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Report No 22005/1

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**CONTAMINATION ASSESSMENT
for land at
38-44 TOWNLEY STREET
MIDDLETON
ROCHDALE**

Prepared for

**UNIVERSAL BARGAINS LIMITED
35 Overbridge Road
Salford
M7 1SL**

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1. INTRODUCTION

- 1.1 The Arley Consulting Company Limited (TACCL) has been commissioned by Universal Bargains Limited (UBL) to assess the ground conditions at 38 to 44 Townley Street, Middleton, Rochdale with respect to potential contamination. The assessment is required to satisfy planning requirements.
- 1.2 The site is located at the corner of Townley Street and Adelaide Street, Middleton some 8.25 km to the south-south-west of Rochdale town centre and 5.1 km west-north-west of Oldham.
- 1.3 Planning permission has been granted by Rochdale Borough Council for the *'demolition of existing buildings and erection of 8 no, 1- and 2-bedroom self-contained apartment block with associated parking'* (Ref 20/00681/FUL).
- 1.4 Condition No 9 of the permission requires that *'Prior to commencement of the development an investigation and risk assessment, in addition to any assessment provided with the planning application, must be completed to assess the nature and extent of any contamination on the site, whether or not it originates on the site. The investigation and risk assessment must be undertaken by competent persons and a written report of the findings must be produced and shall have been first submitted to and approved in writing by the Local Planning Authority before development commences'*. Some specific requirements are also listed.
- 1.5 A preliminary risk assessment (PRA) has been produced for the site by Worms Eye (Ref 38 - 44 Townley Street/M24 1BF/2020, dated 4 September 2020). TACCL has used the PRA findings to inform the investigation undertaken.
- 1.6 The local planning authority agreed that the ground investigation could be undertaken after the demolition and site clearance works.
- 1.7 In this report TACCL presents a summary of the PRA findings, together with the results of the ground investigation carried out at the site. TACCL provides an assessment of the ground conditions and recommendations for remediation and/or mitigation measures, as required to satisfy the planning condition requirements.
- 1.8 The conclusions and recommendations presented in this report are the result of our professional interpretation of the information obtained. TACCL reserves the right to amend the conclusions and recommendations if further information becomes available.

2. SITE DESCRIPTION

2.1 Site Location

2.1.1 The site is located at the corner of Townley Street and Adelaide Street, Middleton. It is some 8.25 km to the south-south-west of Rochdale town centre and 5.1 km west-north-west of Oldham.

2.1.2 The approximate National Grid Reference for the site is 387290, 405910.

2.1.3 A location plan is presented at Appendix H.

2.2 Surrounding Land Use

2.2.1 The site is located in an area where other properties are mixed use, some commercial (to the north on Townley Street) and some residential (to the south on Adelaide Street).

2.2.2 *Worms Eye reported that 'to the north is a shop, to the south a house, to the west is a river and to the northeast a car park with a garage workshop beyond. The area slopes down to the southwest'.*

2.2.3 The River Irk is located immediately to the south-west of the site, in a channel located at a lower elevation than the development site.

2.3 Site Description

2.3.1 The site is a rectangular plot, about 27 m deep by 18 m wide, located on the corner of Townley Street and Adelaide Street, Middleton.

2.3.2 TACCL visited and inspected the site on two occasions prior to the investigation, on 13 May (pre demolition) and 24 November 2022 (post demolition). A series of photographs from these site visits is presented in Appendix G.

2.3.3 The pre-demolition site layout is illustrated on Greenfield Design Services Drawing No 759-19-01 Rev A, presented in Appendix H.

2.3.4 The drawing shows buildings on the eastern part of the site with outdoor space to the west. From the inspection it was evident that the outdoor space was a patio/beer garden with bench seating and some trees and shrubs.

2.3.5 There was no visual evidence of contamination, or any significant potential sources of contamination were identified during TACCLs site visits. Nor were any identified by Worms Eye.

2.4 Proposed Development

2.4.1 The approved development layout is shown on Greenfield Design Services Drawing No 759-19-06 Rev A, presented in Appendix H.

2.4.2 It can be seen, from this drawing, that the apartment block will occupy the front part of the site with a surfaced car park to the rear.

2.4.3 No garden or landscaped areas are proposed.

3. PRELIMINARY RISK ASSESSMENT

3.1 Introduction

3.1.1 A preliminary risk assessment (PRA) has been produced for the site by Worms Eye (Ref 38 - 44 Townley Street/M24 1BF/2020, dated 4 September 2020).

3.1.2 The Worms Eye PRA is summarised in the following report sections.

3.2 Site History

3.2.1 Copies of historic Ordnance Survey (OS) maps for the period 1848 to 2020 were obtained from Landmark and are appended to the Worms Eye PRA.

3.2.2 Worms Eye reported that the site was initially undeveloped (1848) but it was occupied by buildings (possibly houses/shops) which were first shown on the 1891 map and were demolished and cleared by 1938.

3.2.3 From 1952 the site was labelled as a 'works' with little or no changes up to 2020.

3.2.4 A number of potentially contaminating activities are described off-site, as follows:

Map Date	Description	Location
1848	Sand Pit	170 m south-east
	Cotton Mill	55 m south
1891	Many cotton mills within 250 m	Closest 55 m north
	Gas Works	35 m west & 15 m south-west beyond the River Irk
	Railway	95 m south-east
	Smithy	65 m north-east
	Ironworks	70 m east
	Sand pit filled	170 m south-east
1909	Spring Vale Dye Works	220 m north-east
1973-75	Spring Vale Works (Dying & Proofing)	35 m north-east
1992	Gas holder demolished, now a gas depot and council depot	15 m south-west & 15 m west

Table 1: Summary of Off-Site Uses Identified by Worms Eye

3.2.5 Worms Eye provides the following additional discussion in relation to the site historical development.

- 3.2.6 *'The site was originally developed as housing, demolished before the existing building was constructed. There is potential for demolition rubble to have been left on-site which can contain levels of contaminants which exceed residential thresholds'.*
- 3.2.7 *'The existing building was most recently a bar, but past uses include clothing/fabrics and is likely to have included small industry, like light engineering over its history. These have potential for contaminants to have entered the ground, although the floor is expected to have impeded contaminants reaching the underlying soils and high levels are not expected.'*
- 3.2.8 *'No pollution incidents on or close to the site.'*
- 3.2.9 *'Relevant off-site industries include a garage workshop. However, significant off-site industry, especially the former gas works and depots, are to the southwest, beyond the river which will form a barrier between them and the site'.*

3.3 Geology

- 3.3.1 According to Worms Eye *'The geological map indicates that the underlying solid rocks are mudstone, siltstone and sandstone of the Pennine Lower Coal Measures Formation.'*
- 3.3.2 *'Surface drift is shown as glacial sand and gravel beneath the majority of site, and alluvium (clay, silt, sand and gravel) beneath the southeast corner.'*
- 3.3.3 *'Natural subsidence hazards are shown as a moderate risk for compressible ground stability hazards'.*
- 3.3.4 The geological conditions are illustrated on web images at Appendix A, obtained from the BGS website.
- 3.3.5 The BGS records indicate that there are investigation boreholes in the vicinity of the site but none at the site itself. Copies of the nearest records are presented at Appendix A.
- 3.3.6 It can be seen from this information that the likely ground conditions at the site might comprise a relatively thin layer of made ground consisting of demolition materials and possibly ash, overlying loose to medium dense gravelly sand or sand & gravel.
- 3.3.7 A note provided on BGS Borehole No SD80NE72 (Norwest Holst Soil Engineering Limited Borehole No 5 drilled for Rochdale MBC) states that the 'sand exhibited an 'oily' smell' between 3.9 and 6 m. This borehole was located some 40 m to the north of the development site being assessed.

3.3.8 According to the Worms Eye Envirocheck Report the estimated soil chemistry at the site is as follows:

Arsenic	15 - 25 mg/kg
Cadmium	<1.8 mg/kg
Chromium	60 - 90 mg/kg
Lead	<100 mg/kg
Nickel	15 - 30 mg/kg

3.3.9 These concentrations would not represent a significant potential risk to the proposed residential development.

3.4 Hydrogeology

3.4.1 According to Worms Eye *'the solid rocks and superficial (drift deposits) under the site are indicated as Secondary A aquifers. Groundwater flow is likely to follow the topography and move to the southwest.'*

3.4.2 Secondary A Aquifers are described as *'permeable layers capable of supporting water supplies at local rather than strategic scale, and in some cases forming an important source of base flow to rivers'*.

3.4.3 It can be seen, from the PRA Envirocheck Report, that there are no groundwater abstractions within 1000 m of the site.

3.4.4 The site is not within a currently defined source protection zone.

3.4.5 *'There is 1 pollution incident to groundwater listed within 250 metres:*

- *Minor incident – unknown pollutant to unknown receiver in 1994 – 9m southeast'.*

3.4.6 *'The site is shown to be in an area with a potential for groundwater flooding to occur at the surface.'*

3.5 Hydrology

3.5.1 The closest surface water feature is the River Irk, which is located some 6 m to the south-west of the site. The river flows to the south-west discharging into the River Irwell at Salford.

