



**ENVIRONMENTAL AND ACCIDENT RISK ASSESSMENT**

**ASPHALT RECYCLING FACILITY  
CAULDON LOW QUARRY  
STONEY LANE  
CAULDON  
STOKE-ON-TRENT  
ST10 3EW**

**Document Reference: AI1007/06.R0  
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**Project Quality Assurance  
Information Sheet**

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ASPHALT RECYCLING FACILITY, CAULDON LOW QUARRY, STONEY LANE, CAULDON,  
STOKE-ON-TRENT**

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**ASPHALT RECYCLING FACILITY  
CAULDON LOW QUARRY  
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CAULDON  
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**ENVIRONMENTAL PERMIT APPLICATION  
ENVIRONMENTAL AND ACCIDENT RISK ASSESSMENT**

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## 1.0 INTRODUCTION

### 1.1 Scope

1.1.1 This document presents an assessment of the risks to the environment posed by the operation of an Asphalt Recycling Facility (ARF) at Cauldon Low Quarry, Stoke-on-Trent.

1.1.2 This risk assessment has been undertaken in accordance with the Environment Agency (EA) Guidance on 'Risk Assessments for your Environmental Permit'; published 1st February 2016 (last updated 31st August 2022).

### 1.2 Permitted Activities

1.2.1 The Asphalt Recycling Facility will involve the physical treatment of non-hazardous waste bitumen bound road planings to produce a range of secondary aggregates for reuse. Physical treatment operation will take the form of mechanical crushing and screening/grading/sorting. All associated waste treatment and storage operations will be carried out externally within a designated area of the wider quarry complex. This area will be engineered with a permeable, compacted aggregate hardstanding.

### 1.3 Site Setting

#### Site Description

1.3.1 The ARF will be located within the confines of Cauldon Low Quarry, Stoney Lane, Cauldon, Stoke-on-Trent, Staffordshire, ST10 3EW. The proposed site is situated approximately on National Grid Reference (NGR) SK 07745 48751, as illustrated on **Drawing No. AI1007/09/01**. The elevation of the application site is ~280mAOD.

1.3.2 Cauldon Low Quarry is located in a rural setting approximately 20km west of Stoke-on-Trent. Cauldon village is located approximately 700m north- north-west of the site and Cauldon Low village lies ~900m southwest of the site. The application site operational boundary is shown in Drawing No. A11007/09/02.

1.3.3 Access and egress from the application site will be gained from the north via a network of internal haul roads through the wider quarry complex. The main quarry access is located ~350m west of the application site, and junction with an unclassified public road network, which provides access to the A52 located ~675m south of the junction.

1.3.4 The nearest residential properties to the site include Cauldon Lowe Village hall located ~525m to the south west of the site, Yew Tree Inn located 482m to the north, and an unnamed farm located ~565m to the south of the site. Potential receptors to the site are further discussed in The Environmental & Accident Risk Assessment (Doc. Ref.: AI1007/06) that supports this application.

1.3.5 The proposed site is located within the administrative area of Staffordshire Moorlands District Council, which has two Air Quality Management Areas (AQMAs) designated within its Authority area that cover the site. The pollutant declared for both of these AQMA's is Nitrogen Dioxide (NO<sub>2</sub>).

1.3.6 The site is not located within a Nitrate Vulnerable Zone (NVZ).

1.3.7 There are three designated Sites of Special Scientific Interest (SSSI) and one Local Nature Reserve (LNS) located within 1km of the site boundary.

- 1.3.8 There are no Areas of Outstanding Natural Beauty (AONB), National Nature Reserves (NNR), Ramsar Sites, Special Areas of Conservation (SAC) or Special Protected Areas (SPA) located within 1km of the site boundary.
- 1.3.9 There are 12 Grade II\* Listed Buildings located within 1km of the site and 1 Scheduled Monument.
- 1.3.10 A review of the dominant wind direction indicates that the prevailing wind blows in from the west towards the east.

