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Phase 1 Land Contamination Risk Assessment

for

Erection of convenience retail store (A1 Use Class) with associated parking area and loading bay

on the site of

Land at Corner of Harrow Street and Oldham Road, Rochdale, OL11 2AT

Date: October 2018

Status:	Final Report
Reference:	1336H – Shockledge - Rochdale
Date:	14/10/2018

EXECUTIVE SUMMARY

Site is currently occupied by a grass covered vacant plot bounded by metal fencing. South of the site is the M62 and it's associated embankment, to the north is residential housing, to the east is a petrol filling station and to the west parking and garages.

The site has historic and current practices on and offsite have had potential contaminate the site.

Based on the information contained in this report, it is the opinion of Castledine & Co that the site represents a Low risk with respect to the proposed development.

It is recommended that a remediation in line with section 11.0 is undertaken.

A watching brief should be had during the course of construction works for any obvious contamination (e.g. oil spillage in ground, buried waste, possible asbestos containing material) development should stop and Castledine & Co should be contact to determine if further assessment or changes to the remediation scheme are required. It is also recommended to cap the site in hardstanding to mitigate and provide sufficient protection against any potential contaminants onsite.

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1.0 QUALITY ASSURANCE

Castledine & Co. confirm that all reasonable efforts have been made to ensure that the information outlined within this report is accurate.

Castledine & Co. would further confirm that due care, attention and technical skill were used in the creation of this report.

For and on behalf of Castledine & Co.

Kevin Castledine

(Proprietor)

2.0 LIMITATIONS

The conclusions and recommendations made in this report are limited to those based on the findings of the investigation. Where comments are made based on information obtained from third parties, Castledine & Co. assumes that all third party information is true and correct. No independent action has been undertaken to validate the findings of third parties. The assessments and interpretation have been made in line with legislation and guidelines in force at the time of writing, representing best practice at the time.

This survey has not included asbestos within existing structures, invasive plant species or any elements unconnected with potential ground contamination at the site. If required, such surveys should be undertaken by suitably accredited organisations.

There may be other conditions prevailing at the site which have not been disclosed by this investigation and which have not been taken into account by this report. Responsibility cannot be accepted for conditions not revealed by the investigation.

3.0 INTRODUCTION

Castledine & Co. have been appointed by Mr Eugene Shockledge to undertake a Phase 1 Desk study on Land at Corner of Harrow Street and Oldham Road, Rochdale, OL11 2AT

4.0 SCOPE

Castledine & Co. have prepared this report for the sole use and reliance of Mr Eugene Shockledge and his appointees for the purpose of ensuring compliance with:

- paragraphs 120 and 121 of the NPPF,
- part C1 of the building regulations.
- Condition 9 of the Rochdale Borough Council 18/00486/FUL http://publicaccess.rochdale.gov.uk/online-applications/applicationDetails.do?activeTab=summary&keyVal=P7UIJXNB00600

No development shall take place until a site investigation and risk assessment (in addition to any assessment provided with the planning application) has been submitted to and approved in writing by the Local Planning Authority. The assessment shall investigate the nature and extent of any contamination on the site (whether or not it originates on the site). The assessment shall be undertaken by competent persons and a written report of the findings submitted to and approved in writing by the Local Planning Authority before any development takes place. The submitted report shall include:

i) A survey of the extent, scale and nature of contamination

ii) An assessment of the potential risks to: o human health, o property (existing or proposed) including buildings, crops, livestock, pets, woodland, and service lines and pipes,
o Adjoining land,
o Groundwaters and surface waters,
o Ecological systems,
o Archaeological sites and ancient monuments;

iii) Where unacceptable risks are identified, an appraisal of remedial options and proposal of the preferred option(s) to form a remediation strategy for the site. The development shall thereafter be carried out in full accordance with the duly approved remediation strategy and a verification report submitted to and approved in writing by the Local Planning Authority before any of the building(s) hereby approved are first occupied.

This report may not be used or relied upon by any unauthorised third party, or for any other proposed use than that specified above, without the explicit written agreement of Castledine & Co.

The report consists of a preliminary risk assessment in accordance with BS10175:2011+A1:2013 and CLR11 "Model Procedures for the Management of Land Contamination".

The objectives of the report are:-

- To assess historical activities at the site with respect to their potential impact on the site environment.
- To characterise the environmental setting of the site, identify migration pathways and vulnerable receptors for contamination originating at the site, focusing on potential soil and groundwater liabilities.
- To assess historical and current surrounding land use in relation to known or potential off site contamination issues that may impact on the subject site and
- To develop a preliminary conceptual site model (CSM).

5.0 SITE DESCRIPTION

The site is located in Rochdale, Greater Manchester at National Grid 390683, 410582 and is approximately 0.08ha in area.

Site is currently occupied by a grass covered vacant plot bounded by metal fencing. South of the site is the M62 and it's associated embankment, to the north is residential housing, to the east is a petrol filling station and to the west parking and garages.

Photos of the site are present in Appendix C

6.0 REGULATORY AUTHORITY AND OTHER ENVIRONMENTAL DATA

An environmental search listing historical and environmental factors likely to affect the property has been reviewed.

The most pertinent information is summarised in the following sections.

A copy is presented in Appendix A

Additional geological and hydrological data was obtained from the British Geological Survey.

6.1 HYDROLOGICAL

6.1.1 AQUIFER

6.1.1.1 SUPERFICIAL GEOLOGY

ID	Distance (m)	Direction	Designation	Description
1	0	On Site	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers

6.1.1.2 BEDROCK GEOLOGY

ID	Distance (m)	Direction	Designation	Description
1	0	On Site	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers

6.1.2 ABSTRACTIONS AND PRIVATE WATER SUPPLIES

None within 250m.

6.1.3 SOURCE PROTECTION ZONE

Not in a source protection source.

6.1.4 GROUNDWATER VULNERABILITY AND SOIL LEACHING POTENTIAL

Minor Aquifer/High Leaching Potential HU Soil information for urban areas and restored mineral workings. These soils are therefore assumed to be highly permeable in the absence of site-specific information.

6.1.5 POTENTIAL SURFACE WATER

Distance (m)	Direction
172	S

6.1.6 DISCHARGE CONSENTS

ID	Distance (m)	Direction	NGR	Description	
1	162	N	390750 410750	Address:	Oldham Road, Greater Manchester
				Effluent Type:	Sewage discharges – pumping station – water company
				Permit Number:	016993132
				Permit Version:	1
				Receiving Water:	Sudden Brook
				Status	Post NRA Legislation where issue date > 31/08/89 (Historic Only)
				Issue Date:	-
				Effective Date	17/07/1996
				Revocation Date:	-
2A	233	N	390610 410820	Address:	Oldham Road CSO 35027, 705 Oldham Road, Rochdale, Greater Manchester
				Effluent Type:	Sewage Discharges – Sewer Storm Overflow – Water Company
				Permit Number:	01ROC0093
				Permit Version:	2
				Receiving Water:	Sudden Brook
				Status	Consent Revoked or Revised New Consent Issued (37(1))
				Issue Date:	-
				Effective Date	01/01/1995
				Revocation Date:	22/06/2004
3A	233	N	390610 410820	Address:	Oldham Road CSO 35027, 705 Oldham Road, Rochdale, Greater Manchester
				Effluent Type:	Sewage Discharges – Sewer Storm Overflow – Water Company

ID	Distance (m)	Direction	NGR	Description	
				Permit Number:	01ROC0093
				Permit Version:	2
				Receiving Water:	-
				Status	Revoked – Unspecified
				Issue Date:	-
				Effective Date	01/04/1991
				Revocation Date:	31/12/1994
4	235	NE	390900 410700	Address:	Fairview Inn, Burnedge, Rochdale, Greater Manchester
				Effluent Type:	Sewage Discharges – Final/ Treated Effluent – Not Water Company
				Permit Number:	016992272
				Permit Version:	1
				Receiving Water:	Sudden Brook
				Status	>31/08/89 (Historic Only)
				Issue Date:	-
				Effective Date	10/06/2004
				Revocation Date:	-

6.2 PERMITTED PROCESSES

ID	Distance (m)	Direction	NGR	Description	
12	32	NE	390725 410599	Address:	Dean Service Station, Oldham Road, Rochdale, Lancashire, OL16 4RH
				Process:	Unloading of petrol into storage at service stations
				Status:	Current Permit
				Permit Type	Part B
				Enforcement:	No enforcements notified
				Date of Enforcement:	No enforcements notified
				Comment:	No enforcements notified

6.3 POLLUTION INCIDENTS

None within 250m.

6.4 RADIOACTIVE SUBSTANCES REGISTRATIONS

None within 250m.

6.5 WASTE

6.5.1 LICENSED WASTE MANAGEMENT FACILITIES (LOCATIONS)

None within 250m.

6.5.2 LANDFILL SITES

None within 250m.

6.5.3 REGISTERED NO ENFORCEMENTS NOTIFIED WASTE TREATMENT OR DISPOSAL SITES

None within 250m

6.6 HAZARDOUS SUBSTANCES

None within 250m

6.7 ECOLOGICAL RECEPTORS

107m south and 213m east of the site is the Liverpool, Manchester and West Yorkshire Greenbelt.

6.8 SOILS AND GEOLOGY

"Contains British Geological Survey materials © NERC 2018" obtained from http://www.bgs.ac.uk/data/mapViewers/home.html under the Open Government Licence

6.8.1 SUPERFICIAL DEPOSITS

Devensian Hummocky (Moundy) Glacial Deposits – Diamicton. Superficial Deposits formed up to 2 million years ago in the Quaternary Period. Local environment previously dominated by ice age conditions.

6.8.2 BEDROCK

Pennine Lower Coal Measures Formation - Mudstone, Siltstone and Sandstone. Sedimentary Bedrock formed approximately 318 to 319 million years ago in the Carboniferous Period. Local environment previously dominated by swamps, estuaries and deltas.

6.8.3 COAL MINING

Property is within a coal mining area.

The site is not in an area affected by past or present underground or over ground mining.

The site is not within an area where the Coal Authority has plans to grant a licence to remove coal in the future. There is also no known mine entries within 20m of the property boundary.

6.8.4 NON-COAL MINING

No non-coal mining areas within 50m.

6.8.5 RADON

The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level. No radon protective measures are necessary as described in publication BR211:2015 by the Building Research Establishment.