3.5.2 Worm Eye reports that:

(i) *The nearest discharge consents are:*

- *151 - 156m southwest –Storm sewage overflow to freshwater stream/river in 2019.**

- 238 - 248m northeast - Storm sewage overflow to freshwater stream/river in 2020.*

(ii) *There are 3 pollution incidents to surface water listed within 250 metres:*

- *Minor incident – unknown pollutant to unknown receiver in 1996 – 73m west.**
- *Minor incident – Sewage debris/litter to unknown receiver in 1994 – 147m southeast.**
- *Oils: kerosene fuel oil to unknown receiver in 1995 – 215m south.**

(iii) *There are the following surface water abstraction points nearby:*

- *74m west – Revoked (from River Irk for cooling)**
- *128m northeast – Revoked (from River Irk for cooling)**

** not relevant due to distance/severity/significance'*

3.5.3 Worms Eye reports that *'the Environment Agency maps show that this site is clear of flooding from rivers.'*

3.5.4 It can be seen, from the PRA Envirocheck Report, that the River Irk was classified as GQA Grade E - Poor water quality between 1995 and 2009. No information is supplied for more recent years.

3.6 Radon

3.6.1 According to Worms Eye *'the site is in a lower probability radon area as less than 1% of homes in the area are above the radon action level. Radon protection measures are not required'*.

3.6.2 The Building Research Establishment (BRE) has issued guidance *'for reducing the concentration of radon in new dwellings, hence reducing the risk to occupants of exposure to radon'*.

3.6.3 Using the maps contained in the BRE guidance document it can be seen that the site is located in an area where radon protection measures are not required.

3.7 Mining & Ground Stability Hazards

3.7.1 According to the Envirocheck Report appended to the PRA there is one recorded mineral site within 250 m of the development site, as follows:

- Little Park Sand Pit (ceased) – 241 m South

- 3.7.2 Landmark reports that the site *'is in an area which may be affected by coal mining activity'*.
- 3.7.3 Potential for coal mining at the site has been assessed by reference to the Coal Authority website and interactive maps. Copies of the web images are presented at Appendix B.
- 3.7.4 The site is in a coal mining reporting area and the following additional information is provided:
- The site is in a coal mining reporting area.
 - The site is not in a Development High Risk area, but a high risk area is located to the north-east of the site.
 - There are no mine entries in the immediate vicinity of the site.
 - There are no fissures and break lines.
 - There is no surface mining (past or present) in the vicinity of the site.
 - There are no past shallow mine workings in the vicinity of the site.
 - There are east-south-easterly trending coal outcrops to the north-east of the site and others some distance to the south.
 - There are no probable shallow coal mine workings in the vicinity of the site, although some are present to the north-east.
- 3.7.5 Based on this information TACCL considers the potential for mining related issues to affect the site are very low and no specific investigation is necessary.
- 3.7.6 The Worms Eye Envirocheck Report also contains information on ground stability, as summarised below:
- | | |
|-----------------------------|--------------------|
| Collapsible Ground: | No Hazard/Very Low |
| Compressible Ground: | No Hazard/Moderate |
| Ground Dissolution: | No Hazard |
| Landslide: | No Hazard/Very Low |
| Running Sand: | Low/Very Low |
| Shrinking or Swelling Clay: | Very Low/No Hazard |
- 3.8 Land Use**
- 3.8.1 Information provided in the Envirocheck Report indicates there are no historic, local authority recorded or registered landfill sites within 250 m of the development site.

3.8.2 Worms Eye reports that five licensed waste facilities are located within 500 m. These relate to transfer stations and scrap yards. The closest was a '*Household, commercial and industrial (waste) transfer stations*' located some 15 m to the north-west although the permit status is noted as being surrendered.

3.8.3 In addition, Worms Eye identifies the following areas of potentially infilled land.

- *86m northeast (Pit, quarry etc)*
- *171m southeast (Pit, quarry etc)*
- *190m north (Pit, quarry etc)*
- *9m southeast (Pond, marsh, river, stream, dock etc)*
- *151m north (Pond, marsh, river, stream, dock etc)*
- *221m northwest (Pond, marsh, river, stream, dock etc)*
- *224m northwest (Pond, marsh, river, stream, dock etc)*

3.8.4 Worms Eye identify some nearby industrial sites and trade directory entries in close proximity (within 50 m). The nearest fuel station is reported to be some 172 m to the east.

3.8.5 There are no potentially sensitive land uses in close proximity to the site.

3.9 Conceptual Model & PRA Conclusions

3.9.1 Worme Eye provides the following interpretation of the data reviewed as part of the PRA.

- *'On completion, the building and car park will cover the site thereby eliminating the risk of rainwater passing through the surface soils. Furthermore, although contaminants may be present at raised levels, high levels are not expected and it is anticipated there will be no risk to controlled waters.'*
- *'There are several filled features within 250 metres of the site. These are potential sources of ground gases which could migrate to and present a risk to the development. Bearing in mind the size of the filled areas, distance from the site and underlying geology, it is considered that there is likely to be a low risk to the development.'*
- *'The site was originally developed as housing, demolished before the existing building was constructed and made ground is expected. The existing building was most recently a bar, but past uses include clothing/fabrics and is likely to have included small industry, like light engineering.'*

3.9.2 The conceptual model is provided as a table in the Worms Eye report, see below. A figure illustrating the conceptual model is also appended to the PRA. A copy of which is presented at Appendix H:

Source	Receptors	Pathway	Potential/Likely Pollutant Linkage
Asbestos	Construction workers	Inhalation	Yes
	End-users	No pathway	No
	Off-site	Migration off-site	Yes (during construction)
Inorganic contaminants	Construction workers	Short-term direct contact, inhalation of dust, ingestion	Yes
	Householders	No pathway	No
	Groundwater	No pathway	No
	River	No pathway	No
Sulphate	Building fabric	Concrete directly in contact with soil	Yes
Hydrocarbons	Construction workers	Short-term direct contact, inhalation of dust, ingestion	Yes
	Householders	No pathway	No
	Service pipes	Seeping into drinking water pipes	Yes
	Groundwater	No pathway	No
	River	No pathway	No
Hydrocarbon vapours	Construction workers	Short-term inhalation	Unlikely
	Householders	Inhalation of vapours indoors	Unlikely
Landfill/ground gas	End-users - in buildings	Seeping into buildings, explosion, asphyxiation	Yes
Radon	End-users - in buildings	Seeping into buildings	No

Figure 1: Worms Eye Conceptual Site Model

3.9.3 Worms Eye concluded that:

- *‘Taking into account the past use of the site it is thought likely that contamination will be present on the site. The findings suggest high levels are not expected, but may exceed residential thresholds. However, these are unlikely to pose a risk for householders on this hard-surfaced development.*
- *An intrusive investigation is required, consisting of boreholes/trial holes and tests to confirm the presence/absence and extent of contamination on the site. This will help to select drinking water pipes, design buried concrete and classify material for disposal off-site.*
- *There are no specific point sources for contamination and the investigation will need to target the proposed building and provide all round coverage.*
- *The investigation would be better suited to being carried out post demolition.*
- *No risk to controlled water is expected and no further action is considered necessary at this stage. This may need to be reviewed following the soil tests.*
- *There are several nearby areas of filled ground from which ground gases may pose a risk to the development. A gas testing programme is required.*
- *Radon protection measures are not required.’*

4. GROUND INVESTIGATION

4.0.1 An intrusive ground investigation has been undertaken at the site to determine the ground conditions and assess potential risks associated with ground contamination.

4.0.2 The investigation was undertaken in two phases. Phase 1 was designed to assess general ground conditions and enable sampling for chemical testing. Phase 2 was required to provide additional information within the proposed building footprint, specifically to determine the presence or absence of peat to support the foundation design.

4.1 Boreholes

4.1.1 Eight window sample boreholes were drilled at the site, to depths of between 4.0 and 7.25 m.

4.1.2 Copies of the borehole records are presented at Appendix C and the locations are illustrated on Drawing No 22005/02A at Appendix H.

4.1.3 It can be seen, from these records, that there is a layer of made ground across the site. In the eastern and central parts of the site this is relatively thin (0.1 to 1.0 m) but is thicker to the rear of the site (2.0 m at Borehole No 3/3A).

4.1.4 The made ground comprises gravelly sand with some brick fragments. This probably originates from the demolition of the former site buildings and associated site clearance works where the old floor slabs and associated foundations have been dug up and removed.

4.1.5 The made ground is underlain by granular soils, typically comprising sand and sand & gravel. A 0.6 m thick layer of fibrous peat was encountered at 5.0 to 5.6 m in Borehole No 3A, which was drilled in the western part of the site, close to the adjacent River Irk. This area will be a car park for the residential development.

4.1.6 No visual or olfactory evidence of contamination was identified in any of the boreholes.

4.1.7 Groundwater was encountered in the granular soils in each borehole. Details are provided on the Borehole Records at Appendix C.

4.2 Soil Sampling

4.2.1 Samples were recovered from the boreholes drilled as part of the first phase of investigation (Nos 1, 2 & 3) for chemical testing. Sampling records are presented on the Borehole Records at Appendix C.