#### Geology

- 1.3.11 Information on the published geology of the site area has been collated from the British Geological Survey (BGS) 1:50,000 scale map, available BGS Borehole logs as well as publicly available information including site investigation reports.
- 1.3.12 Borehole logs to the west of the site indicate the superficial Till comprises brown sandy boulder clay with pale yellow fine-medium grained sandstone fragments throughout. Small white quartzite pebbles were observed in upper part of sequence. There are no superficial deposits underlying the proposed site as they have been excavated during previous quarrying operations.
- 1.3.13 A borehole log situated 582m south east of the site within the footprint of Cauldon Low Quarry describes ~0.44m of made ground comprising red-brown with limestone fragments. Beneath this sits the Milldale Limestone Formation which comprises fine – medium grained limestone which is predominantly mid grey with red mottling along fractures. Joints and fractures are sub-horizontal and occur at 25 – 30cm intervals on average. Thick shelled brachiopods and fine crinoidal debris was observed at varying depths.
- 1.3.14 The Rue Hill Dolomite Formation is observed at a depth of ~189m which is described as brown, very fine grained with irregular calcite veins. From a depth of ~190m alternating bands of mudstone and limestone are observed. Dolomite is observed again at a depth of ~200m with bands of chert and limestone. A thin band of clay is observed at a depth of ~206m which transitions into alternating bands of limestone, dolomite, and mudstone. At a depth of ~258m conglomerate is observed which comprises dolomite consisting of sub-rounded clasts and a brown coarsely grained dolomite matrix. This marks the lower boundary of the Rue Hill Dolomite Formation which is situated upon the Redhouse Sandston Formation.
- 1.3.15 The Redhouse Sandstone Formation is from a depth of ~365m and is observed to comprise red-brown occasionally green-grey fine-grained sandstone. Alternating layers of conglomerate, mudstone, and siltstone are observed throughout the sequence. The base of the Redhouse Sandstone is not proven.

#### Hydrogeology

- 1.3.16 Publicly available information has been used to determine the hydrogeology of the site. The Milldale Limestone is a Principal aquifer commonly considered to exhibit karstic hydrogeological behaviour. The term karst can be summarised as a terrain which has distinctive landforms and hydrogeology as a result of its high rock solubility and well developed secondary fracture porosity. In general karst systems tend to evolve downward to include a simplified network of a few main pathways<sup>1</sup>.
- 1.3.17 A Water Impact Assessment Report carried out in 2014 demonstrated that under observed conditions groundwater flows locally to the north-northeast

towards the confluence of the River Hamps and River Manifold. However, regionally groundwater flow is observed to continue east and towards Ilam. It is likely the Milldale aquifer provides baseflow to the River Hamps and River Manifold. Given the non-hazardous nature of the wastes and large intervening distance the River Hamps and River Manifold are not considered sensitive receptors. Further the carboniferous limestones generally have very low porosity and permeability, thus making a negligible contribution to groundwater flow.

- 1.3.18 The Milldale Limestones constitute an aquifer only due to the presence of a secondary network of solution-enlarged fractures and joints which commonly form complex branching systems, ranging in scale from extensive cave systems to microfractures<sup>2</sup>. Groundwater flow is largely concentrated in the larger conduits and directed towards discrete discharge points at a single spring or group of springs<sup>2</sup>. As highlighted in the Water Impact Assessment Report the River Manifold feeds the springs that rise in Ilam located ~5.6km east-northeast of the site boundary. However, given the non-hazardous nature of the wastes and large intervening distance, the Ilam springs are not considered a sensitive receptor to the proposed site operations.
- 1.3.19 In the absence of current groundwater level data the Water Impact Assessment Report indicates that groundwater level to the south east of the site is between 240mAOD to 215mAOD with a hydraulic gradient towards the north-northeast.
- 1.3.20 There are no licensed groundwater abstractions located within 1km of the application site.

#### Hydrology

- 1.3.21 The area is regionally part of the River Dove drainage basin which rises near Buxton ~25km north of the site boundary and flows to the south towards its confluence with the River Trent at Newton Solney. The nearest river is the River Hamps which located ~1.3km to the north of the site boundary. The River Hamps rises to the south of Merryton Low, east of Upper Hulme. It flows towards the south where it then flows to the east towards Winkhill and Watercourses where it then flows to join the River Manifold.
- 1.3.22 The River Hamps is major tributary of the River Manifold their confluence is located ~5.8km north east of the site. The River Manifold flows south towards Ilam and is a tributary of the River Dove.
- 1.3.23 There is a man made surface water lagoon located ~1.2km north of the site boundary. There are several more smaller surface water lagoons located north east of the site within the confines of the Cauldon Cement works. Another lagoon associated with the quarry located ~1km north west of the site.
- 1.3.24 With regard to flood risk there is a medium risk of flooding from surface waters with a chance of flooding of between 1% and 3.3% each year. There is a very low risk of flooding from rivers or sea with a chance of flooding of less than 0.1% each year.
- 1.3.25 There are no licensed surface water abstractions located within 1km of the application site.

