooding each year.
- 2.15 There are no formal surface water features on the site.

Recorded pollution incidents

2.16 There are no known historic pollution incidents at Hibaldstow Quarry site⁵. The nearest is 837 m south of the centre of the site, a Category 3 Minor Incident, with unknown pollutant entering groundwater for an unknown reason. There have been two further recorded pollution incidents, both relate to overfilling during delivery of pesticides on an arable property into an unnamed watercourse, 938 m south of the centre of the site.

Ecosystems

- 2.17 The site is not located within any sensitive locations. It is located within a surface water Nitrate Vulnerable Zone (NVZ) Ancholme Frome Bishopbridge to the Humber, and in a groundwater NVZ of the Lincolnshire Limestone⁵.
- 2.18 The site is not located within an area of any Priority Habitat, nor is it within 1 km of any Priority Habitat². The nearest Site of Special Scientific Interest (SSSIs) are located nearly 3 km west of the centre of the site, these being Cliff Farm Pit and Cleatham Quarry. The nearest Area of Outstanding Natural Beauty (AONB) is located over 12 km east of the site. The nearest Special Area of Conservation (SAC), Special Protection Area (SPA) and Ramsar site are over 15 km away.

Surrounding receptors

2.19 The site is within a BGS recorded mineral site – Hibaldstow Quarry, producing limestone⁵. Farm buildings for Slate House Farm (550 m east of the centre of the site) and Field House Farm (900 m north east of the centre of the site. There are also depot buildings for commercial/airfield use further east of Slate House Farm. There are residential and commercial uses of property at Redbourne village located 600 m south of the centre of the site. An un-named drain runs along the northern boundary of the Hibaldstow Quarry site (flowing west to east). There are no designated nature sites of interest within 1 km of the wider Hibaldstow Quarry site boundary⁵. Drawing 243152/D/003 shows all site receptors within 1 km of the centre of site.

Historical Land Use

- 2.20 The earliest 1:2,500 scale Envirocheck historical map⁵ (1887) shows the site as open fields with a drain running along the northern boundary of what is now the wider Hibaldstow Quarry site, flowing west to east. Quarrying/pit activity is shown in the eastern part of the wider Hibaldstow Quarry site by 1976 with areas of marsh at the base. By 1994, mapping shows specific marsh boundaries in the base of the pit area.
- 2.21 The earliest 1:10,560 scale historic maps⁵ (1886) show the site as open farmland, farm buildings are show on the opposite side of the Redbourne Road approximately 550 m east and 900 m north east of the centre of the site. A drain flows along the northern boundary of the wider Hibaldstow Quarry site, flowing west to east. Another Farm, Northwood Farm, is shown just outside 1 km west of the centre of

⁷ Flood Map for Planning, Map – Flood map for planning – GOV.UK, accessed 16th June 2025.

the site and Redbourne village itself approximately 600 m south of the centre of the site (with church, Manor House, Red Lion pub, vicarage and west to east flowing stream). On the 1907 map contours are given showing the site to be at '50' (unknown unit), the buildings along Redbourne Road are named as Slate House (east) and Field House Farm (north east), and a small area of undefined pit is located approximately 550 m south of the centre of the site. The first guarried area on the wider Hibaldstow Quarry site is shown on the 1938 - 1950 map with a minor road leading from Redbourne Road in the east to the guarried area. There is no change to the site on the 1956 map but a reservoir is shown on the northern edge of Redbourne village 600 m south of the centre of the site, 1980 – 1983 mapping shows limited on site detail but does show the extents of the airfield to the east of Redbourne Road and the addition of housing to the site at Redbourne village. Contours now give heights of around 15 m AOD in the east of the wider site, 20 m AOD in the centre and 25 m AOD in the western areas of the wider site. There is no change on the 1991 map and the 2000 and 2006 maps show areas of quarrying on the wider site to the east as partially vegetated, it also shows the drain running along the northern boundary of the site in clearer detail, as well as buildings developing around the airfield. The 2024 map labels the base of the wider site at 22 m AOD in the northern part of the quarried area, 23 m AOD at the southern area and 13 m AOD at the deepest in the eastern side of the quarried area.