4.2.2 Shallow samples (0.5 m depth) of made ground and natural soils have been tested. Deeper samples from 1.0 m were also analysed to support the UU Risk Assessment.

4.3 Chemical Testing

4.3.1 Three samples have been analysed for a general screening suite of potential contaminants, as follows:

pH

Metals (Arsenics, Boron, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium & Zinc)

Cyanide

Speciated Polynuclear Aromatic Hydrocarbons (PAHs)

Phenol

Soil Organic Matter

Sulphate

4.3.2 Samples were also analysed for petroleum hydrocarbons and BTEX compounds.

4.3.3 The made ground sample was also screened for asbestos.

4.3.4 The 1.0 m sample from Borehole No 1 was also analysed for volatile and semi-volatile organic compounds to advise the UU risk assessment for selection of water supply pipes.

4.3.5 The results of the chemical testing are presented in Appendix D.

4.4 Review of Chemical Test Results

4.4.1 No asbestos was encountered in the made ground sample analysed.

4.4.2 The results of the contaminant testing are summarised in Tables 2, 3 and 4. TACCL has subdivided the data according to the material type, made ground and alluvial sand, for comparison against the assessment criteria.

4.4.3 No VOCs or SVOCs were identified in the 1.0 m sample from Borehole No 1, above the test limit of detection.

Analyte	Units	Range of Results		Assessment Criteria**
		Made Ground	Sand	
pH	-	7.8 - 8.25	8.74	n/a
Arsenic	mg/kg	4 - 18	13	40*
Boron	mg/kg	<1.0	<1.0	11,000
Cadmium	mg/kg	0.5 - 0.6	1.2	150*
Copper	mg/kg	11 - 12	62	7100
Chromium (iii)	mg/kg	8 - 12	13	910
Chromium (vi)	mg/kg	<1	<1	21*
Lead	mg/kg	15 - 23	249	310*
Mercury	mg/kg	<0.17	0.50	56
Nickel	mg/kg	9 - 12	18	180
Selenium	mg/kg	<1	<1	250
Zinc	mg/kg	29- 31	98	40,000
Organic Matter	%	0.7 - 1.5	6.0	n/a
Sulphate (Total)	mg/kg	<200	220	n/a
Sulphate (2:1 Extract)	g/l	0.04 - 0.063	0.22	n/a
Cyanide	mg/kg	<1	<1	n/a

Table 2: Summary of Inorganic Analysis

Analyte	Units	Range of Results		Assessment Criteria *, **
		Made Ground	Sand	
Acenaphthene	mg/kg	<0.01	0.39	6000/3000
Acenaphthylene	mg/kg	<0.01	0.02	6000/2900
Anthracene	mg/kg	<0.02	0.46	31,000/37,000
Benzo(a)anthracene	mg/kg	<0.04 - 0.11	1.28	15/11
Benzo(a)pyrene	mg/kg	<0.04 - 0.31	1.21	5.3*
Benzo(b)fluoranthene	mg/kg	<0.05 - 0.24	1.38	4.0/3.9
Benzo(ghi)perylene	mg/kg	<0.05 - 0.24	0.57	360/360
Benzo(k)fluoranthene	mg/kg	<0.07 - 0.10	0.51	110/110
Chrysene	mg/kg	<0.06 - 0.12	1.46	32/30
Dibenzo(ah)anthracene	mg/kg	<0.04 - 0.05	0.15	0.32/0.31
Fluoranthene	mg/kg	<0.08 - 0.09	3.12	1600/1500
Fluorene	mg/kg	<0.01	0.22	4500/2800
Indeno(123-cd)pyrene	mg/kg	<0.03 - 0.24	0.61	46/45
Naphthalene	mg/kg	<0.03	0.10	13/2.3
Phenanthrene	mg/kg	<0.03 - 0.04	2.34	1500/1300
Pyrene	mg/kg	<0.07 - 0.11	2.87	3800/3700
Total PAH	mg/kg	<0.08 - 1.65	16.7	-

Table 3: Summary of PAH Analysis

Analyte	Units	Range of Results		Assessment Criteria**
		Made Ground	Sand	
Phenols	mg/kg	<0.2	<0.2	2300/750
Benzene	mg/kg	<0.01	<0.01	3.3*
Toluene	mg/kg	<0.01	<0.01	3900/880
Ethylbenzene	mg/kg	<0.01	<0.01	440/83
o-Xylene	mg/kg	<0.01	<0.01	480/88
mp-Xylene	mg/kg	<0.01	<0.01	430/79
MTBE	mg/kg	<0.01	<0.01	-
Aliphatic PH (C5-C6)	mg/kg	<0.01	<0.01	160/42
Aliphatic PH (C6-C8)	mg/kg	<0.01	<0.01	530/100
Aliphatic PH (C8-C10)	mg/kg	<1	2	150/27
Aliphatic PH (C10-C12)	mg/kg	<1	1	770/130
Aliphatic PH (C12-C16)	mg/kg	<1	4	4400/1100
Aliphatic PH (C16-C21)	mg/kg	<1	4	110,000/
Aliphatic PH (C21-C35)	mg/kg	<1	17	65,000
Aromatic PH (C5-C7)	mg/kg	<0.01	<0.01	1400/370
Aromatic PH (C7-C8)	mg/kg	<0.01	<0.01	3900/860
Aromatic PH (C8-C10)	mg/kg	<1	2	270/47
Aromatic PH (C10-C12)	mg/kg	<1	3	1200/250
Aromatic PH (C12-C16)	mg/kg	<1	24	2500/1800
Aromatic PH (C16-C21)	mg/kg	<1	90	1900/1900
Aromatic PH (C21-C35)	mg/kg	<1	273	1900/1900

Table 4: Summary of Organic Analysis

Notes to Tables 1, 2 & 3:

PH – Petroleum Hydrocarbons

* - C4SLs for residential land use without home-grown produce, all other assessment criteria S4ULs for the same land use, produced by LQM/CIEH.

** - Where assessment criteria values are dependent on the soil organic matter the criteria for 6% and 1% SOM are specified based on test results for both soil types (made ground and sand respectively).

4.4.4 It can be seen, from the laboratory test results summarised in Tables 2 to 4 that no ground contamination has been identified at the site. None of the test results exceeds the corresponding assessment criteria for residential land use without home-grown produce.

4.5 Gas Monitoring

4.5.1 Two gas monitoring probes have been installed within the footprint of the proposed building during the two phase of investigation (Borehole Nos 1 & 5).

4.5.2 To date monitoring has been undertaken on five occasions. The following parameters have been measured:

- Methane
- Carbon Dioxide
- Oxygen
- Barometric Pressure
- Flow Rate/differential pressure

4.5.3 The gas monitoring results are presented in Appendix E and are summarised in Tables 5 and 6.

Borehole No	Gas Concentrations (%)		
	Methane	Carbon Dioxide	Oxygen
BH1	0	0.9 - 1.8	18.7 - 19.4
BH5	0	0.5 - 1.3	18.1 - 19.7

Table 5: Summary of Gas Concentrations

4.5.4 From these results it can be seen that no elevated methane (>1.0 %) or carbon dioxide (>1.5/5.0 %) has been detected to date.

4.5.5 Borehole gas flows have also been measured and the results are summarised in Table 11.

Borehole No	Gas Flows (l/hr)		
	Borehole Flow	Methane	Carbon Dioxide
BH1	0	0	0
BH5	0	0	0

Table 6: Summary of Gas Flows

4.5.6 The barometric pressure on four of the five visits was less than 1000 mB.

4.5.7 Gas monitoring is ongoing but, to date no elevated concentrations or flows have been detected.

4.5.8 Groundwater levels have been measured in the monitoring probes, the results are presented on the gas monitoring records (Appendix E) and are summarised below:

Borehole No 1 3.64 - 3.83 m bgl

Borehole No 2 3.40 - 3.60 m bgl

4.5.9 With reference to CIRIA C665 Table 8.5 for Situation A the site would be classified as Characteristic Situation 1 - Very Low Risk. As such no specific gas precautions are required as part of the proposed development.

5. LANDFILL GAS ASSESSMENT

5.1 Introduction

- 5.1.1 Guidance on the investigation and assessment of risks posed by hazardous ground gases is provided in CIRIA Report C659. This report provides '*up-to-date advice*'. *'The guidance it contains consolidates good practise on investigation, the collection of relevant data, and monitoring programmes for a risk based approach to gas contaminated land'*.
- 5.1.2 Additional guidance is contained in BS8485:2015+A1:2019 Code of Practise for the Design of Protective Measures for Methane and carbon Dioxide Ground Gasses for New Buildings.
- 5.1.3 As part of the preliminary risk assessment (Section 3.8) Worms Eye identified a number of potential off-site sources of hazardous gas and, as a result, it recommended a gas testing programme. Monitoring results are presented at Section 4.5.
- 5.1.4 The potential risks to the site and its future occupants have been assessed using standard risk assessment methodology, ie the source-pathway-receptor principle, recommended in the guidance.