## **1.4 Potential Sensitive Receptors**

- 1.4.1 **Table EARA1** summarises the potential sensitive receptors that have been identified through a desk top study of the locality and the corresponding

minimum distance from the proposed permit boundary of the RAP. The locations of the receptors are shown in **Drawing No. AI1007/09/04**.

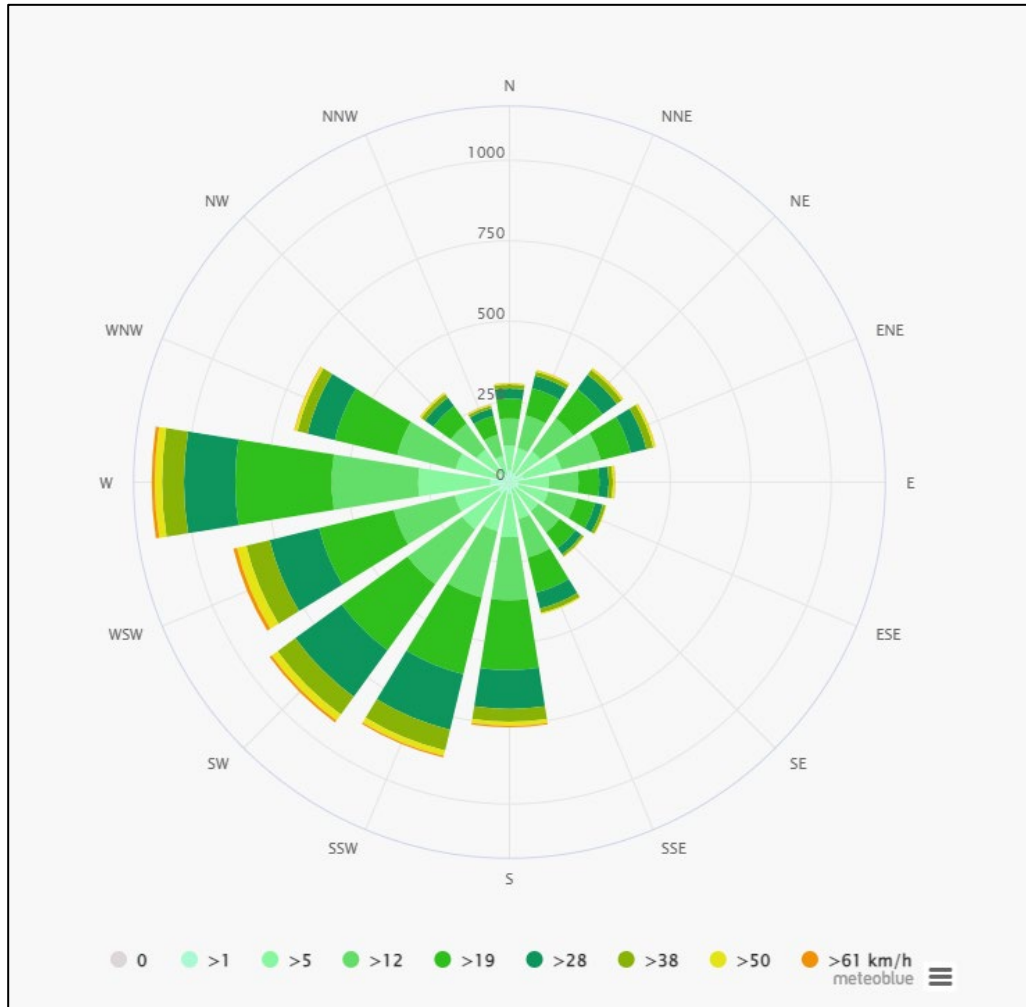
**Table EARA1: Identified Potential Sensitive Receptors within 1km of Cauldon Low Quarry ARF.**