6.9 AERIAL PHOTOGRAPHY

Aerial photography shows the following

6.9.1 BING

Site is shown as a vacant grass covered plot with several large trees and shrubs.

6.9.2 GOOGLE MAPS

Site is shown as a vacant grass covered plot with several large trees and shrubs.

6.9.3 GOOGLE EARTH

6 images are held in the historic imagery dataset, as follows:

Date	Description
31/12/2000	Grass covered vacant plot of land with shrubs around the borders.
16/04/2003	Unclear image.
31/12/2005	Further growth of shrubs and the development of trees around the site's borders.
06/04/2013	Unclear image.
17/09//2016	Further growth of trees and shrubs.
24/03/2017	The site has been cleared. An area of hardstanding has been paced in the north central sector of the site.

6.9.4 ENVIRONMENTAL SEARCH

Image taken 02/05/2011

Site is shown as a vacant grass covered plot with several large trees and shrubs.

6.10 GOOGLE STREET VIEW

The site is vacant, however it has been cleared of shrubs and trees but remains grass covered. The site is bounded by metal fencing.

6.11 HISTORIC MAPPING

The following historic maps have been reviewed as part of this assessment. Castledine and Co. do not hold a license for the reproduction and/or distribution of this data.

Map	Onsite	Offsite
OS County Series: LANCASHIRE AND FURNESS 1851 1:10,560	The site is part of a large agricultural field.	The surrounding area consists of agricultural land with several large buildings located 120m S.
OS County Series: LANCASHIRE AND FURNESS 1890 1:2,500	The site has become part of a smaller more rectangular plot running adjacent to the main road.	50m E is the Dean Cotton Mill with several reservoirs. 100m N terrace housing has been developed. 150-250m SE larger residential properties have been developed. 170m E is Sudden Brook. 100m and 250m W there are two streams with a NE follow. The closest stream passes through an elongated pond.
OS County Series: LANCASHIRE AND FURNESS 1910 1:2,500	The field that the site is situated has become more square and smaller in size.	40m N terrace housing has expanded towards the site.
OS County Series: LANCASHIRE AND FURNESS 1930 1:2,500	No significant changes onsite.	Further extension of terrace housing to the N. 200m SW development of marshland. 170m NE, N of the Dean Mill there is a laundry.
OS Plan 1955 1:1,250	No significant changes onsite.	Marshland has been converted into a reservoir. 20m S electricity line and pylons. The Dean Mill contains a chimney and an electricity substation. 240m there is a garage. The furthest stream 250m W has gone.
OS Plan 1970 1:2,500	No significant changes onsite.	The Dean Mill has been demolished. 160m W there has been further residential expansion.

Map	Onsite	Offsite
OS Pan (partial) 1976-1977 1:1,250	Two buildings located in the southern central sector of the site have been built.	The M62 motorway has been built 30m S, the motorway is raised above the local area via an embankment. A garage has been placed on the land previously occupied by the Dean Mill. The former garage to the north has been demolished and replaced with residential units and a new garage has been erected across the road from the former.
OS Plan 1984-1993 1:10,000	The buildings are now unmarked on the map.	No significant changes.

6.12 CURRENT LAND USE DATA

ID	Distance [m]	Direction	Company	Activity	Category
1A	33	NE	Dean Service Station	Petrol and Fuel Stations	Road and Rail
2A	33	NE	BA Motors Ltd	Secondhand Vehicles	Motoring
3A	33	NE	Dean Service Station Ltd	Petrol and Fuel Stations	Road and Rail
4A	33	NE	V W Auto	Vehicle Repair, Testing and Servicing	Repair and Servicing
5	173	SE	Electricity Substation	Electrical Features	Infrastructure and Facilities
6	192	N	Revive	Vehicle Repair, Testing and Servicing	Repair and Servicing
7	209	NW	D A Wash	Vehicle Cleaning Services	Personal, Consumer and Other Services
8	249	E	Tank	Tanks (Generic)	Industrial Features

6.13 PETROL AND FUEL SITES

ID	Distance [m]	Direction	Company	LPG	Status
9	27	NE	ESSO	No	Open

6.14 HISTORICAL PETROL AND FUEL SITE DATABASE

None within 250m

6.15 POTENTIAL CONTAMINATIVE LAND USES IDENTIFIED ON MAPPING

ID	Distance [m]	Direction	Use	Date
1A	10	NE	Unspecified Mill	1891
2A	10	NE	Unspecified Mill	1907
3A	10	NE	Unspecified Mill	1928
4A	10	NE	Unspecified Mill	1938
5A	14	NE	Unspecified Mill	1967
6A	14	NE	Unspecified Mill	1954
7B	61	NE	Unspecified Ground Workings	1938
8B	61	NE	Unspecified Ground Workings	1928
9C	159	NE	Refuse Heap	1928
10C	159	NE	Refuse Heap	1938
11C	163	NE	Refuse Heap	1954
12C	179	NE	Unspecified Heap	1967
13Q	179	NW	Garage	1967
14T	181	S	Refuse Heap	1938
15	193	SE	Pump	1851
16U	213	SW	Unspecified Ground Workings	1938

6.16 HISTORICAL TANK DATABASE

ID	Distance [m]	Direction	Use	Date
34A	62	NE	Unspecified Tank	1890
35I	220	SE	Unspecified Tank	1992
36I	220	SE	Unspecified Tank	1976
37	250	NE	Unspecified Tank	1996
38J	250	E	Unspecified Tank	1930
39J	250	E	Unspecified Tank	1937

6.17 HISTORICAL ENERGY FACILITIES

ID	Distance(m)	Direction	Use	Date
52L	14	NE	Electricity Substation	1955
53L	14	NE	Electricity Substation	1955
54M	165	SE	Electricity Substation	1976
55M	165	SE	Electricity Substation	1992

6.18 HISTORICAL GARAGE AND MOTOR VEHICLE REPAIR DATABASE

ID	Distance (m)	Direction	Use	Date
66L	14	NE	Garage	1977
67Q	179	NW	Garage	1996
68Q	180	NW	Garage	1955
69Q	180	NW	Garage	1966
70Q	180	NW	Garage	1977
71Q	180	NW	Garage	1955
72Q	180	NW	Garage	1966

6.19 POTENTIALLY INFILLED LAND

ID	Distance (m)	Direction	Use	Date
73R	32	N	Reservoirs	1891
74R	32	N	Reservoirs	1938
75R	32	N	Reservoirs	1907
76R	32	N	Reservoirs	1928
77R	36	N	Reservoirs	1954
78R	40	N	Reservoirs	1967
79B	61	NE	Unspecified Ground Workings	1938
80B	61	NE	Unspecified Ground Workings	1928
81C	159	NE	Refuse Heap	1928
82C	159	NE	Refuse Heap	1938
83C	163	NE	Refuse Heap	1954
84C	169	NE	Unspecified Heap	1967
85S	170	S	Reservoir	1976
86S	170	S	Reservoir	1967
87S	173	S	Pond	1954
88T	181	S	Refuse Heap	1938
89U	213	SW	Unspecified Ground Workings	1938

6.20 PLANNING HISTORY

This information is taken from the Rochdale Borough Council planning website

http://publicaccess.rochdale.gov.uk/online-applications/spatialDisplay.do

Reference	Address	Proposal	Hyperlink
13/01098/FUL	Land At Harrow Street And Oldham Road Rochdale OL11 2AT	Erection of 13 garages including 2m high boundary fencing to north and east facing elevations with a double and two single access gates.	http://publicaccess.rochdale.gov.uk/online-applications/caseDetails.do?caseType=Application&keyVal=MUPGQ9NB00Z00
04/D44052	Dean Service Station, Oldham Road, Rochdale, Lancashire, OL112AT	Use Of Part Of Petrol Station Forecourt As Car Sales Pitch.	http://publicaccess.rochdale.gov.uk/online-applications/caseDetails.do?caseType=Application&keyVal=ZZZXVVNBXE438
03/D41392	Buersil Head Farm, Thornham New Road, Rochdale, Lancashire, OL112BA	Change Of Use From One Dwelling Into Two Dwellings.	http://publicaccess.rochdale.gov.uk/online-applications/caseDetails.do?caseType=Application&keyVal=ZZZXVPNBXE416
02/D41048	494, Oldham Road, Rochdale, Lancashire, OL11 2AT	Single Storey Rear Extension To Dwelling	http://publicaccess.rochdale.gov.uk/online-applications/caseDetails.do?caseType=Application&keyVal=ZZZXVJNBXE768
96/D33111	Land At Pleasant View Off Oldham Road Rochdale	Residential Development - Revised Layout For Part Of Site Of Application D31403 Including The Increase In Number Of Dwellings From 20 To 42	http://publicaccess.rochdale.gov.uk/online-applications/caseDetails.do?caseType=Application&keyVal=ZZZXW2NBXE843
90/D25506	Land At Pleasant View Oldham Road Rochdale	Residential Development - Twenty Seven Dwellinghouses	http://publicaccess.rochdale.gov.uk/online-applications/caseDetails.do?caseType=Application&keyVal=ZZZXVMNBXE177
89/D24615	Land At Pleasant View Oldham Road Rochdale	Residential Development	http://publicaccess.rochdale.gov.uk/online-applications/caseDetails.do?caseType=Application&keyVal=ZZZXW8NBXE908
87/D20544	Dean Autopoint Oldham Road Rochdale	Redevelopment Of Petrol Station And Carwash	http://publicaccess.rochdale.gov.uk/online-applications/caseDetails.do?caseType=Application&keyVal=ZZZXWDNBXE315

7.0 POLLUTANT LINKAGE ASSESSMENT

The risk posed by any contaminants in soil or groundwater will depend on the nature of the hazard, the probability of exposure, the pathway by which exposure occurs, and the likely effects on the receptors. A contaminant is defined as a substance that has the potential to cause harm, while a risk is considered to exist if such a substance is present in sufficient concentration to cause harm and a pathway exists for a receptor to be exposed to the substance.

The following sections discuss all the identified potential on and off site sources, pathways and receptors in the context of the proposed development and plausible pollutant linkages which may represent a risk to identified receptors from the data gained from the desk study. At this stage the assessment is qualitative and aimed to determine all pollutant linkages, irrespective of significance or allowing for uncertainty.