5.2 Potential Sources of Gas

- 5.2.1 Based on the preliminary risk assessment and the investigation findings there are three potential sources of gas which could affect the proposed residential development, as follows:
- (i) On-site made ground
 - (ii) Peat under the northern part of the site
 - (iii) Off site areas of infilled ground
- 5.2.2 Investigations prove the made ground at the site comprises reworked natural soils with some relatively minor construction materials eg brick fragments. No potentially biodegradable matter was noted within the made ground.
- 5.2.3 The made ground stratum is quite shallow, up to 1 m deep beneath the building footprint as a result of excavations to remove floor slabs and foundations and 2.0 m deep in the western part of the site close to the boundary with the River Irk.

- 5.2.4 A 0.6 m thick layer of fibrous peat was encountered at between 5.0 and 5.6 m in Borehole No 3A drilled in the western part of the site. No peat was encountered in any of the other boreholes some of which were drilled specifically to identify peat for the foundation design.
- 5.2.5 The peat stratum is located below the standing groundwater level which is approximately 3.5 m below ground level.
- 5.2.6 There are no landfill sites within 250 m of the site, but Landmark has identified a number of areas of potentially infilled ground (see Paragraph 3.8.3). Only two areas are within 100 m of the site. These are considered further below (see also Envirocheck extracts presented at Appendix F).
- 5.2.7 Areas of potentially infilled land beyond 100 m are not considered to represent a significant potential hazard to the proposed development.
- (i) 86m northeast (Pit, quarry etc)
- 5.2.8 The position of this former pit/quarry is illustrated on the Envirocheck Site Sensitivity Map at Appendix F. According to Landmark the feature is shown on the 1984 edition OS map. Review of the relevant map indicates that, at that time the site was occupied by the former Spring Vale Works (dying & proofing) and no pit/quarry feature is evident.
- 5.2.9 Earlier maps show that the site was previously occupied by Tonge Mill (Cotton).
- 5.2.10 From Google Earth imaging it appears that the site of the former pit/quarry is currently part of a waste recycling centre.
- (ii) 9m southeast (Pond, marsh, river, stream, dock etc)
- 5.2.11 This area is shown as a linear feature on the Site Sensitivity Map and according to Landmark it was noted from the 1848 OS map. Reference to the map indicates a possible drainage channel from the former Spring Vale Print Works which was located some 300 m from the proposed development site. Specific detail is not clear due to the age and scale of the map, but the entire route of the former channel has been developed over.
- 5.2.12 TACCL considers that the potential for significant gas generation at any of these identified potential gas sources is very low.
- 5.2.13 Gas monitoring results are summarised at Section 4.5. It can be seen from these records that no elevated gas concentrations or flows have been measured in the soils immediately beneath the propose residential apartment building.

5.3 Potential Migration Pathways

- 5.3.1 In order for gas to affect the development site, a pathway must exist, linking the potential source(s) with the target.
- 5.3.2 The ground conditions at the site comprise a thin layer of made ground/reworked natural strata (up to 1.0 m thick) beneath the proposed building and thicker in the northern part of the site where car parking is proposed (2 m thick). The made ground comprises gravelly sand with some brick fragments.
- 5.3.3 A potential pathway exists between the made ground/peat and the proposed residential property.

5.4 Potential Target

- 5.4.1 The potential target is the proposed residential apartment building to be constructed at the site.

5.5 Gas Risk Assessment Conclusions

- 5.5.1 The potential gas sources identified by Worms Eye as part of the PRA or during the investigation of the site represent very low gassing potential sources.
- 5.5.2 No significant methane or carbon dioxide gas has been encountered during the monitoring undertaken at the site to date. The results are consistent with CIRIA Characteristic Situation 1 – Very Low Risk sites.
- 5.5.3 On the basis of the available information no specific gas protection measures are required as part of the development.

6. CONTAMINATION RISK ASSESSMENT

6.0.1 Planning condition no 9 requires that *'an investigation and risk assessment ... must be completed to assess the nature and extent of any contamination on the site.... and a written report of the findings must be produced and shall have been first submitted to and approved in writing by the Local Planning Authority before development commences. The report of the findings must include:*

a. a survey of the extent, scale and nature of contamination

b. an assessment of the potential risks to:

- i. human health,*
- ii. property (existing or proposed) including buildings, crops, livestock, pets, woodland, and service lines and pipes,*
- iii. adjoining land,*
- iv. groundwaters and surface waters,*
- v. ecological systems,*
- vi. archeological sites and ancient monuments;*

c. where unacceptable risks are identified, an appraisal of remedial options and proposal of the preferred option(s)

The development shall thereafter be completed in full accordance with the approved recommendations'.

6.1 Conceptual Site Model

6.1.1 In this section TACCL identifies sources of potential contaminants of concern, pathways and receptors that may be affected based on historical and current land uses and the results of the ground investigation. The information is used to develop a conceptual site model to identify potential pollutant linkages.

6.1.2 It is noted that if no pathway exists between a contaminant and a receptor, then in effect there would be no 'pollutant linkage'.

6.2 Potential Contaminants of Concern

6.2.1 Investigations undertaken at the site have not identified any significant potential source of contamination. Furthermore, testing proves that the made ground/reworked natural soils does not contain any contamination at concentrations above the human health assessment criteria for residential land use.

6.2.2 The peat identified in the northern part of the site represents a very low potential gas source, but no elevated methane or carbon dioxide has been detected at the site.

6.3 Contamination from Off-Site Sources

6.3.1 Worms Eye has identified numerous potential off site sources of contamination as part of the preliminary risk assessment. These include the former gas works to the west, beyond the River Irk. Some ground contamination

6.3.2 A note provided on BGS Borehole No SD80NE72 (Norwest Holst Soil Engineering Limited Borehole No 5 drilled for Rochdale MBC), some 40 m to the north of the development site, states that the 'sand exhibited an 'oily' smell' between 3.9 and 6 m.

6.3.3 Potential ongoing risks from off-site contamination sources are considered to be low. The River Irk is likely to act as a natural barrier to the migration of contamination from sites to the north and west of the river channel.

6.4 Potential Contaminative Pathways

6.4.1 The pathways through which contaminants may reach the identified key receptors, are in part dependent on the nature and behaviour of the contaminant as well as the proposed end use (residential).

6.4.2 The following potential pathways will be assessed in the conceptual site model:

- (i) Direct dermal contact.
- (ii) Ingestion (eg of soil).
- (iii) Inhalation of contaminants in the particulate form.
- (iv) Migration of hazardous gases from made ground or peat beneath the site and off-site sources in close proximity to the site.

6.4.3 Groundwater could also act as a migration pathway.

6.4.4 Shallow groundwater was encountered during the ground investigations at the site and monitoring records indicate a standing groundwater level of around 3.5 m bgl.

6.4.5 Groundwater flow is likely to be towards the River Irk ie to the west or south-west and groundwater is likely to be hydraulically linked to the water in the adjacent river.

6.5 Potential Receptors

- 6.5.1 It is proposed to redevelop the site by constructing an apartment block. The approved development layout is illustrated on Greenfield Design Services Drawing No 759-19-06 Rev A – Proposed Site Layout at Appendix H.
- 6.5.2 Potential receptors that may be exposed to contamination at the site are listed below. This list includes potential receptors listed in the planning condition (see Paragraph 6.0.1):

On Site

- (i) Future site users (Residents and Visitors)
- (ii) Buildings and structures
- (iii) Construction workers

Off Site

- (a) Residents and workers at the adjacent properties
- (b) Nearby property (including buildings, crops, livestock, pets, woodland and service lines and pipes)
- (c) Controlled waters
- (d) Ecological systems
- (e) Archeological sites and ancient monuments

6.6 Possible Significant Pollutant Linkages

- 6.6.1 Due to the absence of ground contamination at the site, above residential assessment criteria there are no '*significant pollutant linkages*' associated with the redevelopment of the site.
- 6.6.2 Human health and the building structure could be at risk from hazardous gases generated in the peat ground but the risks are very low.
- 6.6.3 The absence of any significant contamination also means that there are no '*significant pollutant linkages*' associated controlled waters, ecological systems or archeological sites and ancient monuments.

6.7 Risk Assessment

6.7.1 The assessment of risk is based on the concept of the source – pathway - receptor linkage.

6.7.2 Risks posed to each of the identified potential receptors are discussed separately below in accordance with CIRIA Guidance Document: Contaminated Land Risk Assessment – A Guide to Good Practice. An environmental risk rating of Low, Moderate or High has been assigned to each identified receptor.

Future Site Users

6.7.3 For the purposes of the human health risk assessment laboratory test results have been assessed against assessment criteria for residential land use without homegrown produce.

6.7.4 No ground contamination has been identified, consequently the potential human health risks are considered to be negligible.

6.7.5 No elevated methane or carbon dioxide gas has been identified and therefore potential gas risks are very low.

Buildings and Structures

6.7.6 The risk to buildings and infrastructure from hazardous ground gas generated from peat beneath the proposed car park is very low.