Ref.	Receptor Name	Receptor Type	Approximate distance from the operational area	Direction from proposed facility
R1	Milldale Limestone Formation – Principal Aquifer	Groundwater	0m	All directions
R2	Cauldon Low Quarry	Industrial / Commercial	0m	All directions
R3	Lagoon	Surface Water	100m	S
R4	Cauldon Low SSSI	Site of Specific Scientific Interest	335m	N
R5	Agricultural / Vegetated Land	Agriculture, woodlands & grassland.	210m	All directions
R6	Rue Hill SSSI	Site of Specific Scientific Interest	341m	SSE
R7	Main Road	Residential	365m - 713m	W, N & NE
R8	Stoney Lane	Residential	464m	NW
R9	Cauldon Village	Residential	482m	N
R10	Hemmings Lows View	Residential & Industrial / Commercial	515m	SW
R11	Cauldon Lowe Village and associated dwellings & farmsteads along the A52	Residential	523m	SW, S & SE
R12	A52	Highway	532m	S
R13	Lower Moorend	Residential	600m	NW
R14	Drain	Surface Water	780m	NW
R15	Cauldon Low Railway Cutting	Site of Specific Scientific Interest	812m	N
R16	Hofen's Croft Meadow	Local Nature Reserve	844m	SW
R17	Moorfields Close and associated dwellings & farmsteads	Residential	907m	SW
R18	Lafarge Cement Works	Industrial / Commercial	919m	NE
R19	Ribden Low Bowl Barrow	Scheduled Monument – Grade II Listed Building	921m	SSW

### Meteorological Conditions

- 1.4.2 The local wind speed and direction data has been obtained from the Meteoblue Meteorological Website for Cauldon. The wind rose, as shown by **Figure EARA1** shows the percentage of wind vector that could be generated in each of the 16 points of a compass.
- 1.4.3 The wind rose indicates that the predominant wind directions are from the west and the south western quadrant.

**Figure EARA1: Wind Rose for Cauldon**



## 1.5 Risk Assessment

### Risk Assessment Criteria

1.5.1 The risk assessment will be prepared using the widely accepted source-pathway-receptor methodology, and is the preferred method specified in the EA guidance. Where any complete source-pathway-receptor linkage exists, the magnitude of any such risk is qualified by the probability and consequence of any such risk occurring. The criteria to be adopted for the risk assessment are present in **Table EARA2**.

**Table EARA2: Risk Assessment Criteria**

Probability ⇔ Consequence ↓	Very Low	Low	Moderate	High
Very Low	Negligible	Very Low	Low	Low-Moderate
Low	Very Low	Low	Low-Moderate	Moderate
Moderate	Low	Low-Moderate	Moderate	High
High	Low-Moderate	Moderate	High	Very high

1.5.2 An environmental and accident risk assessment for the waste operations is presented in **Appendix EARA1**. The assessment covers the following potential risks;



- Dust and particulates;
- Odour;
- Litter;
- Mud and Debris on the road;
- Scavenging Birds, Vermin and Insects;
- Noise & Vibration;
- Fugitive emissions to water;
- Accidents; and
- Abnormal conditions.