Three impact potentials exist for any given site, these are:

- The site impacting upon itself;
- The site impacting on its surroundings; and
- The surroundings impacting on the site.

All three impacts need to be considered in a risk assessment.

7.1 SOURCES

The following potential sources of contamination have been identified.

7.1.1 ONSITE

- Historical agricultural use of the site
- Unknown use of the former buildings

7.1.2 OFFSITE

- Made ground
- Petrol Filling Station
- Former Cotton Mill, with chimney and reservoirs
- Garages
- M62 and embankment
- Historical agricultural practises
- Streams

7.2 PATHWAYS

A pathway is defined as a mechanism or route by which a contaminant comes into contact with, or otherwise affects a receptor. Pathways by which the identified receptors may be impacted upon in the context of the proposed development are identified as follows:

- Ingestion;
- Skin contact;
- Inhalation;
- Plant uptake,
- Direct contact by buried structures;
- Leaching of soluble contamination into groundwater

7.3 RECEPTORS

Receptors are defined as people, living organisms, ecological systems, controlled waters, atmosphere, structures and utilities that could be adversely affected by contaminant(s).

- Human Health
    - Current users of the site;
    - Future users of the site;
    - Users of neighbouring sites;
    - Construction workers; and
    - Services personnel working in trenches.
    - Construction Materials
- Buried concrete, which may be affected by high concentrations of sulphate and/or low pH, in the soils and groundwater underlying the site; and
- Buried water pipes.
- Controlled Waters
- Ecological Receptors
- Flora and fauna using the proposed development

8.0 CONCEPTUAL SITE MODEL

The Conceptual Site Model (CSM) is a hypothesis of the nature and sources of contamination, potential receptors that may be the recipient of contamination arising from those sources and any pathways that may exist. It creates a plausible source-pathway-receptor pollutant linkage (hazard), set within the context of the ground and proposed end use of the site.

8.1 PRELIMINARY CONCEPTUAL SITE MODEL

8.1.1 SOIL CONTAMINATION

Site is currently occupied by a grass covered vacant plot bounded by metal fencing.

Historic agricultural practices and have the potential to have contaminated the site with various substances including

- Metals and metalloids;
- Polycyclic aromatic hydrocarbons (PAH's);
- Petroleum hydrocarbons
- Pesticides
- PCBs
- Organic and inorganic compounds

The site has the potential to be contaminated through onsite and offsite sources. The site is unlikely to be contaminated from onsite sources. The site has remained relatively vacant and undeveloped since the beginning of the census maps.

Any pesticides or mobile phase contaminates (e.g. some heavy metals, and petroleum hydrocarbons) onsite or offsite would have migrated into the local surface water then into the drainage systems or underlying groundwater. From the flow direction of the local streams the groundwater is likely to be flowing northwards and away from the site. Most of the contaminative offsite sources are located to the north, it is highly unlikely

that contaminates would have migrated upstream and contaminated the area.

Hardstanding planned for the site would mitigate and provide sufficient protection against contaminates and severe the pathway to end users.

8.1.2 HAZARDOUS GROUND GAS AND VAPOURS

Sources for gases are located offsite. The sources of gas are unlikely to affect the site. It is likely that during the construction of the M62 that made ground was brought in or around the site. However, it is unlikely that unclean material would have been used during the construction and there is no obvious signs from the walkover to suggest that material is still in or around the site. Therefore gas protection measures are not needed onsite.

As such the protection offered by modern building regulations compliant floor is likely to provide sufficient protection as outlined in CL:AIRE RB17 A Pragmatic Approach to Ground Gas Risk Assessment.

TABLE 1. SUMMARY OF SIGNIFICANT POLLUTION LINKAGES

Contaminant	Pathway	Receptor	Comments	Probability of Pollutant Linkage	Consequence	Risk	Possible Mitigation
Contaminated Soils	Direct Ingestion & Direct Contact	Site Workers		Lw	Md	M/L	Site workers to wear appropriate PPE for health and safety reasons
Contaminated Soils	Inhalation of Dust	Site Workers		Lw	Mi	L	
Contaminated Soils	Direct Ingestion & Direct Contact	End Users		Lw	Mi	L	
Contaminated Soils	Inhalation of Dust	End Users		Lw	Mi	L	
Contaminated Soils	Direct Ingestion	Flora and Fauna		Lw	Md	M/L	
Contaminated Soils	Vertical and lateral migration	Controlled Waters		Li	Md	M	
Contaminated Soils	Direct contact	Services		Lw	Mi	L	

Contaminant	Pathway	Receptor	Comments	Probability of Pollutant Linkage	Consequence	Risk	Possible Mitigation
Ground Gases (Methane and CO_2)	Vertical and lateral migration	End Users & Building Envelope		Lw	Mi	L	No gas protection measures needed onsite.
Volatile and Semi-volatile Organic Compounds	Vertical and lateral migration	End Users & Building Envelope		Lw	Md	M/L	
Radon	Vertical and lateral migration	End Users & Building Envelope		Ul	Md	L	

KEY:

Probability of pollutant linkage Hl = Highly likely, Ll = Likely, Lw = Low Likelihood, Ul = Unlikely

Consequence Sv = Severe, Md = Medium, Mi = Mild, Mr = Minor.

Overall Risk VH = Very High, H = High, M = Moderate, M/L = Moderate/Low, L = Low, VL = Very Low

Based on the preliminary CSM for the site, an environmental risk assessment has been undertaken. A simple matrix can provide a consistent basis for decision making. It should be used with caution, recognising the over-simplification that it will normally represent. The probability and consequences are defined according to parameters relevant to the situation; the boundaries of risk acceptability (and tolerability, where relevant) indicated on the matrix provided in Table 2, can be tailored to the factors influencing the significance of the risk. Individual situations are mapped onto the matrix to provide a ready and consistent indication of their acceptability or tolerability.

TABLE 2. RISK CLASSIFICATION MATRIX

		Consequence			
		Severe (Sv)	Medium (Md)	Mild (Mi)	Minor (Mr)
Probability	High (Hl)	Very high risk	High risk	Moderate Risk	Moderate/ Low Risk
	Likely (Ll)	High risk	Moderate Risk	Moderate/Low Risk	Low Risk
	Low Likelihood (Lw)	Moderate Risk	Moderate/ Low Risk	Low Risk	Very Low Risk
	Unlikely (Ul)	Moderate/ Low Risk	Low Risk	Very Low Risk	Very Low Risk

Source: CIRIA Report C552, Contaminated Land Risk Assessment. A Guide to Good Practice, 2001

These attributes are evaluated qualitatively against individual hazard assessments to determine the likelihood of a given hazard occurring. The risk evaluations for each plausible pollutant linkage are given in the last three columns of Table 1..

TABLE 3. CLASSIFICATION OF RISK

Very high risk (Vh)	There is a high probability that severe harm could arise to a designated receptor from an identified hazard, OR, there is evidence that severe harm to a designated receptor is currently happening. This risk, if realised, is likely to result in a substantial liability. Urgent investigation (if not undertaken already) and remediation are likely to be required.
High risk (Hi)	Harm is likely to arise to a designated receptor from an identified hazard. Realisation of the risk is likely to present a substantial liability. Urgent investigation (if not undertaken already) is required and remedial works may be necessary in the short-term and are likely over the longer term.
Moderate risk (Md)	It is possible that harm could arise to a designated receptor from an identified hazard. However, it is either relatively unlikely that any such harm would be severe, or if any harm were to occur it is more likely that the harm would be relatively mild. Investigation (if not already undertaken) is normally required to clarify the risk and to determine the potential liability. Some remedial works may be required in the longer-term.
Low risk (Lw)	It is possible that harm could arise to a designated receptor from an identified hazard, but it is likely that this harm, if realised, would at worst normally be mild.
Very low risk (Vl)	There is a low possibility that harm could arise to a receptor. In the event of such harm being realised it is not likely to be severe.

Source: CIRIA Report C552, Contaminated Land Risk Assessment. A Guide to Good Practice, 2001

9.0 PRELIMINARY ENVIRONMENTAL RISK ASSESSMENT

Based on the information contained in this report, it is the opinion of Castledine & Co that the site represents a Low risk with respect to the proposed development.

It is recommended that remediation in-line with section 11.0 is undertaken

This should be Discussed with the Local Planning Authority / Local council Contaminated Land Officer

10.0 FURTHER ENVIRONMENTAL INVESTIGATION

It is not envisaged that further testing will be required.

This should be Discussed with the Local Planning Authority / Local council Contaminated Land Officer

11.0 REMEDIAL ACTIONS AND VERIFICATION

1. A watching brief should be had during the course of construction works for any obvious contamination (e.g. oil spillage in ground, buried waste, possible asbestos containing material) development should stop and Castledine & Co should be contact to determine if further assessment or changes to the remediation scheme are required.
2. Capping of the site within hardstanding (e.g. concrete slab, Asphalt etc.).
3. If small areas of soft landscaping are to be incorporated into the development (for bushes, boarders etc.) then it must be capped with a minimum of 600mm of clean material. Prior to the placement of material it should be tested in line with Guidance And Good Practice Verification Of Cover Systems – Testing Criteria For Subsoil And Topsoil, page 10, NHBC Technical Extra Note Issue 8 Nov 2012.
(http://www.nhbc.co.uk/NHBCPublications/LiteratureLibrary/Technical/TechnicalExtra/filedownload,48980,en.pdf). The chemical testing criteria are presented in Appendix D.
The suitability of the soil should be confirmed with the Local Planning Authority prior to its importation.
All transfer notes and/or receipts for the soil should be retained.
The thickness of the soil placed will require evidence either via photographs during its placement or by digging of post placement verification trial holes

12.0 REFERENCES

12.1 LEGISLATION AND REGULATIONS

12.1.1 ACTS

[1] Environmental Protection Act 1990, Part IIA: inserted by Environment Act 1995, Section 57. See Environment Act 1995 for text of Part IIA.

12.1.2 PLANNING REGULATIONS

[2] The Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999 SI1999/No.293

[3] The Town and Country Planning (Environmental Impact Assessment) (England and Wales) (Amendment) Regulations 2000 SI2000/No.2867

12.1.3 CONTAMINATED LAND REGULATIONS

[4] The Contaminated Land (England) Regulations 2000. SI2000/No.227

[5] The Contaminated Land (England) (Amendment) Regulations 2001 SI2001/No.663

[6] The Contaminated Land (England) Regulations 2006 SI2006/No.1380

12.2 STATUTORY GUIDANCE

[7] Department of Environment, Food and Rural Affairs. 2012. *Environmental Protection Act 1990: Part 2A Contaminated Land Statutory Guidance*. Department of Environment, Food and Rural Affairs

[8] Communities and local Government, 2012: National Planning Policy Framework.