2.22 The wider site is currently utilised as a guarry and material storage.

Other matters (mining affected area, landfill and radon)

- 2.23 There are two Integrated Pollution Prevention and Control (IPPC) permits currently in effect⁵, at 604 m north east and 672 m east of the centre of the site, both held by A. M. Borrill & Son for Slate House Farm Duck Unit (intensive farming greater than 40,000 poultry).
- 2.24 There are 2 BGS recorded mineral sites according to the Envirocheck report⁵, both relate to the Hibaldstow Quarry site. They are classed as opencast quarrying for limestone (ref 262870 'Active' and ref 78444 'Dormant').
- 2.25 The Hibaldstow Quarry site is a licensed waste management facility (license number 401197) to Welton Aggregates Limited⁵.
- 2.26 The site is in a 'Intermediate' probability radon area (1-3 % of homes are estimated to be at or above the Action Level). The Envirocheck report⁵ states that no radon protection measures are necessary in the construction of any new dwellings or extensions.

3.0 RISK ASSESSMENT

3.1 The site activities have been assessed in the context of the baseline setting. The assessment has been completed in accordance with Horizontal Guidance H1. The resulting matrix and associated mitigation are presented in Appendix A.

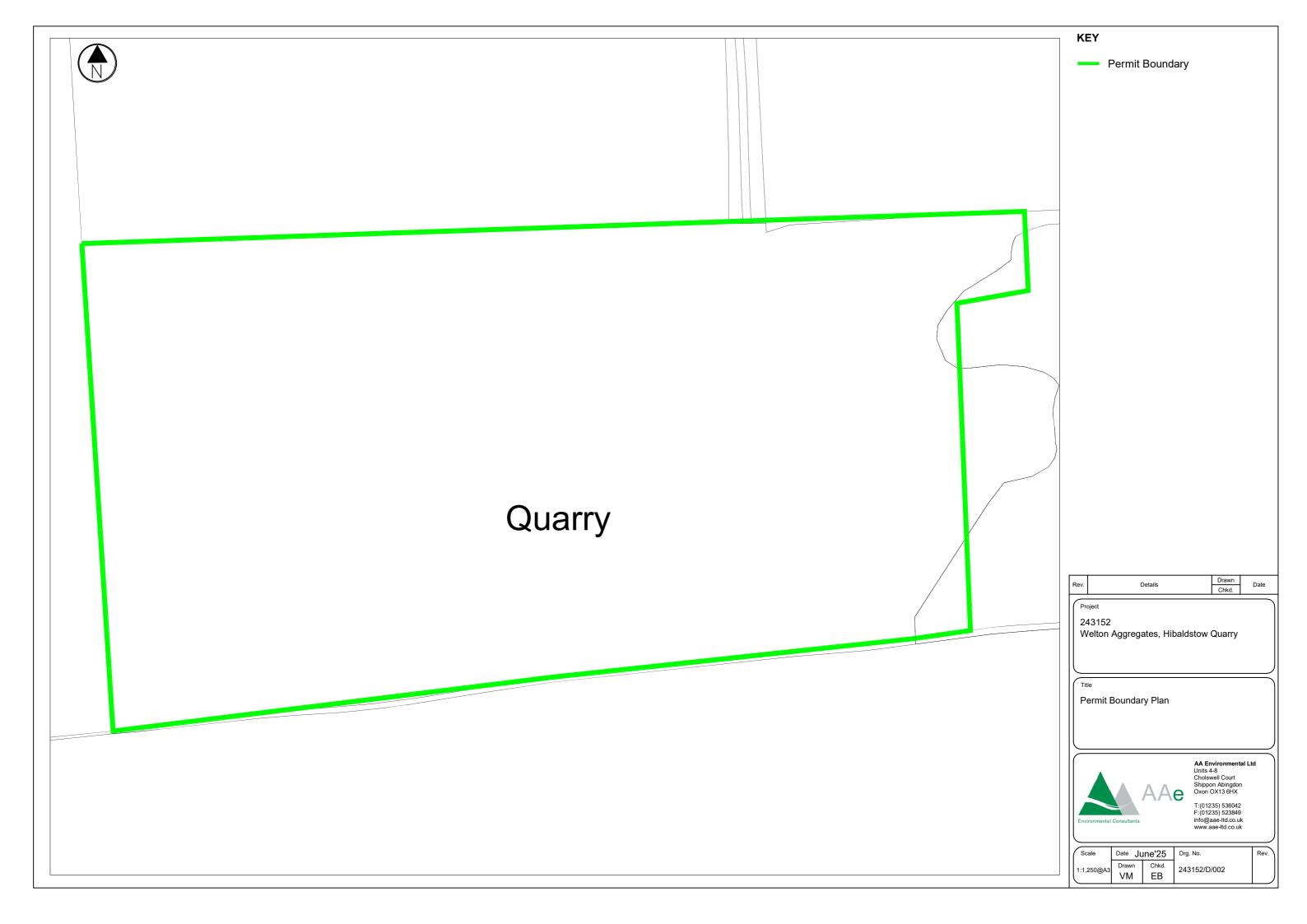
Drawings

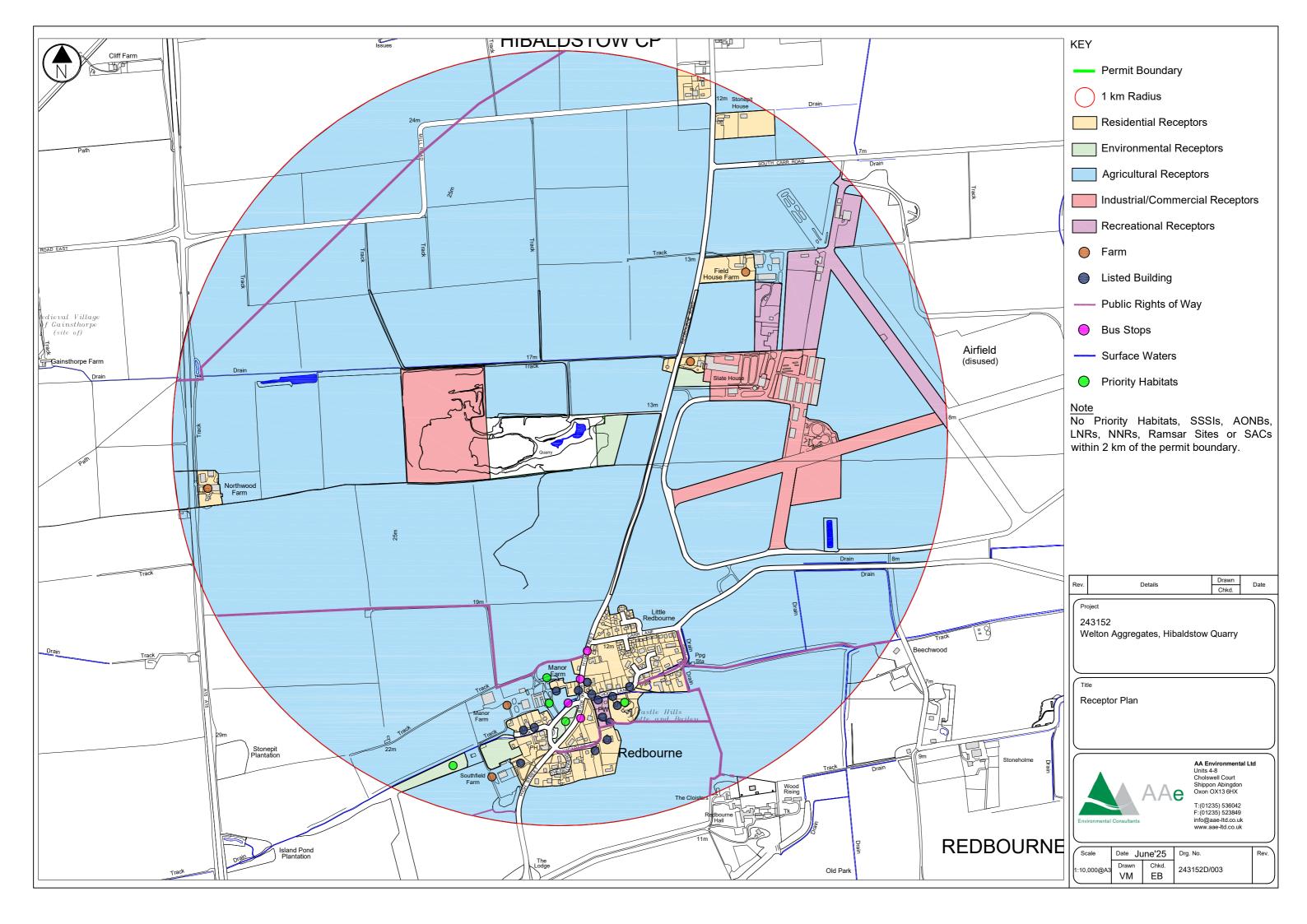
AA Environmental Limited

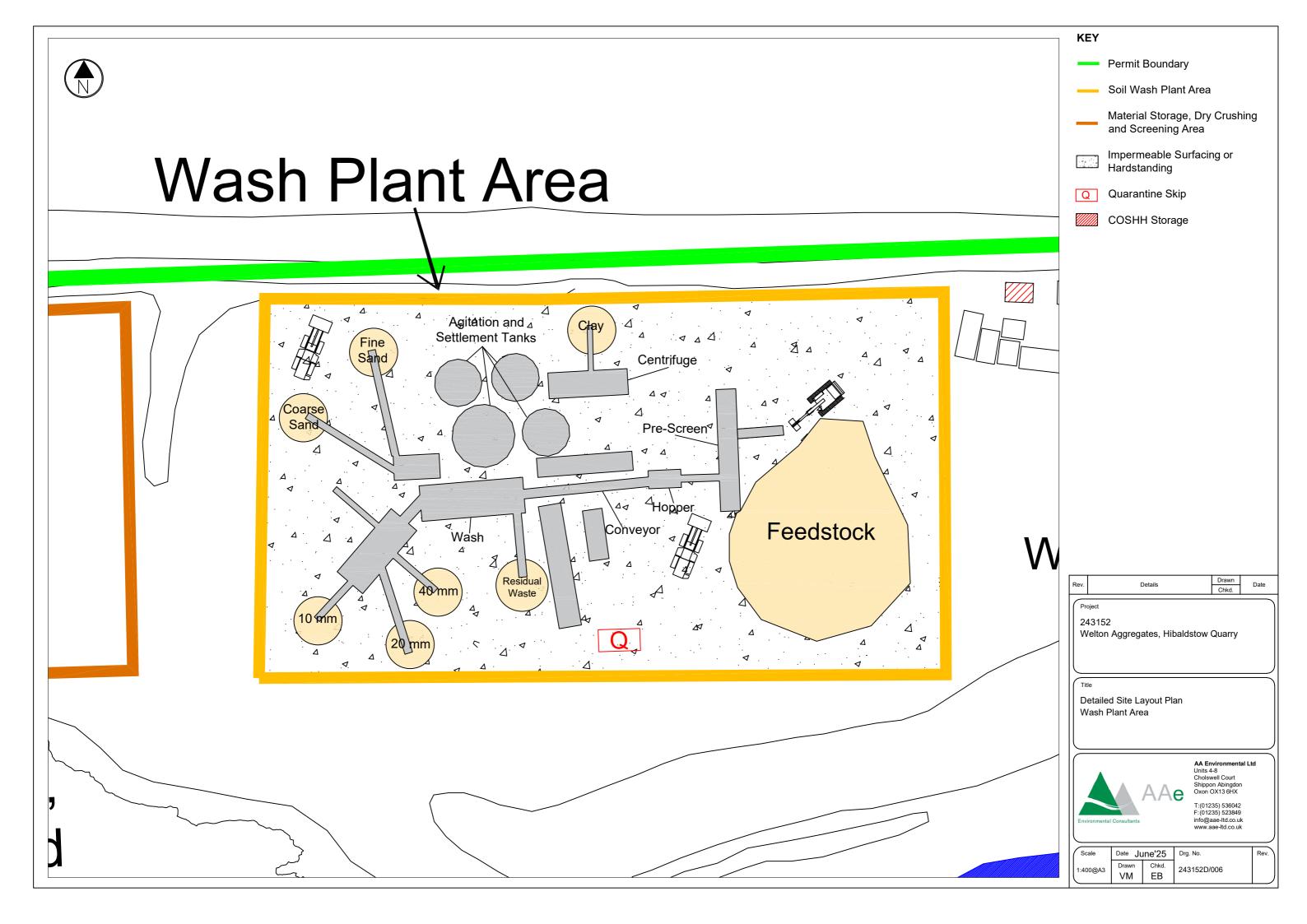
243152

Hibaldstow Quarry
Lincolnshire









Appendix A Risk Assessment

AA Environmental Limited
243152

Hibaldstow Quarry
Lincolnshire

Document Ref: 243152/H1

Table 1. Assessment of odour risks

Hazard	Receptors	Harm	Pathway	Hazard Receptor Significance	Likelihood of Hazard Receptor Linkage	Magnitude	Justification	Risk Management	Residual Risk
Odour from imported waste and recovered materials. Fugitive emissions from: Storage activities Process activities Note there are no point discharges.	Agricultural land on and adjacent to the site boundary. There is the residential village of Redbourne 600 m south east of the centre of the site. Nearest school is > 1.5 km north east (Hibaldstow Primary School). The surrounding land is predominantly agricultural with farm buildings approx. 