**APPENDIX EARA1**  
Risk Assessment Matrix

Data and information				Judgement				Action (by permitting)	
Source	Harm	Pathway	Receptor	Probability of exposure	Consequence	Magnitude of risk	Justification for magnitude	Risk management	Residual risk
<i>What is the agent or process with potential to cause harm?</i>	<i>What are the harmful consequences if things go wrong?</i>	<i>How might the receptor come into contact with the source?</i>	<i>What is at risk? What do I wish to protect?</i>	<i>How likely is this contact?</i>	<i>How severe will the consequences be if this occurs?</i>	<i>What is the overall magnitude of the risk?</i>	<i>On what did I base my judgement?</i>	<i>How can I best manage the risk to reduce the magnitude?</i>	<i>What is the magnitude of the risk after management?</i>
<b>Dust/Particulates</b>									
Particulate matter and dusts from delivery vehicles, handling and unloading wastes/materials, including trafficked mud and debris, dust from waste storage and treatment.	Harm to human health - respiratory irritation and illness.	Air transport, deposition then inhalation.	Local human population	Low	High	<b>Moderate</b>	Most dust/particulates will deposit within 500m of the source. The nearest residential properties to the site include Cauldon Lowe Village hall located 523m to the south west of the site, Yew Tree Inn located 482m to the north, and an unnamed farm located 566m to the south of the site.	All haul routes will be maintained in good condition and be kept clean and free of debris.  All loads will be sheeted whilst in transit to and from the site. Where inbound sub-contract haulage vehicles are not sheeted, they will be informed of the company requirements accordingly.  Loading of all vehicles, including internal traffic, will be supervised to ensure vehicles/containers are not overloaded.  All loads will be checked prior to dispatch to ensure that vehicles are clean and free from debris.  Vehicles will be thoroughly washed down as necessary prior to onward movement off site.  All waste storage will be conducted to the highest of housekeeping standards.  All entry points to the processing area will be kept restricted, except for when access is required.  Water sprays (bowser and/or fogs) will be utilised where required to dampen surfaces and reduce dust emissions.	Low
	Nuisance - dust on property, clothing etc.	Air transport then deposition	Local human population	Low	Moderate	<b>Low-Moderate</b>	As the prevailing winds are from the west the above receptors are unlikely to be adversely affected by dust.  Receptors such as public highways and private roads are unlikely to be affected by dust due to their transient nature.		Low
	Smothering of habitats and crops	Air transport then deposition	Local wildlife habitats/species	Moderate	Moderate	<b>Moderate</b>	Prevailing winds are from the west.  The majority of Protected Habitats and SSSIs are not located downwind of the prevailing wind direction. The area of Deciduous Woodland located to the north-east is unlikely to be adversely affected by dust as the prevailing winds are from the west and are less likely to originate from the south-west.  Further most dust/particulates will deposit within 500m of the source.		Low

Data and information				Judgement				Action (by permitting)	
Source	Harm	Pathway	Receptor	Probability of exposure	Consequence	Magnitude of risk	Justification for magnitude	Risk management	Residual risk
<b>Odours</b>									
<p>Fugitive odours from delivery and dispatch of wastes/materials</p> <p>Fugitive odours from waste unloading, handling and treatment of waste.</p> <p>Fugitive odour emissions from waste storage</p> <p>Fugitive odour release during an abnormal event such as a spill or leak</p>	Nuisance, loss of amenity	Air transport then inhalation.	Local human population	Very Low	Low	<b>Very Low</b>	<p>The likelihood of odours arising as a result of the permitted operations is minimal to non-existent due to the material consisting mainly of road planings which are inherently non-odorous. There is also no heat involved in any of the treatment processes that could result in the production of an odour.</p> <p>The nearest residential receptors are located ~500m from the facility.</p> <p>Receptors such as public highways and private roads are unlikely to be affected by odours due to their transient nature.</p>	<p>Waste types accepted for processing (non-putrescible road planings) are not of the type that could be odorous as received or become odorous once stored. Notwithstanding this the following procedures will be adopted:</p> <p>Incoming loads of waste will be visually checked at either the site entrance or during off-loading in the inert waste recycling area. Odorous wastes will be rejected or stored in enclosed receptacles in the quarantine area.</p> <p>Daily inspection of the site for odours will be performed as part of the management procedures.</p>	Very Low
<b>Litter</b>									
<p>Litter from waste delivery vehicles</p> <p>Litter from waste stored on site</p> <p>Litter from the welfare and office facilities</p>	Nuisance, loss of amenity, road traffic accidents and harm to animal health	<p>Vehicles entering and leaving site.</p> <p>Air transport and then deposition</p>	Local human population, livestock and wildlife. Local road users.	Very Low	Low	<b>Very Low</b>	<p>Waste types to be permitted at the site very unlikely to generate litter.</p> <p>The proposed site is located within a wider Cauldon Low Quarry complex which is at significant distance from potential sensitive receptors.</p>	<p>Types of waste accepted (road planings) are unlikely to lead to issued due to the lack of light fraction windblown elements.</p> <p>All loads will be sheeted whilst in transit to and from the site. Where inbound sub-contract haulage vehicles are not sheeted, they will be informed of the company requirements accordingly.</p> <p>Waste loads with a high fraction of non-planing materials will be rejected. Strict compliance with waste acceptance procedures will be required at all times.</p> <p>Non-conforming wastes will be hand or mechanically extracted and stored within an enclosed receptacle.</p> <p>Good housekeeping will be promoted in order to keep storage areas, treatment areas and haul roads as clean as possible.</p> <p>Daily inspection of the site for windblown fraction will be performed.</p>	Very Low