12.3 BRITISH STANDARDS

[9] BS 5930:1999 Code of practice for site investigations

[10] BS 10175:2011+A1:2013 Investigation of potentially contaminated sites - Code of practice

[11] BS 8485:2015 bs 8485 - 2015 - Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings

[12] BS 8576:2013 Guidance on investigations for ground gas. Permanent gases and Volatile Organic Compounds (VOCs)

12.4 NON STATUTORY TECHNICAL GUIDANCE

12.4.1 ENVIRONMENT AGENCY

[13] Cassella Stranger, 2002. Model Procedures for the Management of Contaminated Land, Contaminated Land Report (CLR) 11, Department for Environment, Food, and Rural Affairs.

12.4.2 CIRIA PUBLICATIONS

[14] Wilson, S., Oliver, S., Mallett, H., Hutchings, H., and Card, G.. 2007, *C 665 Assessing risks posed by hazardous ground gases to buildings* London: Construction Industry Research and Information Association

[15] Mallett, H., Cox, L., Wilson, S. and ,Corban M... 2014, *C 735 Good practice on the testing and verification of protection systems for buildings against hazardous ground gases* London: Construction Industry Research and Information Association

12.4.3 CL:AIRE

[16] Card G, Wilson S, Mortimer S. 2012. *A Pragmatic Approach to Ground Gas Risk Assessment. CL:AIRE Research Bulletin RB17.* CL:AIRE, London, UK. ISSN 2047- 6450 (Online)

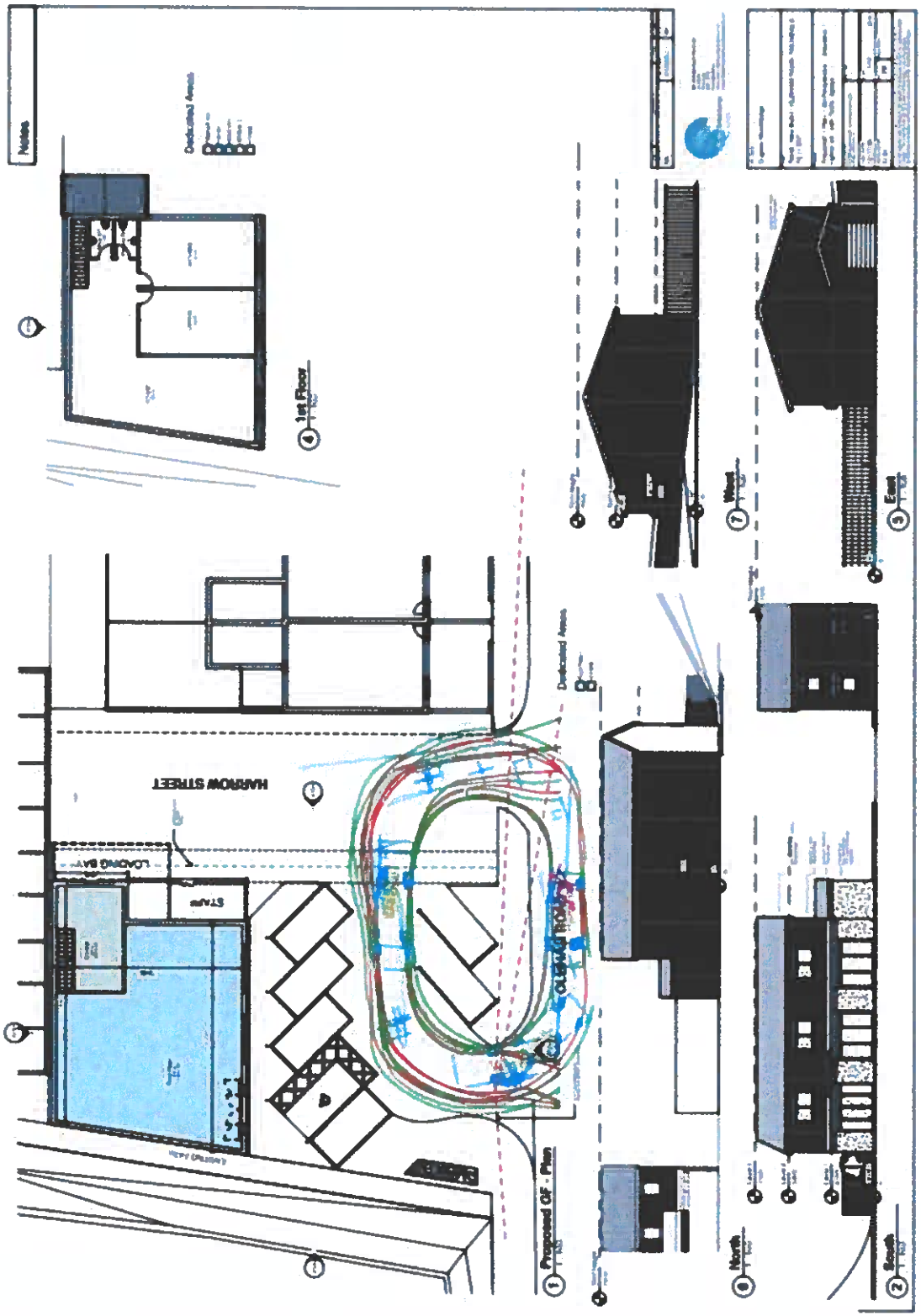
13.0 APPENDICES

APPENDIX A **ENVIRONMENTAL SEARCH**


NW
N
NE
W
E
SW
S
SE

APPENDIX B **PROPOSED AND CURRENT SITE PLANS**

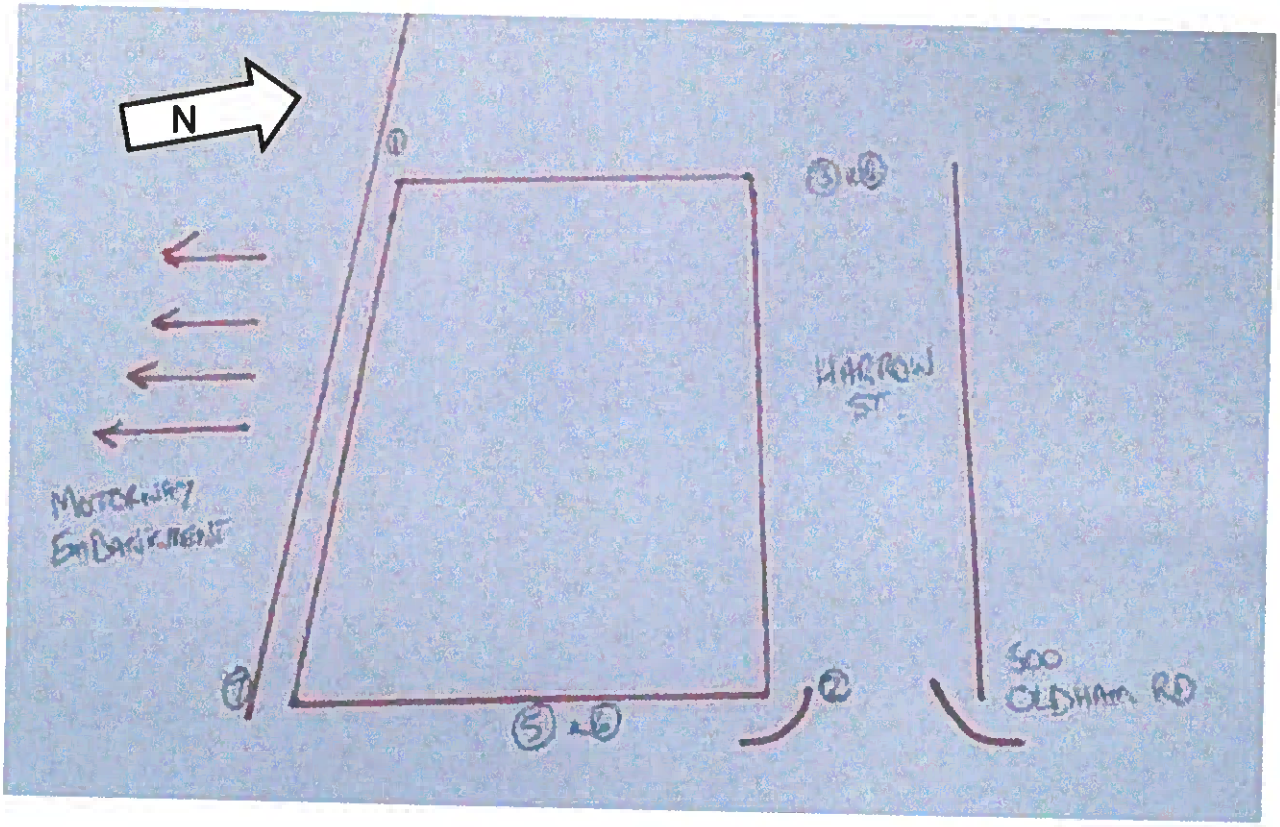

LAND AT HARROW STREET, ROCHDALE
ROCHDALE COUNCIL
Scale 1:1250


Notes
Dedicated Areas
1st Floor
West
East
HARROW STREET
LOADING BAY
STAIR
Proposed GF - Plan
North
South

APPENDIX C **SITE PHOTOS AND LOCATIONS**

1336H – Shockledge - Rochdale

Castledine & Co



1336H – Shockledge - Rochdale

Castledine & Co

1.



1336H – Shockledge - Rochdale

Castledine & Co

2.



1336H – Shockledge - Rochdale

Castledine & Co

3.



1336H – Shockledge - Rochdale

Castledine & Co

4.



1336H – Shockledge - Rochdale

Castledine & Co

5.



1336H – Shockledge - Rochdale

Castledine & Co

6.