6.7.7 The structural engineer should take account of the pH and sulphate results when designing any cast in situ concrete structures, the results for the made ground and natural soils at the site are summarised as follows:

pH	7.80 – 8.74
Total Sulphate	<200 - 220 mg/kg
2:1 Sulphate	0.04 - 0.22 g/l

6.7.8 Due to the absence of any contamination standard pipes are appropriate for water supply pipework.

Construction Workers

6.7.9 No ground contamination has been identified therefore construction workers will not be exposed to contamination.

6.7.10 Notwithstanding the above construction workers should adopt standard health & safety precautions including appropriate personal protective equipment (PPE).

Neighbours and Occupants of Adjacent Property

- 6.7.11 The risk to occupants of adjacent properties from contamination and hazardous ground gas is considered to be Very Low.

Nearby Property

- 6.7.11 The risk to nearby property (including buildings, crops, livestock, pets, woodland and service lines and pipes) from contamination and hazardous ground gas is considered to be Very Low.

Controlled Waters

- 6.7.12 The risk to controlled waters (including shallow groundwater and the adjacent River Irk) from contamination and hazardous ground gas is considered to be Very Low.

Ecological Systems

- 6.7.13 The risk to ecological systems from contamination and hazardous ground gas is considered to be Very Low

Archeological sites and ancient monuments

- 6.7.14 The risk to archeological sites and ancient monuments from contamination and hazardous ground gas is considered to be Very Low

6.8 Conceptual Site Model Conclusions

- 6.8.1 Based on the investigation findings and the information presented in the preliminary risk assessment, risks from contamination and /or ground gas at the site are considered to be Very Low.

7. SUMMARY & CONCLUSIONS

- 7.1 The Arley Consulting Company Limited (TACCL) has been commissioned by Universal Bargains Limited to assess the ground conditions at 38 to 44 Townley Street, Middleton, Rochdale with respect to potential contamination to satisfy planning requirements.
- 7.2 Condition No 9 of the permission requires that *‘Prior to commencement of the development an investigation and risk assessment, in addition to any assessment provided with the planning application, must be completed to assess the nature and extent of any contamination on the site, whether or not it originates on the site. The investigation and risk assessment must be undertaken by competent persons and a written report of the findings must be produced and shall have been first submitted to and approved in writing by the Local Planning Authority before development commences’*. Some specific requirements are also listed.
- 7.3 A preliminary risk assessment (PRA) was produced for the site by Worms Eye (Ref 38 - 44 Townley Street/M24 1BF/2020, dated 4 September 2020). Worms Eye concluded that the risks associated with ground contamination and gas were low.
- 7.4 TACCL has undertaken an intrusive investigation based on the PRA findings. The following conclusions have been drawn from the investigation findings and associated background information:
- (i) There is a thin layer of made ground at the site which is thicker at the western end of the site. This stratum comprises gravelly sand with some brick fragments produced by excavation of floor slabs and associated old foundations.
 - (ii) The natural soils underlying the site comprise sand and/or sand and gravel deposits.
 - (iii) A thin pocket of peat was encountered in Borehole No 3A in the western part of the site. This will underlie the proposed car park. No peat has been identified within the footprint of the proposed building.
 - (iv) No visual evidence of contamination has been identified and analysis proves the made ground is uncontaminated with respect to the proposed residential development.
 - (v) No hazardous ground gas has been detected and therefore no specific precautions are required. Gas monitoring is ongoing.

- (vi) The site does not represent a significant potential hazard to any of the possible receptors listed in the planning condition, ie human health, property (existing or proposed) including buildings, crops, livestock, pets, woodland, and service lines and pipes, adjoining land, groundwaters and surface waters, ecological systems, archeological sites and ancient monuments.

8. REMEDIATION STRATEGY

8.1 Remediation/Mitigation Measures

- 8.1.1 No remediation or mitigation measures are required as no contamination has been identified.

8.2 Waste Disposal

- 8.2.1 Any material disposed off-site should be fully characterised in accordance with Environment Agency guidance and should satisfy the Duty of Care requirements.

- 8.2.2 Records should be maintained by the developer.

8.3 Imported Soils

- 8.3.1 There are no gardens or landscaped areas and therefore it should not be necessary to import soils for landscaping purposes.

- 8.3.2 However if there is any change to the scheme which requires landscaping any imported soils should be assessed and tested to confirm suitability. Sampling should be undertaken at the following test frequencies:

Garden Areas	1 per 50 m ³ imported (minimum of 3 samples per source)
--------------	--

Landscaped Areas	1 per 250 m ³ (minimum of 3 samples per source)
------------------	--

- 8.3.2 Samples should be analysed for a basic test suite at an appropriately accredited, independent laboratory. Testing should be to MCERTS standards where available.

8.4 Unrecorded Contamination & Associated Issues

- 8.4.1 The developer and any appointed groundworks contractors should be aware that other previously unrecorded contamination might be encountered or identified during the redevelopment of the site.

- 8.4.2 If, in the course of site clearance and ground works, any visual/olfactory signs of contamination are detected which had not previously been accounted for by the site investigation and assessment then works, in that area, should be suspended pending investigation and assessment.

- 8.4.3 Appropriate specialist advice should be sought and may result in further investigation and testing being carried out to determine the nature and extent of any such additional contamination. This information can be used to determine any further remedial measures required and the remediation statement can be updated or amended as necessary.
- 8.4.4 If the contamination identified is of limited extent it might be possible to remove it for temporary storage in a quarantine area pending further investigation and assessment. This might allow development works to continue.
- 8.4.5 The local authority should be notified if such a situation arises.
- 8.4.6 A detailed record of any such occurrence should be maintained by the supervising engineer and this will be presented in the final completion report.

8.5 Completion Report

- 8.5.1 A completion report will only be required if unrecorded contamination is identified during the works.
- 8.5.2 If a report is required it should include the following information and should be submitted to and approved by the LPA prior to occupation/use of the site.
- (i) A general description of works undertaken, including any supplementary investigation, excavation and removal of contaminated made ground or installation of capping soils or hard surfacing.
 - (ii) Verification of the removal and disposal of any material from the site, as necessary.
 - (iii) The chemical composition of imported topsoil and/or subsoil and verification of its suitability for use in gardens and/or landscaped areas.
 - (iv) Details of any unforeseen contamination identified during the works and any additional remediation measures undertaken.

D KILLICK
BSc (Hons)
Senior Consultant

M LOVELOCK
BEng (Hons) CGeol FGS MCIWM
Technical Director

APPENDIX A

BGS Web Images & Borehole Records



British
Geological
Survey

Geology of Britain viewer (classic)

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Surface
Geology

3D
Models

Borehole
Scans

Earthquake
Timeline

Surface Geology

- ☒ Superficial only
- ☐ Bedrock only
- ☐ Bedrock and Superficial

Visible geology:
1:50 000 scale

Geology
Key

[More on digital geology](#)

Navigation controls: arrows, zoom in (+), zoom out (-), and a location pin icon.

[Go to Location](#)

[Switch Basemap](#)

100% 0%

Geology Transparency

Grid Ref: 387426, 405733

Superficial geology

1:50 000 scale superficial deposits description: Glaciofluvial Sheet Deposits, Devensian - Sand And Gravel. Superficial Deposits formed up to 2 million years ago in the Quaternary Period. Local environment previously dominated by ice age conditions (UGF).

Setting: ice age conditions (UGF). These sedimentary deposits are glaciofluvial in origin. They are detrital, generally coarse-grained, they form beds, channels, plains and fans associated with meltwater.

[Further details](#)

[What are Superficial Deposits?](#)

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British
Geological
Survey

Geology of Britain viewer (classic)

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**Surface
Geology**

**3D
Models**

**Borehole
Scans**

**Earthquake
Timeline**

Surface Geology

- ☐ Superficial only
- ☒ Bedrock only
- ☐ Bedrock and Superficial

Visible geology:
1:50 000 scale

**Geology
Key**

[More on digital geology.](#)

Navigation controls: Go to Location, Switch Basemap, and a Geology Transparency slider (100% to 0%).