Data and information				Judgement				Action (by permitting)	
Source	Harm	Pathway	Receptor	Probability of exposure	Consequence	Magnitude of risk	Justification for magnitude	Risk management	Residual risk
<b>Mud and Debris</b>									
Waste debris and mud on local roads  Tracking of mud and debris onto public roads causing accident, hazards and nuisance to road users.	Nuisance, loss of amenity, road traffic accidents and harm to animal health	Vehicles entering and leaving site.	Local human population, livestock and wildlife. Road users	Very Low	Moderate	<b>Low</b>	Significant intervening road distance between the facility and the adjoining public highways.	Entrance way and main site access roads are surfaced (tarmac or concrete).  All vehicles hauling waste and recycled products will be sheeted (or instructed to do so) or fully enclosed where appropriate to avoid the loss of waste/materials during transport.  Vehicles will be checked for mud prior to being dispatched.  Wheel wash facilities are available with the wider quarry complex prior to leaving the site.  All vehicles will be supervised during loading to ensure that vehicles are not overfilled.  A mechanical road sweeper will be deployed along the metalled sections of quarry internal haul roads as necessary.  Daily inspection of the site for mud and debris will be performed as part of the management procedures.	Low
<b>Scavengers, Insects and Other Pests</b>									
Scavenging animals and scavenging birds, Pests (e.g. flies) attracted to or infesting wastes	Harm to human health - from waste carried off site and faeces. Nuisance and loss of amenity.  Negative effects on habitats and crops	Air transport and over land.	Local human population, crops and local habitats.	Very Low	Low	<b>Very Low</b>	The types of waste proposed to be accepted for processing at the facility are not of the nature that could typically attract pests, i.e. non-putrescible	Waste types accepted for processing (non-putrescible road planings) are overall not of the type that could be infested once stored.  Incoming loads of waste will be visually checked at either the site entrance or during offloading in the appropriate area. Infested wastes will be rejected or stored in enclosed receptacles in the quarantine area.  First in, first out principles will be employed to prevent excessive waste storage timings.  Daily inspection of the site for infestations will be performed as part of the management procedures.	Negligible

Data and information				Judgement				Action (by permitting)	
Source	Harm	Pathway	Receptor	Probability of exposure	Consequence	Magnitude of risk	Justification for magnitude	Risk management	Residual risk
<b>Noise &amp; Vibration</b>									
Noise and vibration caused by engine noise and vibrations from site plant and equipment, lorry movements etc.	Nuisance, loss of amenity, loss of sleep or harm.	Noise through the air and vibration through the ground.	Local human population	Very Low	Moderate	<b>Low-Moderate</b>	<p>Nearest noise sensitive receptor is located ~500m to the north of the site.</p> <p>The facility is located with a wider industrialised quarry complex.</p> <p>Scheduled monuments are located at a significant intervening distance from the proposed site.</p>	<p>All machinery used on site will be operated and maintained in accordance with manufacturers' recommendations.</p> <p>Vehicles will adhere to specified speed limits when entering and exiting the site along the Main road.</p> <p>Unloading, processing and loading the materials will be undertaken within strict operational parameters, to ensure that noise and vibration from this activity is mitigated as necessary.</p> <p>Noise monitoring will be undertaken if necessary. Should unacceptable emissions of noise or vibration occur, the incident will be noted, and a record made.</p>	Negligible
<b>Water</b>									
Generation of contaminated run-off and leachate from wastes	Contamination of groundwater resources	Direct leakage, spillage onto permeable ground and then percolation to water table	Groundwater, surface water bodies and their associated habitats.	Low	Moderate	<b>Low-Moderate</b>	Road planings are unlikely to contain any significant leachable concentrations of pollutants.	<p>Asphalt waste processing and storage presents a low risk to the hydrological regime due to the non-hazardous nature of materials accepted and associated controls that are in place.</p> <p>Regular monitoring will be undertaken to ensure compliance.</p> <p>No point source off site discharges are associated with the inert waste storage and processing areas.</p> <p>Spill kits, absorbent granules are available throughout the site ready for immediate deployment.</p> <p>Good housekeeping will be promoted in order to keep storage areas as clean as possible.</p> <p>Daily inspection of the site for spillages / leaks etc will be performed as part of the management procedures.</p>	Low