APPENDIX D **SOIL SCREENING CRITERIA**

Contaminant	Source of GAC	Human Health Generic Assessment Criteria (mg/kg)																	
		residential without plant uptake (1% SOM)	residential without plant uptake (2.5% SOM)	residential without plant uptake (6% SOM)	residential with plant uptake (1% SOM)	residential with plant uptake (2.5% SOM)	residential with plant uptake (6% SOM)	allotments (1% SOM)	allotments (2.5% SOM)	allotments (6% SOM)	commercial (1% SOM)	commercial (2.5% SOM)	commercial (6% SOM)	POSresi (1% SOM)	POSresi (2.5% SOM)	POSresi (6% SOM)	POSpark (1% SOM)	POSpark (2.5% SOM)	POSpark (6% SOM)
Default Suite																			
Arsenic	SGV report + CLEA 1.06	35	35	35	32	32	32	43	43	43	640	640	640	79	79	79	170	170	170
Beryllium	LQM/CIEH + CLEA 1.06	51	51	51	51	51	51	55	55	55	420	420	420	93	93	93	670	670	670
Boron	LQM/CIEH + CLEA 1.06	1000	1000	1000	290	290	290	45	45	45	190000	190000	190000	21000	21000	21000	46000	46000	46000
Cadmium	SGV report + CLEA 1.06	85	85	85	11	11	11	1.9	1.9	2	230	230	230	120	120	120	560	560	560
Chromium (III)	LQM/CIEH + CLEA 1.06	630	630	630	630	630	630	15000	15000	15000	8800	8800	8800	1500	1500	1500	27000	27000	27000
Chromium (VI)	LQM/CIEH + CLEA 1.06	4.3	4.3	4.3	4.3	4.3	4.3	2.2	2.2	2.2	35	35	35	7.7	7.7	7.7	220	220	220
Copper	LQM/CIEH + CLEA 1.06	6200	6200	6200	2300	2300	2300	520	520	520	72000	72000	72000	12000	12000	12000	44000	44000	44000
Lead	C4SL	310	310	310	200	200	200	80	80	80	2330	2330	2330	630	630	630	1300	1300	1300
Mercury, Inorganic	SGV report + CLEA 1.06	240	240	240	170	170	170	80	80	80	3600	3600	3600	470	470	470	1100	1100	1100
Nickel	SGV report + CLEA 1.06	130	130	130	130	130	130	230	230	230	1800	1800	1800	290	290	290	3500	3500	3500
Selenium	SGV report + CLEA 1.06	600	600	600	350	350	350	120	120	120	13000	13000	13000	1400	1400	1400	2600	2600	2600
Vanadium	LQM/CIEH + CLEA 1.06	190	190	190	74	74	74	18	18	18	3200	3200	3200	440	440	440	970	970	970
Zinc	LQM/CIEH + CLEA 1.06	40000	40000	40000	3700	3700	3700	620	620	620	670000	670000	670000	81000	81000	81000	170000	170000	170000
Cyanide (free)	Hydrock + CLEA 1.06	780	780	780	750	750	750	2300	2300	2300	16000	16000	16000	1600	1600	1600	3400	3400	3400
Phenol	SGV report + CLEA 1.06	310	420	520	180	290	420	66	140	280	3200	3200	3200	3200	3200	3200	3200	3200	3200
Acenaphthene	LQM/CIEH + CLEA 1.06	2000	3100	3900	210	480	1000	34	65	200	85000	98000	100000	15000	15000	15000	29000	30000	30000

Contaminant	Source of GAC	Human Health Generic Assessment Criteria (mg/kg)																	
		residential without plant uptake (1%SOM)	residential without plant uptake (2.5%SOM)	residential without plant uptake (6%SOM)	residential with plant uptake (1%SOM)	residential with plant uptake (2.5%SOM)	residential with plant uptake (6%SOM)	allotments (1%SOM)	allotments (2.5%SOM)	allotments (6%SOM)	commercial (1%SOM)	commercial (2.5%SOM)	commercial (6%SOM)	POAmsl (1%SOM)	POAmsl (2.5%SOM)	POAmsl (6%SOM)	POApark (1%SOM)	POApark (2.5%SOM)	POApark (6%SOM)
Acenaphthylene	LQM/CIEH + CLEA 1.06	2000	3000	3900	170	400	850	28	69	160	84000	97000	100000	15000	15000	15000	29000	30000	30000
Anthracene	LQM/CIEH + CLEA 1.06	20000	22000	23000	2300	4900	9200	380	950	2200	520000	540000	540000	74000	74000	74000	150000	150000	150000
Benz(a)anthracene	LQM/CIEH + CLEA 1.06	3.7	5.2	6.2	3.1	4.7	5.9	2.5	5.5	10	89	95	97	17	18	18	26	33	40
Benzo(a)pyrene	LQM/CIEH + CLEA 1.06	1	1	1	0.83	0.94	1	0.6	1.2	2.1	14	14	14	2.6	2.6	2.6	4.5	5.6	6.5
Benzo(b)fluoranthene	LQM/CIEH + CLEA 1.06	7	7.3	7.4	5.6	6.5	7	3.5	7.4	13	100	100	100	18	18	18	30	38	45
Benzo(ghi)perylene	LQM/CIEH + CLEA 1.06	47	47	47	44	46	47	70	120	160	650	660	660	120	120	120	270	310	350
Benzo(k)fluoranthene	LQM/CIEH + CLEA 1.06	10	10	10	8.5	9.6	10	6.8	14	23	140	140	140	26	26	26	46	57	67
Chrysene	LQM/CIEH + CLEA 1.06	8.8	9.7	10	6	8	9.3	2.6	5.8	12	140	140	140	25	26	26	34	45	55
Dibenz(ah)anthracene	LQM/CIEH + CLEA 1.06	0.86	0.91	0.93	0.76	0.86	0.9	0.76	1.5	2.3	13	13	13	2.3	2.3	2.3	4.5	5.5	6.3
Fluoranthene	LQM/CIEH + CLEA 1.06	970	990	1000	260	460	670	52	130	290	23000	23000	23000	3100	3100	3100	6300	6300	6400
Fluorene	LQM/CIEH + CLEA 1.06	1900	2500	2900	160	380	780	27	67	160	64000	69000	71000	9900	9900	9900	20000	20000	20000
Indeno(123cd)pyrene	LQM/CIEH + CLEA 1.06	4.2	4.4	4.4	3.2	3.9	4.2	1.8	3.8	7.1	60	61	62	11	11	11	17	22	26
Naphthalene	LQM/CIEH + CLEA 1.06	1.6	3.9	9.3	1.5	3.7	8.7	4.1	9.9	23	200	480	1100	3900	4100	4200	1100	1600	2300
Phenanthrene	LQM/CIEH + CLEA 1.06	840	930	970	92	200	380	16	38	90	22000	22000	23000	3100	3100	3100	6200	6300	6300
Pyrene	LQM/CIEH + CLEA 1.06	2300	2400	2400	560	1000	1600	110	270	620	54000	54000	55000	7400	7400	7400	15000	15000	15000
TPH fractions																			
TPH all EC05-EC06	LQM/CIEH + CLEA 1.06	30	55	110	30	55	110	740	1700	3900	300	560	1200	300	560	600000	300	560	1200
TPH all >EC06-EC08	LQM/CIEH + CLEA 1.06	73	160	370	73	160	370	2300	5600	13000	140	320	740	600000	610000	620000	140	320	740

Contaminant	Source of GAC	Human Health Generic Assessment Criteria (mg/kg)																	
		residential without plant uptake (1% SOM)	residential without plant uptake (2.5% SOM)	residential without plant uptake (6% SOM)	residential with plant uptake (1% SOM)	residential with plant uptake (2.5% SOM)	residential with plant uptake (6% SOM)	allotments (1% SOM)	allotments (2.5% SOM)	allotments (6% SOM)	commercial (1% SOM)	commercial (2.5% SOM)	commercial (6% SOM)	POSrsl (1% SOM)	POSrsl (2.5% SOM)	POSrsl (6% SOM)	POSpart (1% SOM)	POSpart (2.5% SOM)	POSpart (6% SOM)
TPH ali >EC08-EC10	LQM/CIEH + CLEA 1.06	19	46	110	19	46	110	320	770	1700	78	190	450	13000	13000	13000	77	190	450
TPH ali >EC10-EC12	LQM/CIEH + CLEA 1.06	48	120	280	48	120	280	2200	4400	7300	48	120	280	13000	13000	13000	48	120	280
TPH ali >EC12-EC16	LQM/CIEH + CLEA 1.06	24	59	140	24	59	140	11000	13000	13000	24	59	140	13000	13000	13000	24	59	140
TPH ali >EC16-EC35	LQM/CIEH + CLEA 1.06	45000	64000	77000	45000	64000	76000	260000	270000	270000	1000000	1000000	1000000	250000	250000	250000	460000	480000	490000
TPH ali >EC35-EC44	LQM/CIEH + CLEA 1.06	45000	64000	77000	45000	64000	76000	260000	270000	270000	1000000	1000000	1000000	250000	250000	250000	460000	480000	490000
TPH aro EC05-EC07	LQM/CIEH + CLEA 1.06	260	480	980	65	130	280	13	27	57	1200	2300	4700	56000	56000	56000	1200	2300	4700
TPH aro >EC07-EC08	LQM/CIEH + CLEA 1.06	610	1300	2700	120	270	610	22	51	120	870	1900	4400	56000	56000	56000	870	1900	4400
TPH aro >EC08-EC10	LQM/CIEH + CLEA 1.06	33	81	190	27	65	150	8.6	21	51	610	1500	3600	5000	5000	5000	610	1500	3600
TPH aro >EC10-EC12	LQM/CIEH + CLEA 1.06	180	420	870	69	160	350	13	31	74	360	900	2200	5000	5000	5000	360	900	10000
TPH aro >EC12-EC16	LQM/CIEH + CLEA 1.06	1250	1600	1700	140	310	590	23	57	130	36000	37000	38000	5000	5000	5000	10000	10000	10000
TPH aro >EC16-EC21	LQM/CIEH + CLEA 1.06	1300	1300	1300	250	480	770	46	110	260	28000	28000	28000	3800	3800	3800	7600	7700	7800
TPH aro >EC21-EC35	LQM/CIEH + CLEA 1.06	1300	1300	1300	890	1100	1200	370	820	1600	28000	28000	28000	3800	3800	3800	7800	7800	7900
TPH aro >EC35-EC44	LQM/CIEH + CLEA 1.06	1300	1300	1300	890	1100	1200	370	820	1600	28000	28000	28000	3800	3800	3800	7800	7800	7900
TPH >EC44-EC70	LQM/CIEH + CLEA 1.06	1300	1300	1300	1200	1300	1300	1200	2100	3000	28000	28000	28000	3800	3800	3800	7800	7800	7900
VOCs - BTEX & MTBE																			
Benzene	SGV report + CLEA 1.06	0.27	0.49	1	0.08	0.16	0.33	0.017	0.035	0.075	28	50	95	72	72	73	90	100	110
Toluene	SGV report + CLEA 1.06	610	1300	2700	120	270	610	22	51	120	870	1900	4400	56000	56000	56000	870	1900	4400
Ethylbenzene	SGV report + CLEA 1.06	170	380	840	65	150	350	16	39	91	520	1200	2800	25000	25000	25000	520	1200	2800