550 m east, 900 m north east and 930 m west of the centre of the site.	Nuisance and loss of amenity value	Atmospheric (fugitive). Air transport then inhalation.	Mild	Unlikely	Very Low	Permitted treatment of inert waste and excavation materials will have a low odour potential (no municipal or waste with high organic content will be imported onto the site).	Controls on types of wastes accepted. Wastes of solely loose fibres, dust or powders, and liquids will not be accepted under the permit. Controls as set out in the Operational Plan (OP) and regularly inspected. Emissions shall be free from odour. Recording of any complaints and implementation of controls as set out in the OP.	Very Low

Table 2. Assessment of noise and vibration risks

Hazard	Receptors	Harm	Pathway	Hazard Receptor Significance	Likelihood of Hazard Receptor Linkage	Magnitude	Justification	Risk Management	Residual Risk
Noise and vibration emissions from haulage (road deliveries and dispatch) and treatment of waste.	Agricultural land on and adjacent to the site boundary. There is the residential village of Redbourne 600 m south east of the centre of the site. Nearest school is > 1.5 km north east (Hibaldstow Primary School). The surrounding land is predominantly agricultural with farm buildings approx. 550 m east, 900 m north east and 930 m west of the centre of the site.	Levels of noise that cause loss of amenity and nuisance to users and residents in the locale. Disturbance to ecological species.	Airborne	High	Likely	Medium	The context of the locale is agricultural land use, which is generally not sensitive to noise. Residential property within 600 m of the centre of the site. Adherence to agreed site operation hours. Vibration is not an issue at the site. Activities are in keeping with quarrying and existing land use.	Controls as set out in the OP, with a strict adherence to working hours. All operatives inducted on the requirement to reduce noise emissions. All plant and vehicles will meet current guidance and will be maintained in line with manufacturer's requirements. Regular inspection of OP controls, and recording of any complaints and implementation of controls, as set out in the OP.	Low

Table 3. Assessment of fugitive emissions (other than odour)