Grid Ref: 387369, 405864

Bedrock geology

1:50 000 scale bedrock geology description:

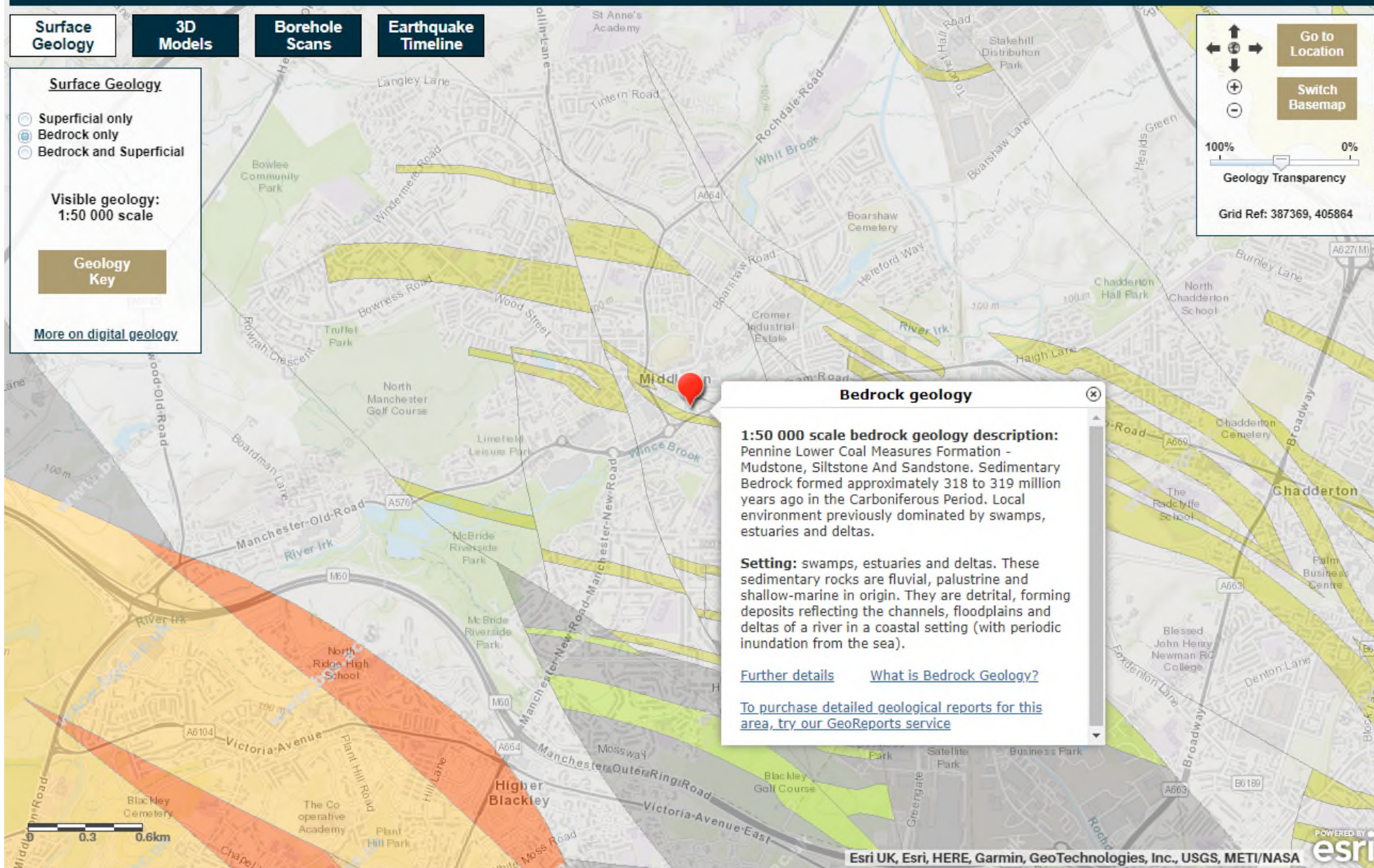
Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone. Sedimentary Bedrock formed approximately 318 to 319 million years ago in the Carboniferous Period. Local environment previously dominated by swamps, estuaries and deltas.

Setting: swamps, estuaries and deltas. These sedimentary rocks are fluvial, palustrine and shallow-marine in origin. They are detrital, forming deposits reflecting the channels, floodplains and deltas of a river in a coastal setting (with periodic inundation from the sea).

[Further details](#)

[What is Bedrock Geology?](#)

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Esri UK, Esri, HERE, Garmin, GeoTechnologies, Inc., USGS, METI/NASA



**Surface
Geology**

**3D
Models**

**Borehole
Scans**

**Earthquake
Timeline**

Borehole Scans

Click on a borehole to view scan.

Borehole depth

- 0 - 10m
- 10 - 30m
- 30m+
- Unknown
- Confidential or Restricted

[More on boreholes](#)

Go to Location

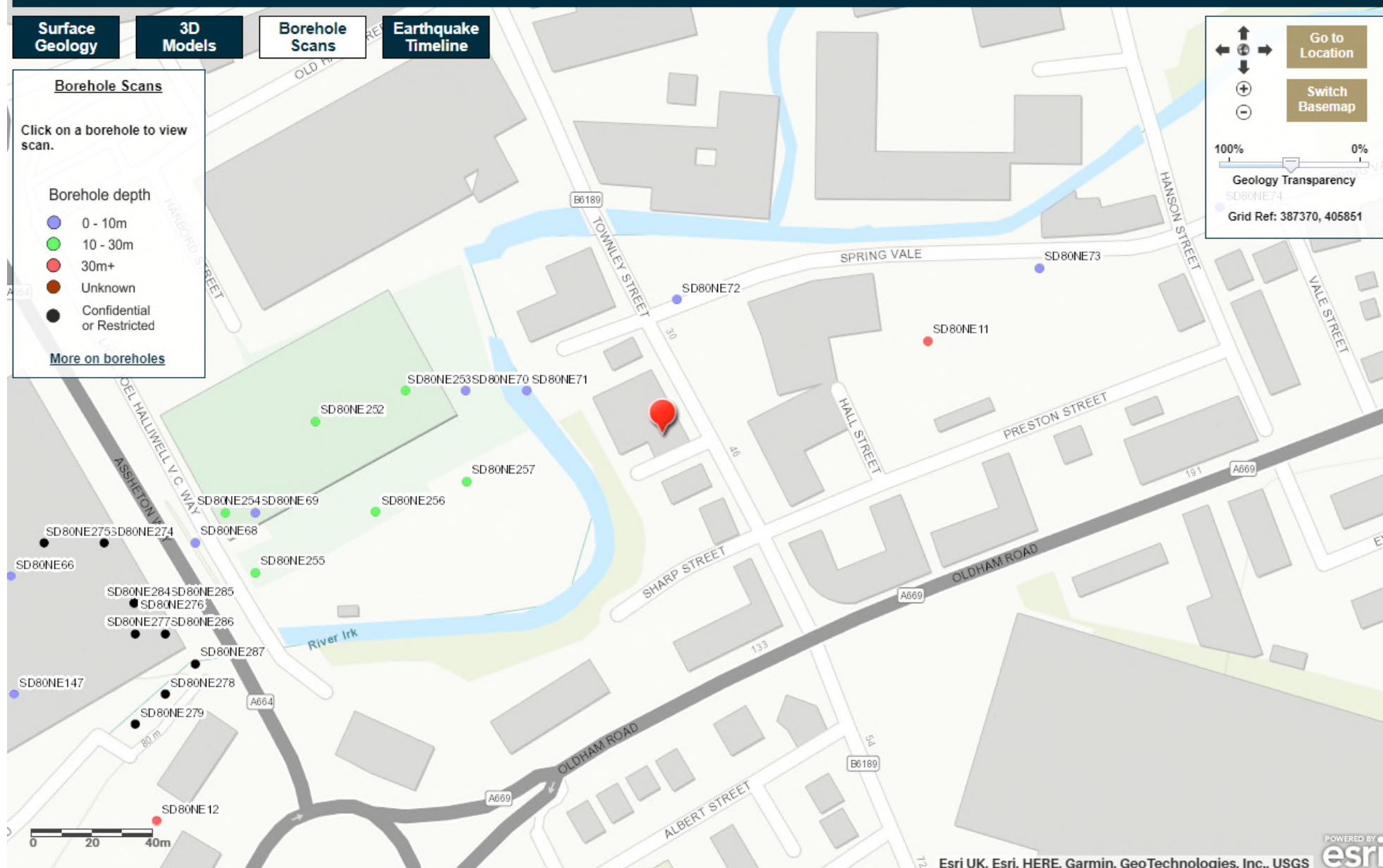
Switch Basemap

100% 0%

Geology Transparency

SD80NE74

Grid Ref: 387370, 405851



Norwest Holst Soil Engineering Ltd.						Borehole No. 4	
BOREHOLE LOG				Sheet.....1.....of.....1.....			
Contract No. <u>F5492</u> Location <u>Irk Valley, Middleton</u> Client <u>Rochdale Metropolitan Borough Council</u> Method of Boring <u>Percussion</u> Diameter of Borehole <u>150mm</u>				Chainage..... Ground Level <u>82.25</u> m.A.O.D. Date <u>8/3/83</u>			
British Geological Survey SD 80 NE 71				British Geological Survey			
Description of Strata	Legend	Depth Below G.L.(m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N"/ R.Q.D. %	Daily Progress
MADE GROUND: Tarmac.		0.20	82.1				
MADE GROUND: Gravel.		0.50	81.8				
MADE GROUND: Bricks and ash.		1.20	81.1		1.00	16	
Loose brown very silty SAND and medium to coarse GRAVEL.					2.00	10	
					3.00	9	
					4.00	6	
					5.00	3	
Very loose silty fine and medium SAND.		5.40	76.9		5.00	3	
Medium dense brown SAND and GRAVEL with some cobbles.					6.00	20	
		6.50	75.8				
Type of Sample Is S.P.T. Undisturbed Ic. C.P.T. Vane O Jar Water ● Bulk Piezometer				Remarks (Observations of Ground Water etc.) Water struck at 5.00m, moderate inflow, casing at 5.00m. Final standing water level at 4.00m. Water levels are subject to seasonal or tidal variations and should not be taken as constant			