Data and information				Judgement				Action (by permitting)	
Source	Harm	Pathway	Receptor	Probability of exposure	Consequence	Magnitude of risk	Justification for magnitude	Risk management	Residual risk
Flooding of the site	Contamination of buildings, gardens, agricultural land, natural habitats etc downstream resulting from waste washed off-site.	Flood waters	Local human population, crops and local habitats.	Very Low	Low	<b>Moderate</b>	<p>There is a medium risk of flooding from surface waters with a chance of flooding of between 1% and 3.3% each year.</p> <p>There is a very low risk of flooding from rivers or sea with a chance of flooding of less than 0.1% each year.</p> <p>Waste accepted at the facility have low leaching potential for contaminants.</p>	The site surface will be engineered and graded with a permeable compacted aggregate hardstanding to minimise the risk of pluvial water flooding the operation areas.	Very Low
<b>Accidents</b>									
On site hazards: wastes, machinery, vehicles, surface water attenuation pond.	Bodily injury	Direct physical contact	Local human population	Low	High	<b>Moderate</b>	The site is fully secured to prevent trespass.	<p>Facility will have perimeter fencing, lockable gates and CCTV installed. The site will be protected with remote surveillance out of normal hours of operation.</p> <p>All site staff and visitors will receive an induction to the site to ensure safety protocols are adhered to.</p> <p>Appropriate personal protective equipment (PPE) will be provided for all site staff, particularly those handling waste.</p> <p>Designated pedestrian routes are clearly marked around the site.</p> <p>In the event of any significant environmental emergency/incident, a representative of Aggregate Industries will notify the Environment Agency (EA) by telephone immediately, but first having due regard for the incident at hand and any remediation actions required to ensure the safety of site personnel and the immediate environment.</p>	Low

Data and information				Judgement				Action (by permitting)	
Source	Harm	Pathway	Receptor	Probability of exposure	Consequence	Magnitude of risk	Justification for magnitude	Risk management	Residual risk
Fire resulting from arson/vandalism or an accident causing the release of polluting materials (smoke or fumes) to air, water or land.	Bodily injury	Direct physical contact	Local human population	Very Low	Moderate	<b>Low</b>	The site is secured outside of operational hours.  No combustible waste are handled at the site.	Facility will have perimeter fencing, lockable gates and CCTV installed.  The site will be protected with remote surveillance out of normal hours of operation.  All plant and equipment will be inspected daily and serviced in line with manufacturers recommendations/specifications  All visitors to the site (including personnel) must report to the site office to sign in.  Fire fighting equipment will be available and maintained, and site operators will be trained in their correct use.	Very Low
Leaks and Spillages of potential polluting materials from on-site plant/vehicles, waste and associated refuelling/maintenance operations or contaminated water runoff (including firewater).	Deterioration of water quality, contamination of ground/surface waters,	Direct leakage, spillage onto permeable ground and then percolation to water table	Groundwater, surface water bodies and their associated habitats.	Moderate	Moderate	<b>Moderate</b>	Plant used will require refuelling and maintenance within their operating locations over areas of permeable hardstanding.	All operations will be closely monitored to allow immediate deployment of mitigation measures in the event of a spillage.  Vehicles for dispatch will not be overfilled and will be supervised during loading.  All plant and equipment will be inspected daily and serviced in line with manufacturers recommendations/specifications  All vehicles hauling waste will be sheeted or enclosed.  Highest risk operations (e.g. refuelling plant) will be undertaken with the necessary primary, secondary and tertiary containment measures e.g. funnels and drips trays provided with fuel bowsers Absorbent spill kits will be available for use should any spillage occur.	Low