Contaminant	Source of GAC	Human Health Generic Assessment Criteria (mg/kg)																	
		residential without plant uptake (1%SOM)	residential without plant uptake (2.5%SOM)	residential without plant uptake (6%SOM)	residential with plant uptake (1%SOM)	residential with plant uptake (2.5%SOM)	residential with plant uptake (6%SOM)	allotments (1%SOM)	allotments (2.5%SOM)	allotments (6%SOM)	commercial (1%SOM)	commercial (2.5%SOM)	commercial (6%SOM)	POSrisk (1%SOM)	POSrisk (2.5%SOM)	POSrisk (6%SOM)	POSpark (1%SOM)	POSpark (2.5%SOM)	POSpark (6%SOM)
Xylene, o-	SGV report + CLEA 1.06	60	140	320	45	110	250	28	67	160	480	1100	2600	41000	42000	43000	480	1100	2600
Xylene, m-	SGV report + CLEA 1.06	55	130	300	44	100	240	31	74	180	630	1500	3500	41000	42000	43000	630	1500	3500
Xylene, p- (use this for combined m & p)	SGV report + CLEA 1.06	53	130	290	42	96	230	29	70	160	580	1400	3200	41000	42000	43000	580	1400	3200
MTBE	EIC/AGS/CL:AIRE + CLEA 1.06	73	120	220	49	84	160	23	44	90	7900	13000	24000	75000	75000	75000	20000	33000	63000
VOCs - other benzenes																			
Iso-propylbenzene	EIC/AGS/CL:AIRE + CLEA 1.06	12	28	67	11	27	64	32	79	190	390	950	2300	25000	25000	25000	390	950	2300
Propylbenzene	EIC/AGS/CL:AIRE + CLEA 1.06	40	97	230	34	82	190	34	83	200	400	980	2300	25000	25000	25000	400	980	2300
1,2,4-Trimethylbenzene	EIC/AGS/CL:AIRE + CLEA 1.06	0.41	0.99	2.3	0.35	0.86	2	0.38	0.93	2.2	42	99	220	250	250	250	310	360	410
VOCs - chlorobenzenes																			
Bromobenzene	EIC/AGS/CL:AIRE + CLEA 1.06	0.91	2.1	4.9	0.88	2	4.7	3.2	7.6	16	97	220	520	5200	5400	5600	850	2000	3500
Chlorobenzene	LQM/CIEH + CLEA 1.06	0.33	0.74	1.7	0.33	0.73	1.7	5.9	14	32	59	130	310	12000	13000	14000	680	1500	2900
1,2-Dichlorobenzene	LQM/CIEH + CLEA 1.06	17	40	94	16	39	91	94	230	540	570	1400	3200	95000	100000	100000	570	1400	3300
1,3-Dichlorobenzene	LQM/CIEH + CLEA 1.06	0.31	0.74	1.7	0.29	0.7	1.7	0.25	0.61	1.5	32	77	180	300	300	300	390	440	470
1,4-Dichlorobenzene	LQM/CIEH + CLEA 1.06	42	100	230	30	72	170	15	37	88	230	540	1300	17000	17000	17000	220	540	1300
Hexachlorobenzene	LQM/CIEH + CLEA 1.06	0.2	0.5	1.7	0.2	0.5	1.4	0.18	0.42	0.92	0.2	53	55	6.5	6.5	6.5	11	11	11
Pentachlorobenzene	LQM/CIEH + CLEA 1.06	14	21	27	5.2	10	17	1.2	3.1	7	43	110	830	110	110	110	190	190	190
1,2,3-trichlorobenzene	LQM/CIEH + CLEA 1.06	1.1	2.6	6.2	1	2.6	6.1	4.7	12	28	110	270	630	1700	1800	1800	130	330	1800
1,2,4-trichlorobenzene	LQM/CIEH + CLEA 1.06	1.8	4.5	11	1.8	4.5	11	31	75	180	230	560	1300	10000	11000	12000	320	790	1900

Contaminant	Source of GAC	Human Health Generic Assessment Criteria (mg/kg)																	
		residential without plant uptake (1%SOM)	residential without plant uptake (2.5%SOM)	residential without plant uptake (6%SOM)	residential with plant uptake (1%SOM)	residential with plant uptake (2.5%SOM)	residential with plant uptake (6%SOM)	allotments (1%SOM)	allotments (2.5%SOM)	allotments (6%SOM)	commercial (1%SOM)	commercial (2.5%SOM)	commercial (6%SOM)	POSresi (1%SOM)	POSresi (2.5%SOM)	POSresi (6%SOM)	POSpark (1%SOM)	POSpark (2.5%SOM)	POSpark (6%SOM)
1,3,5-trichlorobenzene	LQM/CIEH + CLEA 1.06	0.23	0.57	1.4	0.23	0.57	1.4	4.7	12	28	24	590	140	1600	1700	1800	37	91	220
1,2,3,4-tetrachlorobenzene	LQM/CIEH + CLEA 1.06	17	39	84	12	29	62	4.4	11	26	120	300	730	830	830	830	120	1600	1600
1,2,3,5-tetrachlorobenzene	LQM/CIEH + CLEA 1.06	0.53	1.3	3	0.49	1.2	2.8	0.38	0.94	2.2	39	96	240	79	79	79	39	120	130
1,2,4,5-tetrachlorobenzene	LQM/CIEH + CLEA 1.06	0.51	1.2	2.4	0.3	0.66	1.4	0.064	0.16	0.37	20	49	97	13	13	13	25	26	26
VOCs - chloroalkanes & alkanes																			
Bromodichloromethane	EIC/AGS/CL:AIRE + CLEA 1.06	0.019	0.034	0.07	0.016	0.03	0.061	0.016	0.032	0.068	2.1	3.7	7.6	73	73	74	56	67	81
Bromoform	EIC/AGS/CL:AIRE + CLEA 1.06	5.2	11	2.3	2.8	6	13	0.95	2.1	4.6	760	1500	3100	3900	3900	4000	2700	4700	5200
Chloroethane	EIC/AGS/CL:AIRE + CLEA 1.06	8.4	11	18	8.3	11	18	110	210	380	960	1300	2100	2600	3500	5700	2600	3500	5700
Chloroethene (aka vinyl chloride)	LQM/CIEH + CLEA 1.06	0.00054	0.0007	0.0011	0.00047	0.00064	0.00099	0.00055	0.001	0.0018	0.063	0.081	0.12	3.5	3.5	3.5	4.8	5	5.4
Chloromethane	EIC/AGS/CL:AIRE + CLEA 1.06	0.0065	0.0099	0.013	0.0063	0.0096	0.013	0.066	0.13	0.23	1	1.2	1.6	540	550	560	140	150	170
1,1-Dichloroethane	EIC/AGS/CL:AIRE + CLEA 1.06	2.5	4.1	7.7	2.4	3.9	7.4	9.2	17	35	280	450	850	46000	47000	48000	1800	3000	5600
1,2-Dichloroethane	LQM/CIEH + CLEA 1.06	0.0065	0.0093	0.016	0.0053	0.008	0.014	0.0046	0.0063	0.016	0.71	1	1.8	29	29	29	21	24	28
1,1-Dichloroethene	EIC/AGS/CL:AIRE + CLEA 1.06	0.23	0.41	0.82	0.23	0.4	0.82	2.6	5.6	12	26	46	92	2200	3900	11000	2200	3900	5900
Cis 1,2 Dichloroethene	EIC/AGS/CL:AIRE + CLEA 1.06	0.12	0.2	0.39	0.11	0.19	0.37	0.26	0.5	1	15	24	47	1300	1300	1400	690	840	1000
Trans 1,2 Dichloroethene	EIC/AGS/CL:AIRE + CLEA 1.06	0.19	0.35	0.71	0.19	0.34	0.7	0.93	1.9	4	22	40	81	3800	4000	4000	1700	2100	2700
Dichloromethane	EIC/AGS/CL:AIRE + CLEA 1.06	2.1	2.8	4.5	0.56	0.96	1.7	0.1	0.19	0.34	270	360	560	760	760	760	1500	1500	1500
1,2-Dichloropropane	EIC/AGS/CL:AIRE + CLEA 1.06	0.024	0.042	0.085	0.024	0.042	0.085	0.62	1.2	2.6	3.3	5.9	12	1700	1900	2200	160	210	290