Hazard	Receptors	Harm	Pathway	Hazard Receptor Significance	Likelihood of Hazard Receptor Linkage	Magnitude	Justification	Risk Management	Residual Risk
To Air									
Dust from vehicle operations from external haul roads. Dust from operations and handling of soil and waste.	Agricultural land on and adjacent to the site boundary. There is the residential village of Redbourne 600 m	Harm to human health, respiratory irritation and illness.	Air then inhalation.	Mild	Possible	Medium	Permitted wastes include wastes with small particle sizes and potential to generate dust, especially during re-grading. Storage, processing	Dust suppression controls as in OP. Wastes of solely loose fibres, dust or powders, and liquids will not be accepted under the permit.	Low
Dust from treatment of soils and wastes. Note there are no point	south east of the centre of the site. Nearest school is > 1.5 km north east	Nuisance – deposit on cars, homes, clothing etc.		Mild	Possible	Medium	operations have potential to generate dust. There is potential for	During periods of no rain, dust prevention systems will be operated.	
discharges.	(Hibaldstow Primary School). The surrounding land is predominantly agricultural with farm buildings approx. 550 m east, 900 m north east and 930 m west of the centre of the site. Users of adjacent public rights of way/roadways. Un-named drain running along the northern boundary of the site (flowing west to east).	Potential irritant, loss of habitat and damage to species.	Air then deposition in ditches / terrestrial habitats.	Mild	Possible	Medium	increased dust generation from storage activities during prolonged periods. Main processing activity is 'wet process'. Distance to nearby sensitive receptors.	Sheeting of delivery and dispatch vehicles. Plant to be operated in accordance with operators' instructions and good practice of dust minimisation (e.g. reducing drop heights). Dust Emissions Management Plan (DEMP) will be submitted if complaints are received or required by EA.	

Hazard	Receptors	Harm	Pathway	Hazard Receptor Significance	Likelihood of Hazard Receptor Linkage	Magnitude	Justification	Risk Management	Residual Risk
To Controlled Waters									
Run-off from site surfaces or spillages.	Drainage surrounding the site (drainage ditch). No Priority Habitat within 2 km of the site.	Passive leaching to ground or existing land drain, from contamination or spillages on surface and directly entering the drainage system.	Land and drainage systems	Moderate	Likely	Medium	Spillages of oils onto surface could enter the drainage network causing pollution. Permitted waste types do not include liquids. No point source emissions from operations or site activities.	Controls as set out in the OP. Controls on types of wastes accepted. Only acceptable fill material imported to the site. Hazardous wastes or wastes in liquid form are not permitted. Limited proximity to sensitive receptors. All receipt, processing and treatment of non-hazardous and inert waste will be carried out on hard standing. Controls will be regularly inspected in line with the OP. The drainage at the site means water discharges to the catch pit and then to	Low

Hazard	Receptors	Harm	Pathway	Hazard Receptor Significance	Likelihood of Hazard Receptor Linkage	Magnitude	Justification	Risk Management	Residual Risk
Run-off and infiltration from site surfaces or spillages (haulage and treatment).	Hibaldstow Limestone Formation bedrock underlying site (designated as a Principle Bedrock Aquifer – High Vulnerability).	Pollution to Principle aquifer which may be in hydrocontinuity with surface drains. Pollution due to sediment entrainment into waters, loss of habitat and damage to species.	Land infiltration through site roads.	High	Unlikely	High	Proximity to sensitive receptors. However, permitted waste types do not include liquids, leachates or sludges and are unlikely to contaminate groundwater. Underlying Hibaldstow Limestone Formation bedrock is a Principle aquifer. No activities within 50 m of a borehole or abstraction well.	Controls as set out in the OP. Controls on types of wastes accepted. Only acceptable fill material will be imported on to the site. Hazardous wastes or wastes in liquid form are not permitted. All sorting, separation, screening and washing activities will be undertaken on impermeable hardstanding. All staff and operatives will be trained as per pollution prevention requirements.	Low
Fugitive emission of waste through entrainment in flood waters.	Human health, controlled waters.	Nuisance, health implications and pollution/ contamination.	Flood waters	Moderate	Unlikely	Low	The site is not located within any Flood Zones or floodplains. There is no risk to the site from flooding from rivers or seas.	Controls on types of waste accepted. Only acceptable engineering fill material will be imported on to the site. Permitted wastes/materials are at low risk from entrainment. Site drainage to be maintained and inspected in line with the OP.	Low