Norwest Holst Soil Engineering Ltd. F5492 BOREHOLE LOG						Borehole No. 5	
Contract No. Location..... <u>Irk Valley, Middleton</u> Client..... <u>Rochdale Metropolitan Borough Council</u> Method of Boring..... <u>Percussion</u> Diameter of Borehole..... <u>150</u> mm			Sheet..... <u>1</u> of..... <u>1</u> Chainage..... Ground Level..... <u>82.50</u> m.A.O.D. Date..... <u>7/3/83</u>				
British Geological Survey			British Geological Survey				
Description of Strata	Legend	Depth Below G.L.(m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N"/ R.Q.D. %	Daily Progress
TOPSOIL.		0.30	82.2				
MADE GROUND: Medium dense dark grey to brown ash, sand and housebrick debris.					1.00	13	
		2.40	80.1		2.00	7	
Loose brown fine and medium SAND.		3.20	79.3		3.00	5	
Loose brown clayey very silty fine SAND with some root remains.		3.90	78.6	150mm to 6.0m	4.00	21	
Medium dense grey and brown medium SAND with some fine to coarse well rounded gravel and occasional large cobbles - boulders.					5.00	18	
NOTE: Sand exhibited an 'oily' smell which might be the cause of the grey colour.					6.00	28	
		6.00	76.5				
Type of Sample S.P.T. Undisturbed C.P.T. Vane Jar Water Bulk Piezometer Remarks (Observations of Ground Water etc.) Water struck at 3.90 m, moderate inflow, casing at 3.90 m. Final standing water level at 3.50 m, Chiselling boulders in gravelly sand, 1 hr. Water levels are subject to seasonal or tidal variations and should not be taken as constant							

Norwest Holst Soil Engineering Ltd.						Borehole No. 5A							
BOREHOLE LOG						Sheet <u>1</u> of <u>1</u>							
Contract No. <u>F5492</u> Location <u>Irk Valley, Middleton</u> Client <u>Rochdale Metropolitan Borough Council</u> Method of Boring <u>Percussion</u> Diameter of Borehole <u>150mm</u>						Chainage <u> </u> Ground Level <u>82.840</u> m.A.O.D. Date <u>10/7/83</u>							
Description of Strata	Legend	Depth Below G.L. (m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N"/R.Q.D.%	Daily Progress						
MADE GROUND: Brick rubble etc.					0.50	19							
					1.50	14							
		2.80	80.0		2.50	17							
Medium dense brown fine to medium SAND with occasional pebbles.					3.50	21							
		4.10	78.7										
Soft brown sandy CLAY.		4.50	78.3		4.50	26							
Medium dense brown SAND and GRAVEL with occasional cobbles.					5.50	35							
		6.15	76.7										
Dense brown medium to coarse GRAVEL.					6.50	44							
		8.00	74.8		7.50	67							
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 30%;">Type of Sample</th> <th>Remarks (Observations of Ground Water etc.)</th> </tr> <tr> <td style="padding: 5px;"> Is S.P.T. Undisturbed Ic. C.P.T. Vane O Jar Water ● Bulk Piezometer </td> <td style="padding: 5px;"> Water struck at 4.50m. Level rose after 20mins to 4.00m. </td> </tr> <tr> <td colspan="2" style="padding: 5px; text-align: center;"> Water levels are subject to seasonal or tidal variations and should not be taken as constant </td> </tr> </table>								Type of Sample	Remarks (Observations of Ground Water etc.)	Is S.P.T. Undisturbed Ic. C.P.T. Vane O Jar Water ● Bulk Piezometer	Water struck at 4.50m. Level rose after 20mins to 4.00m.	Water levels are subject to seasonal or tidal variations and should not be taken as constant	
Type of Sample	Remarks (Observations of Ground Water etc.)												
Is S.P.T. Undisturbed Ic. C.P.T. Vane O Jar Water ● Bulk Piezometer	Water struck at 4.50m. Level rose after 20mins to 4.00m.												
Water levels are subject to seasonal or tidal variations and should not be taken as constant													

APPENDIX B

Coal Authority Web Images



The Coal Authority

Interactive Map

Q Enter location

Coal Mining Data

Grey layers cannot be viewed at this scale
Click on a layer name for layer information

- ☒ Mine Entry
- ☐ S46
- ☐ Seam Level
- ☐ Working Date
- ☐ Geological Disturbance
- ☒ Outcrop
- ☐ Seam Level Contour
- ☐ Child Phase
- ☐ Coalfield Consultation Area
- ☐ Country
- ☐ Court Order
- ☐ Court Order Amendment
- ☐ Legal Notice
- ☐ Licence Area
- ☐ Parent Phase
- ☒ Probable Working
- ☐ Underground Working
- ☐ Unlicensed Opencast



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Location: 387305, 405624

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Coal Mining Data

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- ☒ Mine Entry
- ☐ S46
- ☐ Seam Level
- ☐ Working Date
- ☐ Geological Disturbance
- ☒ Outcrop
- ☐ Seam Level Contour
- ☐ Child Phase
- ☐ Coalfield Consultation Area
- ☐ Country
- ☐ Court Order
- ☐ Court Order Amendment
- ☐ Legal Notice
- ☐ Licence Area
- ☐ Parent Phase
- ☐ Probable Working
- ☒ Underground Working
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Location: 387477, 405640

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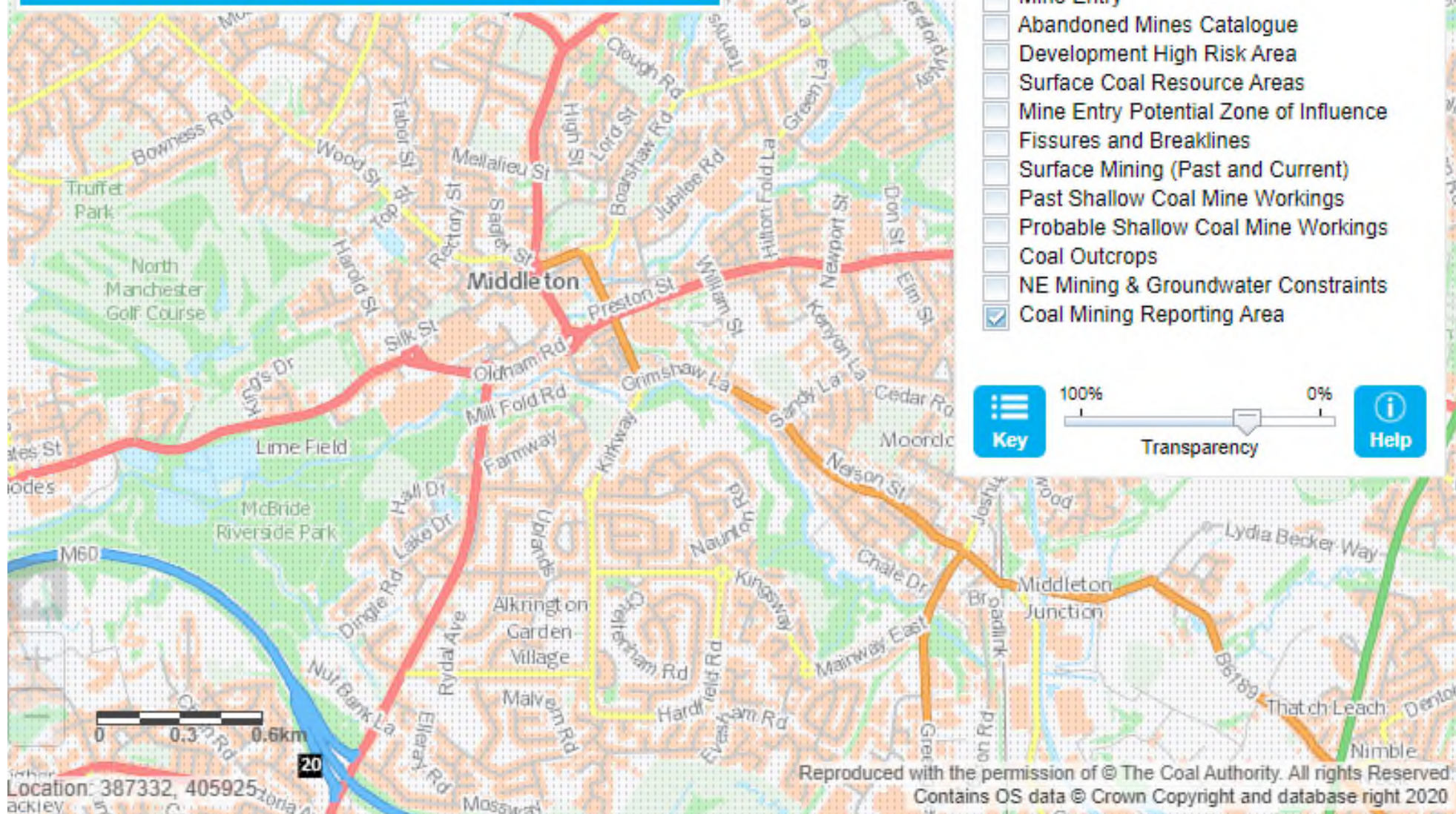
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- ☐ Development High Risk Area
- ☐ Surface Coal Resource Areas
- ☐ Mine Entry Potential Zone of Influence
- ☐ Fissures and Breaklines
- ☐ Surface Mining (Past and Current)
- ☐ Past Shallow Coal Mine Workings
- ☐ Probable Shallow Coal Mine Workings
- ☐ Coal Outcrops
- ☐ NE Mining & Groundwater Constraints
- ☒ Coal Mining Reporting Area