Contaminant	Source of GAC	Human Health Generic Assessment Criteria (mg/kg)																
		residential without plant uptake (1%SOM)	residential without plant uptake (2.5%SOM)	residential without plant uptake (6%SOM)	residential with plant uptake (1%SOM)	residential with plant uptake (2.5%SOM)	residential with plant uptake (6%SOM)	allotments (1%SOM)	allotments (2.5%SOM)	allotments (6%SOM)	commercial (1%SOM)	commercial (2.5%SOM)	commercial (6%SOM)	POSresi (1%SOM)	POSresi (2.5%SOM)	POSresi (6%SOM)	POSpark (1%SOM)	POSpark (2.5%SOM)	POSpark (6%SOM)
Hexachloroethane	EIC/AGS/CL:AIRE + CLEA 1.06	0.22	0.54	1.3	0.2	0.48	1.1	0.27	0.67	1.6	8.2	20	48	120	130	130	8.2	20	48
Tetrachloroethene	LQM/CIEH + CLEA 1.06	1	2.3	5.3	0.94	2.1	4.8	1.6	3.7	8.7	130	290	660	3400	3400	3400	420	950	2200
1,1,1,2-Tetrachloroethane	LQM/CIEH + CLEA 1.06	1.1	2.5	5.6	0.89	2.1	4.8	0.78	1.9	4.4	120	260	590	1400	1400	1400	1500	1800	2100
1,1,2,2-Tetrachloroethane	LQM/CIEH + CLEA 1.06	2.9	5.8	13	1.4	2.9	6.5	0.41	0.89	2	300	600	1200	1400	1400	1400	1800	2100	2300
Tetrachloromethane	LQM/CIEH + CLEA 1.06	0.018	0.04	0.09	0.016	0.039	0.089	0.16	0.37	0.85	3	6.7	15	340	350	350	170	240	320
Trichloroethene	LQM/CIEH + CLEA 1.06	0.11	0.23	0.51	0.11	0.22	0.49	0.43	0.95	2.2	12	25	55	1200	1300	1300	660	860	1100
1,1,1-Trichloroethane	LQM/CIEH + CLEA 1.06	6.3	13	28	6.2	13	28	48	110	240	700	1400	3100	140000	140000	140000	1400	2900	6400
1,1,2 Trichloroethane	EIC/AGS/CL:AIRE + CLEA 1.06	0.88	1.8	3.9	0.8	1.2	2.7	0.26	0.61	1.4	95	190	400	990	990	1000	1100	1300	1500
Trichloromethane	LQM/CIEH + CLEA 1.06	0.92	1.6	3.2	0.75	1.3	2.7	0.36	0.7	1.5	110	190	370	1700	1700	1700	2700	2900	3100
Other phenols & chlorophenols																			
2-Chlorophenol	LQM/CIEH + CLEA 1.06	65	94	120	3.7	8.4	18	0.58	1.4	3.2	3600	4000	4300	610	610	610	1100	1100	1100
2,4-Dichlorophenol	LQM/CIEH + CLEA 1.06	58	85	110	0.88	2	4.4	0.13	0.3	0.7	3500	4000	4200	610	610	610	1000	1100	1100
2,4-Dimethylphenol	EIC/AGS/CL:AIRE + CLEA 1.06	210	410	730	19	43	97	3.1	7.2	17	1400	3100	7200	5000	5000	5000	1400	9600	9900
2-Methylphenol	EIC/AGS/CL:AIRE + CLEA 1.06	3700	5400	6900	82	180	400	13	28	64	160000	180000	180000	25000	25000	25000	15000	46000	49000
3-Methylphenol	EIC/AGS/CL:AIRE + CLEA 1.06	4700	6300	7500	81	180	400	12	28	63	170000	180000	180000	25000	25000	25000	27000	48000	49000
4-Methylphenol	EIC/AGS/CL:AIRE + CLEA 1.06	3600	5500	7000	81	180	400	12	28	63	160000	180000	180000	25000	25000	25000	27000	48000	49000
Pentachlorophenol	LQM/CIEH + CLEA 1.06	22	31	35	0.55	1.3	3	0.084	0.21	0.49	1200	1300	1400	180	180	180	220	250	270
2,3,4,6-Tetrachlorophenol	LQM/CIEH + CLEA 1.06	82	110	130	0.87	2	4.7	0.13	0.31	0.73	3900	4200	4400	610	610	610	1000	1100	1100

Contaminant	Source of GAC	Human Health Generic Assessment Criteria (mg/kg)																
		residential without plant uptake (1%SOM)	residential without plant uptake (2.5%SOM)	residential without plant uptake (6%SOM)	residential with plant uptake (1%SOM)	residential with plant uptake (2.5%SOM)	residential with plant uptake (6%SOM)	allotments (1%SOM)	allotments (2.5%SOM)	allotments (6%SOM)	commercial (1%SOM)	commercial (2.5%SOM)	commercial (6%SOM)	POshred (1%SOM)	POshred (2.5%SOM)	POshred (6%SOM)	POSpark (1%SOM)	POSpark (2.5%SOM)	POSpark (6%SOM)
2,4,6-Trichlorophenol	LQM/CIEH + CLEA 1.06	82	110	130	1.4	3.3	7.5	0.22	0.51	1.2	3900	4200	4400	610	610	610	1100	1100	1100
Phthalates																			
Bis (2-ethylhexyl) phthalate	EIC/AGS/CL:AIRE + CLEA 1.06	2700	2800	2800	280	610	1100	48	120	280	85000	86000	86000	9700	9700	9700	17000	17000	17000
Butyl benzyl phthalate	EIC/AGS/CL:AIRE + CLEA 1.06	43000	44000	44000	1400	3400	7300	220	550	1300	940000	940000	950000	130000	130000	130000	250000	260000	260000
Diethyl Phthalate	EIC/AGS/CL:AIRE + CLEA 1.06	14	29	65	120	260	570	19	41	94	14	29	65	49000	50000	50000	14	93000	96000
Di-n-butyl phthalate	EIC/AGS/CL:AIRE + CLEA 1.06	4.7	11	450	13	31	67	2	5	12	4.7	15000	15000	1300	1300	1300	2600	2700	2800
Di-n-octyl phthalate	EIC/AGS/CL:AIRE + CLEA 1.06	3400	3400	3400	2300	2800	3100	940	2100	3900	89000	89000	89000	11000	11000	11000	20000	20000	20000
Pesticides																			
Aldrin	LQM/CIEH + CLEA 1.06	2.1	2.1	2.2	1.7	2	2.1	1.3	2.6	4	54	54	54	6.6	6.6	6.6	13	13	13
Atrazine	LQM/CIEH + CLEA 1.06	31	32	32	0.24	0.56	1.3	0.037	0.085	0.2	870	880	880	100	100	100	180	180	180
DDD	Hydrock + CLEA 1.06	1300	1300	1300	890	1100	1100	400	790	1200	22000	22000	22000	2700	2700	2700	5700	5700	5700
DDE	Hydrock + CLEA 1.06	1300	1300	1300	860	1100	1200	370	770	1300	22000	22000	22000	2700	2700	2700	5700	5700	5700
DDT	Hydrock + CLEA 1.06	1100	1200	1200	770	940	1000	330	680	1100	21000	21000	21000	2600	2600	2600	5500	5500	5500
Dichlovos	LQM/CIEH + CLEA 1.06	25	32	37	0.29	0.6	1.3	0.044	0.091	0.2	840	870	890	120	120	120	140	160	180
Dieldrin	LQM/CIEH + CLEA 1.06	3.5	3.8	3.9	0.69	1.4	2.2	0.13	0.32	0.73	90	91	92	12	12	12	23	23	23
Endosulfan - alpha	LQM/CIEH + CLEA 1.06	44	78	110	2.9	7	16	0.47	1.2	2.7	2300	3000	3400	490	490	490	940	970	990
Endosulfan - beta	LQM/CIEH + CLEA 1.06	53	89	120	2.8	6.6	15	0.44	1.1	2.6	2600	3200	3500	490	490	490	950	980	990
Hexachlorocyclohexanes - alpha (inc.	LQM/CIEH + CLEA 1.06	460	580	650	19	46	100	3	7.4	18	14000	15000	15000	2000	2000	2000	4000	4100	4100

Contaminant	Source of GAC	Human Health Generic Assessment Criteria (mg/kg)																	
		residential without plant uptake (1%SOM)	residential without plant uptake (2.5%SOM)	residential without plant uptake (6%SOM)	residential with plant uptake (1%SOM)	residential with plant uptake (2.5%SOM)	residential with plant uptake (6%SOM)	allotments (1%SOM)	allotments (2.5%SOM)	allotments (6%SOM)	commercial (1%SOM)	commercial (2.5%SOM)	commercial (6%SOM)	PCBsrul (1%SOM)	PCBsrul (2.5%SOM)	PCBsrul (6%SOM)	PCBsprt (1%SOM)	PCBsprt (2.5%SOM)	PCBsprt (6%SOM)
Lindane)																			
Hexachlorocyclohexanes - beta (inc. Lindane)	LQM/CIEH + CLEA 1.06	50	52	52	1.7	3.9	8.5	0.26	0.64	1.5	1100	1100	1100	150	150	150	300	300	310
Hexachlorocyclohexanes - gamma (inc. Lindane)	LQM/CIEH + CLEA 1.06	18	22	23	0.58	1.4	3	0.089	0.22	0.52	530	550	550	71	71	71	140	140	140
Dioxins, furans & dioxin-like-PCBs																			
Total dioxins, furans & DL-PCB (aerial dep.)	SGV report + CLEA 1.06	0.0099	0.0099	0.0099	0.0085	0.0087	0.0087	0.0073	0.008	0.0083	0.24	0.24	0.24	0.023	0.023	0.023	0.049	0.049	0.049
Non-dioxin-like PCBs																			
PCB-28	Hydrock + CLEA 1.06	0.39	0.39	0.39	0.2	0.27	0.32	0.056	0.13	0.23	9	9	9	1.2	1.2	1.2	2.5	2.5	2.5
PCB-52	Hydrock + CLEA 1.06	0.39	0.39	0.39	0.2	0.28	0.34	0.062	0.14	0.28	9	9	9	1.2	1.2	1.2	2.5	2.5	2.5
PCB-101	Hydrock + CLEA 1.06	0.39	0.39	0.39	0.34	0.37	0.38	0.03	0.53	0.76	9	9	9	1.2	1.2	1.2	2.5	2.5	2.5
PCB-138	Hydrock + CLEA 1.06	0.39	0.39	0.39	0.36	0.37	0.38	0.41	0.67	0.89	9	9	9	1.2	1.2	1.2	2.5	2.5	2.5
PCB-153	Hydrock + CLEA 1.06	0.39	0.39	0.39	0.36	0.38	0.38	0.51	0.77	0.98	9	9	9	1.2	1.2	1.2	2.5	2.5	2.5
PCB-180	Hydrock + CLEA 1.06	0.39	0.39	0.39	0.37	0.38	0.39	0.6	0.87	1.1	9	9	9	1.2	1.2	1.2	2.5	2.5	2.5
Explosives																			
HMX	LQM/CIEH + CLEA 1.06	6500	6500	6500	5.7	13	26	0.86	1.9	3.9	110000	110000	110000	13000	13000	13000	0.35	0.4	0.5
RDX	LQM/CIEH + CLEA 1.06	370	370	370	3.5	7.4	16	0.52	1.1	2.5	6400	6400	6400	790	800	800	19	1500	1600
2,4,6-Trinitrotoluene	LQM/CIEH + CLEA 1.06	57	57	58	1.6	3.7	7.8	0.24	0.58	1.4	1000	1000	1100	130	130	130	260	270	270
Other inorganics																			