Hazard	Receptors	Harm	Pathway	Hazard Receptor Significance	Likelihood of Hazard Receptor Linkage	Magnitude	Justification	Risk Management	Residual Risk
Mud and Litter	1								
Litter from storage areas and mud from site operation.	Humans (local users of adjacent land) and controlled waters.	Nuisance, loss of amenity and reduced safety. Mud on road. Pollution to watercourses.	Air, land, mud on vehicles, runoff into the drainage network.	Moderate	Possible	Medium	Permitted wastes have low litter potential. No municipal wastes accepted. The site is accessed from a hard standing haul road. All vehicle deliveries and dispatch, and site operations, will be undertaken on hardstanding.	Controls as set out in the OP. Haulage routes will be inspected and maintained to keep free of mud. Road sweepers will be operated on external and internal roads, where necessary. All transfer/delivery of materials and waste will be in sheeted lorries or enclosed containers. All visible litter on site boundaries will be cleared as soon as practicable. Inspection and corrective action regime will be undertaken in line with the site management system.	Low
Pest and Vermin									
Storage of waste attracting pests and vermin.	Local human population (as per odour).	Can cause increased populations and infestations of rats, mice, flies and other vermin. The result is harm to health, loss of amenity and nuisance.	Air transport and overland.	Mild	Unlikely	Very Low	Permitted wastes have low organic content. No municipal waste. Very low potential to attract pests and vermin.	Management and control on waste accepted, as set out in the OP. Inspection of site by Site Manager on frequent basis. Implementation of controls as required.	Very Low

Table 4. Accident risk assessment and management

Hazard	Receptors	Harm	Pathway	Hazard Receptor Significance	Likelihood of Hazard Receptor Linkage	Magnitude	Justification	Risk Management	Residual Risk
Fire (accidental, arson) and smoke.	Local human population (as per odour) and environment	Damage and loss of amenity, property, nuisance and carcinogenic particulates.	Direct contact, airborne.	Severe	Possible	Medium	No fire or burning on-site is permitted. Permitted wastes have low combustion potential. In the event of a major incident there is a major health risk.	No wastes will be burned on-site. Activities will be carried out in accordance with the Fire Prevention Plan. The site is secured (via shut gates and 24hr security) at all times. Access controlled during operational hours. In event of fire, controls specified in site Accident Management Plan (AMP) and Fire Brigade notified, as necessary. Incidents recorded in the Site Diary.	Low
Spillage of fuels, oils or polluting material. Fugitive release of VOC from: Storage activities	Soil, surface water and groundwater. Local population.	Pollution and/or contamination	Land and drainage systems	Low	Possible	Low	Only small-scale storage/use of fuel and oils for plant and machinery. These are stored outside of the permit boundary on the wider site. No hazardous or liquid waste will be accepted on site.	Site procedures include AMP and spillage controls. Spill kits stored with tanks and plant, and in the office compound.	Low

Hazard	Receptors	Harm	Pathway	Hazard Receptor Significance	Likelihood of Hazard Receptor Linkage	Magnitude	Justification	Risk Management	Residual Risk
Spillage of waste or recovered material.	Human health (as per odour), surface water drainage.	Loss of amenity, nuisance, pollution and / or contamination.	Land drain and air	Moderate	Possible	Medium	Uncontrolled release could cause health or pollution issues. No hazardous waste will be accepted on site.	All vehicles accessing the site will be sheeted or fully enclosed. Unloading and loading will controlled at all times. The AMP will incorporate spillage of waste from vehicles in the event of a Road Traffic Accident. Incidents recorded in the Site Diary.	Low
Direct physical contact between humans and waste, machinery and vehicles.	Human health (site operatives and local population).	Bodily harm.	Direct contact	Moderate	Likely	Medium	Permitted waste does not have potential to cause risk to human health (no hazardous materials). No public access during works.	Activities to be managed in accordance with site health and safety management system. Access to waste is restricted to trained and competent personnel. Recovered aggregate and soil substitutes will be tested in line with a Factory Protocol (FP) to ensure suitability for use.	Low