Data and information				Judgement				Action (by permitting)	
Source	Harm	Pathway	Receptor	Probability of exposure	Consequence	Magnitude of risk	Justification for magnitude	Risk management	Residual risk
<b>Abnormal Conditions</b>									
Containment Damage from fuel/oils and hazardous materials storage areas	Contamination of surrounding land, groundwater and surface water.	Direct run off from site across ground surface, indirect runoff via the soil layer or transport through soil/ groundwater	Groundwater, surface water bodies and their associated habitats.	Low	Moderate	<b>High</b>	Fuel and oils stores are located of-site.  Application site located over permeable strata and that is designated as a Principal Aquifer.  There are no licensed abstractions within 1km of the site.	All mobile fuel tanks will be of double skin construction and supplied with funnels and drip trays to assists refuelling operations.  The effective capacities of all bunds will be maintained.  Any repairs will be affected as soon as possible or within 5 working days (subject to replacement material availability). Mitigation measures will be undertaken immediately if there is a possibility of pollution.	Low
Power loss tom emission control systems	Harm to human health and local habitats and surface water via fugitive emissions  Nuisance to local human receptors via fugitive emissions	Airborne transport	Local human population, crops and local habitats.	Very Low	Low	<b>Very Low</b>	There are no major process plant items which rely on mains power.  The closest residential property is located ~500m to the north of the site at a higher elevation to the facility  Most dust/particulates will deposit within 400m of the source.  Receptors such as public highways and private roads are unlikely to be affected by odours due to their transient nature.	If power/water is lost for a sufficiently long period of time where it has the potential to affect ancillary functions outside of the permitted area (e.g. weighbridge, mess facilities wash-down area, then alternative means of power generation will be sought).  Adequate sources of water are available within the wider quarry to support dust suppressions requirements.  Treatment operations will be temporarily suspending in the event that the dust suppression plant/equipment are out of action during periods of dry weather.	Very low
Vandalism and security breach	Bodily injury	Direct physical contact	Local human population	Low	Moderate	<b>Low-Moderate</b>	-	Facility will have perimeter fencing, lockable gates and CCTV installed.  The site will be protected with remote surveillance out of normal hours of operation.  All visitors to the site (including personnel) must report to the site office to sign in.  Wider quarry complex where the site is located is not accessible to the general public.	Very Low

Data and information				Judgement				Action (by permitting)	
Source	Harm	Pathway	Receptor	Probability of exposure	Consequence	Magnitude of risk	Justification for magnitude	Risk management	Residual risk
Operator error	<p>Bodily injury</p> <p>Harm to human health - respiratory irritation and illness.</p> <p>Nuisance – dust, olfactory, and noise emissions</p> <p>Contamination of surrounding land, groundwater and surface water.</p>	Direct physical, air transport then deposit or inhalation, direct run off	Local human population, crops and local habitats	Low	Moderate	<b>Low-Moderate</b>	-	<p>Technically competent people will oversee the management of activities of the site, in accordance with the fit and proper person assessment.</p> <p>Training (including refresher training) will be given to all site staff on the environmental permit, health and safety and incident response.</p>	Low
Emissions from plant or equipment due to abnormal conditions	Harm to human health - respiratory irritation and illness.	Air transport, deposition then inhalation.	Local human population	Very Low	Low	<b>Very Low</b>	Unlikely to affect nearest residential properties due to the intervening distances from the site.	<p>Commissioning tests will be performed on all plant/equipment, to ensure integrity, prior to full scale use.</p> <p>All machinery used on site will be operated and maintained in accordance with manufacturers' recommendations.</p> <p>Alarms and interlocks will be used on major items of plant and equipment to monitor performance.</p> <p>Strict operating guidelines will ensure adherence with start-up and shut down procedures.</p> <p>All machinery will be subject to regular checks and maintenance.</p>	Very Low

Data and information				Judgement				Action (by permitting)	
Source	Harm	Pathway	Receptor	Probability of exposure	Consequence	Magnitude of risk	Justification for magnitude	Risk management	Residual risk
Inadequate waste acceptance procedures	Harm to human health - respiratory irritation and illness.  Bodily harm  Nuisance (e.g. dust for non-compliant particularly dusty waste loads)	Transported by vehicle.  Dusts and leachate from storage at the site	Site operatives and site users  Land, groundwater and surface waters, and associated end-users	Very Low	Moderate	<b>Low</b>	Waste handled at the site are easily distinguishable through visual inspections. Any coal-tar bound road planings received and temporarily stored at the site will not present a significant risk to receptors when stored at ambient temperatures	All wastes will undergo a strict pre-acceptance and acceptance procedure in accordance with Duty of Care Requirements.  Incoming waste will be visually checked at the weighbridge to confirm the waste type.  Accompanying paperwork will be scrutinised to ensure the details are correct and all fields are completed.  All waste loads will be visually inspected during deposit in the waste reception areas. PAK testing to be carried out on each source.  Any non-conforming wastes will be segregated as soon as possible and stored in the quarantine area awaiting removal off site.	Negligible