Contaminant	Source of GAC	Human Health Generic Assessment Criteria (mg/kg)																	
		residential without plant uptake (1%SOM)	residential without plant uptake (2.5%SOM)	residential without plant uptake (6%SOM)	residential with plant uptake (1%SOM)	residential with plant uptake (2.5%SOM)	residential with plant uptake (6%SOM)	allotments (1%SOM)	allotments (2.5%SOM)	allotments (6%SOM)	commercial (1%SOM)	commercial (2.5%SOM)	commercial (6%SOM)	POSresi (1%SOM)	POSresi (2.5%SOM)	POSresi (6%SOM)	POSpark (1%SOM)	POSpark (2.5%SOM)	POSpark (6%SOM)
Antimony	EIC/AGS/CL:AIRE + CLEA 1.06	370	370	370	180	180	180	52	52	52	6800	6800	6800	740	740	740	1700	1700	1700
Barium	EIC/AGS/CL:AIRE + CLEA 1.06	1300	1300	1300	780	780	780	260	260	260	22000	22000	22000	2700	2700	2700	5800	5800	5800
Mercury, elemental	SGV report + CLEA 1.06	0.17	0.42	1	0.17	0.42	1	4.3	11	26	4.3	11	26	4.3	11	26	4.3	11	26
Molybdenum	EIC/AGS/CL:AIRE + CLEA 1.06	670	670	670	250	250	250	58	58	58	18000	18000	18000	1400	1400	1400	2900	2900	2900
Thiocyanate	Hydrock + CLEA 1.06	8.9	8.9	8.9	8.8	8.8	8.8	28	28	28	190	190	190	25	25	25	53	53	53
Other organics																			
Biphenyl	EIC/AGS/CL:AIRE + CLEA 1.06	34	84	200	34	84	200	14	35	84	34	84	200	9500	9500	9500	34	84	19000
Carbon disulphide	LQM/CIEH + CLEA 1.06	0.1	0.2	0.44	0.1	0.2	0.44	4.8	10	23	12	23	50	11000	11000	12000	1300	1900	2700
2,4-Dinitrotoluene	EIC/AGS/CL:AIRE + CLEA 1.06	170	170	170	1.5	3.2	7.2	0.22	0.49	1.1	3700	3800	3800	500	500	500	140	960	990
2,6-Dinitrotoluene	EIC/AGS/CL:AIRE + CLEA 1.06	78	84	87	0.78	1.7	3.9	0.12	0.27	0.61	1900	1900	1900	250	250	250	290	490	500
Hexachloro-1,3-butadiene	LQM/CIEH + CLEA 1.06	0.22	0.55	1.3	0.21	0.51	1.2	0.25	0.61	1.4	32	89	120	25	25	25	48	50	51
Mercury, methyl	SGV report + CLEA 1.06	8.4	11	14	7.4	9.6	11	7.9	8	8	370	390	410	53	53	53	73	93	97
Styrene	EIC/AGS/CL:AIRE + CLEA 1.06	35	78	170	6.1	19	43	1.6	3.7	8.7	630	1400	3400	3000	3000	3000	630	1400	3400
Tributyl tin oxide	EIC/AGS/CL:AIRE + CLEA 1.06	8.4	9.8	11	0.27	0.64	1.4	0.042	0.1	0.25	230	230	240	31	31	31	63	64	65
2-Chloronaphthalene	EIC/AGS/CL:AIRE + CLEA 1.06	3.8	9.3	22	3.7	9.2	22	40	98	230	390	960	2200	7500	8400	9000	110	1800	2800

APPENDIX E COAL AUTHORITY REPORT

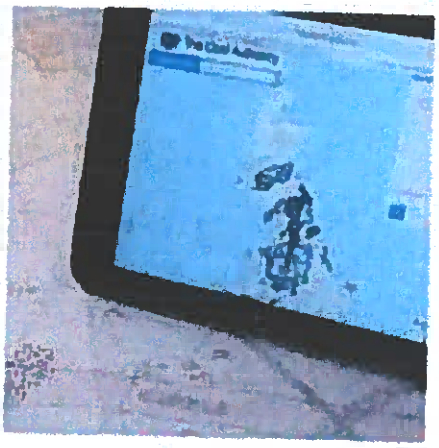
The Coal Authority

Resolving the impacts of mining

CON29M Non-Residential Mining Report







LAND AT HARROW STREET
ROCHDALE

Date of enquiry:	04 March 2016
Date enquiry received:	04 March 2016
Issue date:	04 March 2016
Our reference:	81000661714001
Your reference:	ATD-2659959-V14D

CON29M Non-Residential Mining Report

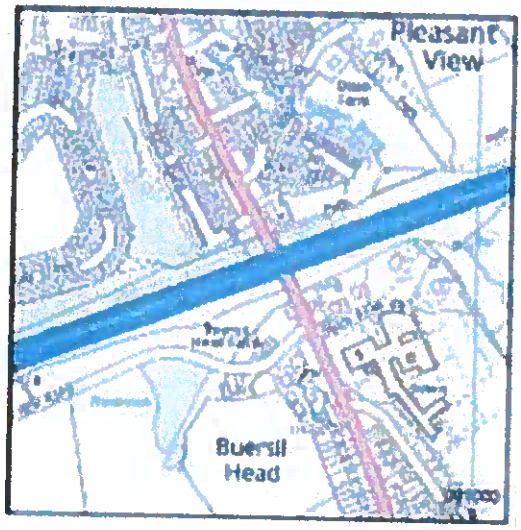
This report is based on, and limited to, the records held by the Coal Authority and the Cheshire Brine Subsidence Compensation Board's records, at the time we answer the search.

Client name

ETSOS

Enquiry address

LAND AT HARROW STREET, ROCHDALE



Approximate position of property

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Summary

Has the enquiry boundary identified evidence of		
1	Past underground coal mining	No
2	Present underground coal mining	No
3	Future underground coal mining	Yes
4	Mine entries	No
5	Coal mining geology	No
6	Past opencast coal mining	No
7	Present opencast coal mining	No
8	Future opencast coal mining	No
9	Coal mining subsidence	No
10	Mine gas	No
11	Hazards related to coal mining	No
12	Withdrawal of support	No
13	Working facilities order	No
14	Payments to owners of former copyhold land	No
15	Information from the Cheshire Brine Subsidence Compensation Board	No

For detailed findings, please go to page 4.

Detailed findings

1. Past underground coal mining

The property is not within a surface area that could be affected by past underground mining.

2. Present underground coal mining

The property is not within a surface area that could be affected by present underground mining.

3. Future underground coal mining

The property is not in an area where the Coal Authority has plans to grant a licence to remove coal using underground methods.

The property is not in an area where a licence has been granted to remove or otherwise work coal using underground methods.

The property is not in an area likely to be affected from any planned future underground coal mining.

However, reserves of coal exist in the local area which could be worked at some time in the future.

No notices have been given, under section 46 of the Coal Mining Subsidence Act 1991, stating that the land is at risk of subsidence.

4. Mine entries

There are no known coal mine entries within, or within 20 metres of, the boundary of the property.

5. Coal mining geology

The Coal Authority is not aware of any damage due to geological faults or other lines of weakness that have been affected by coal mining.

6. Past opencast coal mining

The property is not within the boundary of an opencast site from which coal has been removed by opencast methods.

7. Present opencast coal mining
The property does not lie within 200 metres of the boundary of an opencast site from which coal is being removed by opencast methods.

8. Future opencast coal mining
There are no licence requests outstanding to remove coal by opencast methods within 800 metres of the boundary.

The property is not within 800 metres of the boundary of an opencast site for which a licence to remove coal by opencast methods has been granted.

9. Coal mining subsidence
The Coal Authority has not received a damage notice or claim for the subject property, or any property within 50 metres, since 31st October 1994.

There is no current Stop Notice delaying the start of remedial works or repairs to the property.

The Coal Authority is not aware of any request having been made to carry out preventive works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991.

10. Mine gas
The Coal Authority has no record of a mine gas emission requiring action.

11. Hazards related to coal mining
The property has not been subject to remedial works, by or on behalf of the Authority, under its Emergency Surface Hazard Call Out procedures.

12. Withdrawal of support
The property is not in an area where a notice to withdraw support has been given.

The property is not in an area where a notice has been given under section 41 of the Coal Industry Act 1994, cancelling the entitlement to withdraw support.

13. Working facilities order
The property is not in an area where an order has been made, under the provisions of the Mines (Working Facilities and Support) Acts 1923 and 1966 or any statutory modification or amendment thereof.

14. Payments to owners of former copyhold land
The property is not in an area where a relevant notice has been published under the Coal Industry Act 1975/Coal Industry Act 1994.

15. Information from the Cheshire Brine Subsidence Compensation Board

The property lies outside the Cheshire Brine Compensation District.

Additional remarks

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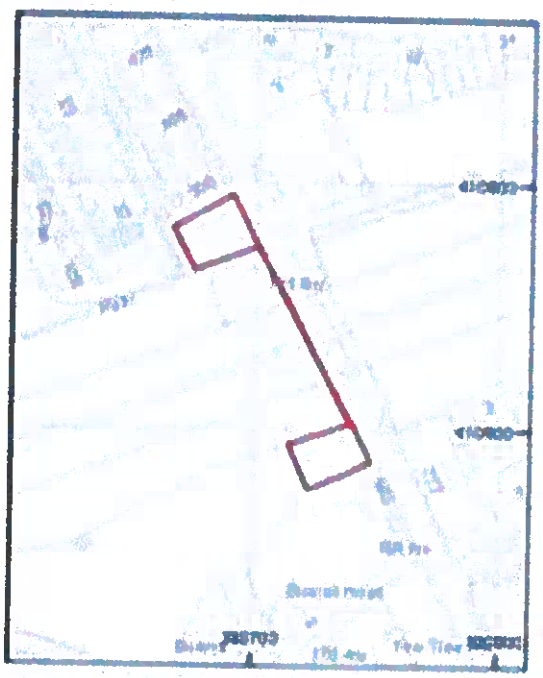
Enquiry boundary

Key

Approximate position of enquiry boundary shown



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