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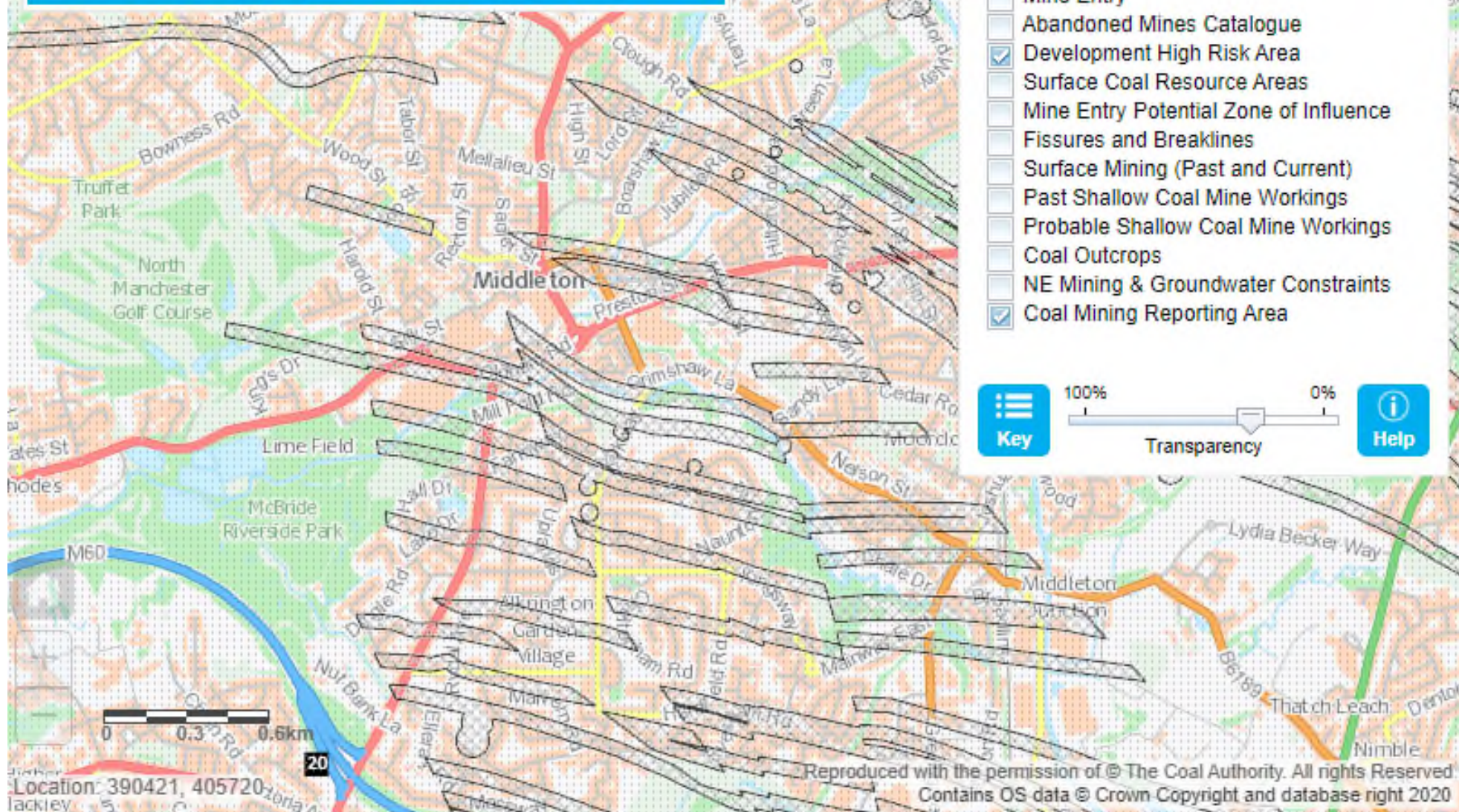
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- ☐ Surface Coal Resource Areas
- ☐ Mine Entry Potential Zone of Influence
- ☐ Fissures and Breaklines
- ☐ Surface Mining (Past and Current)
- ☐ Past Shallow Coal Mine Workings
- ☐ Probable Shallow Coal Mine Workings
- ☐ Coal Outcrops
- ☐ NE Mining & Groundwater Constraints
- ☒ Coal Mining Reporting Area



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- ☒ Mine Entry
- ☐ Abandoned Mines Catalogue
- ☐ Development High Risk Area
- ☐ Surface Coal Resource Areas
- ☐ Mine Entry Potential Zone of Influence
- ☐ Fissures and Breaklines
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- ☐ Past Shallow Coal Mine Workings
- ☐ Probable Shallow Coal Mine Workings
- ☐ Coal Outcrops
- ☐ NE Mining & Groundwater Constraints
- ☒ Coal Mining Reporting Area



Key

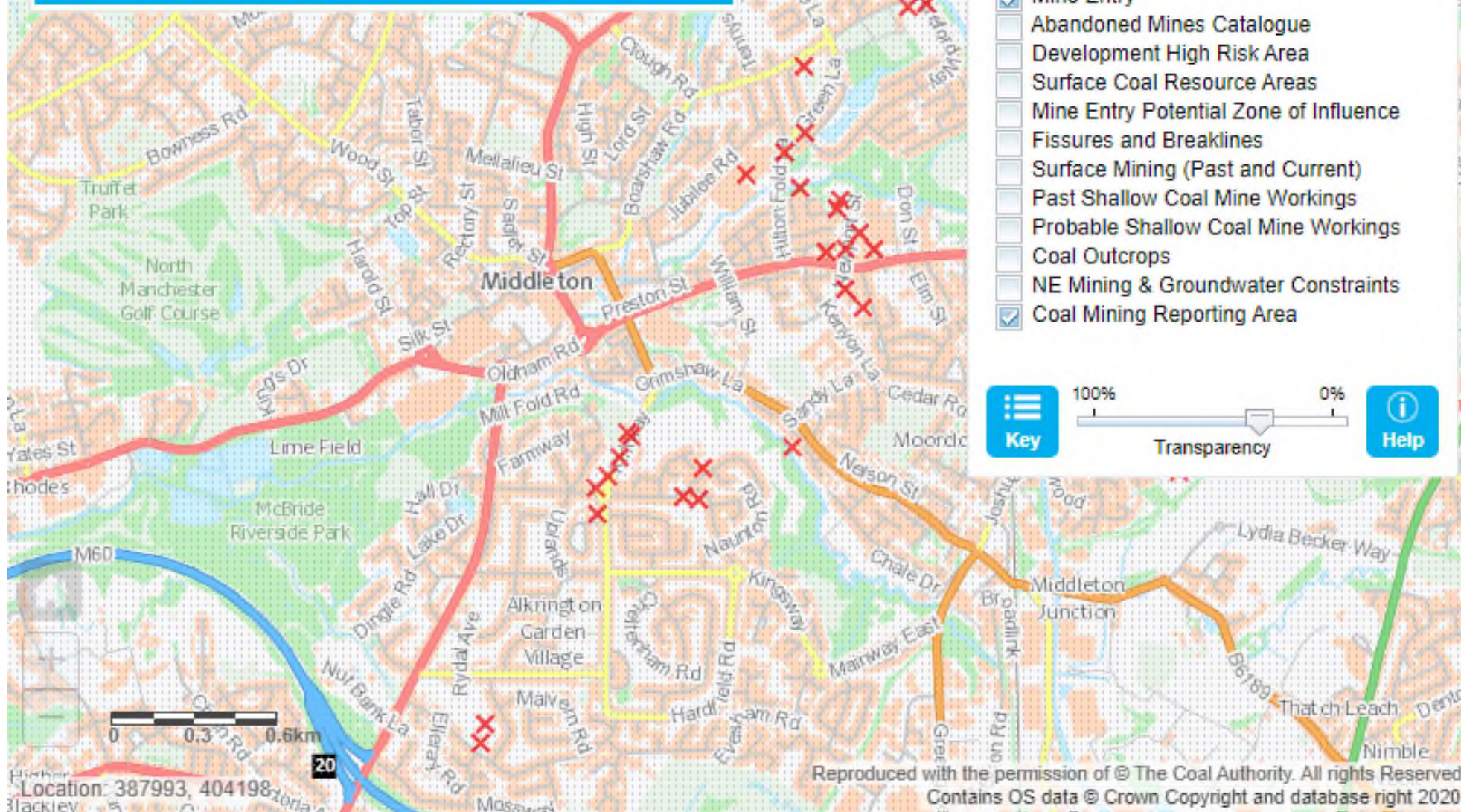
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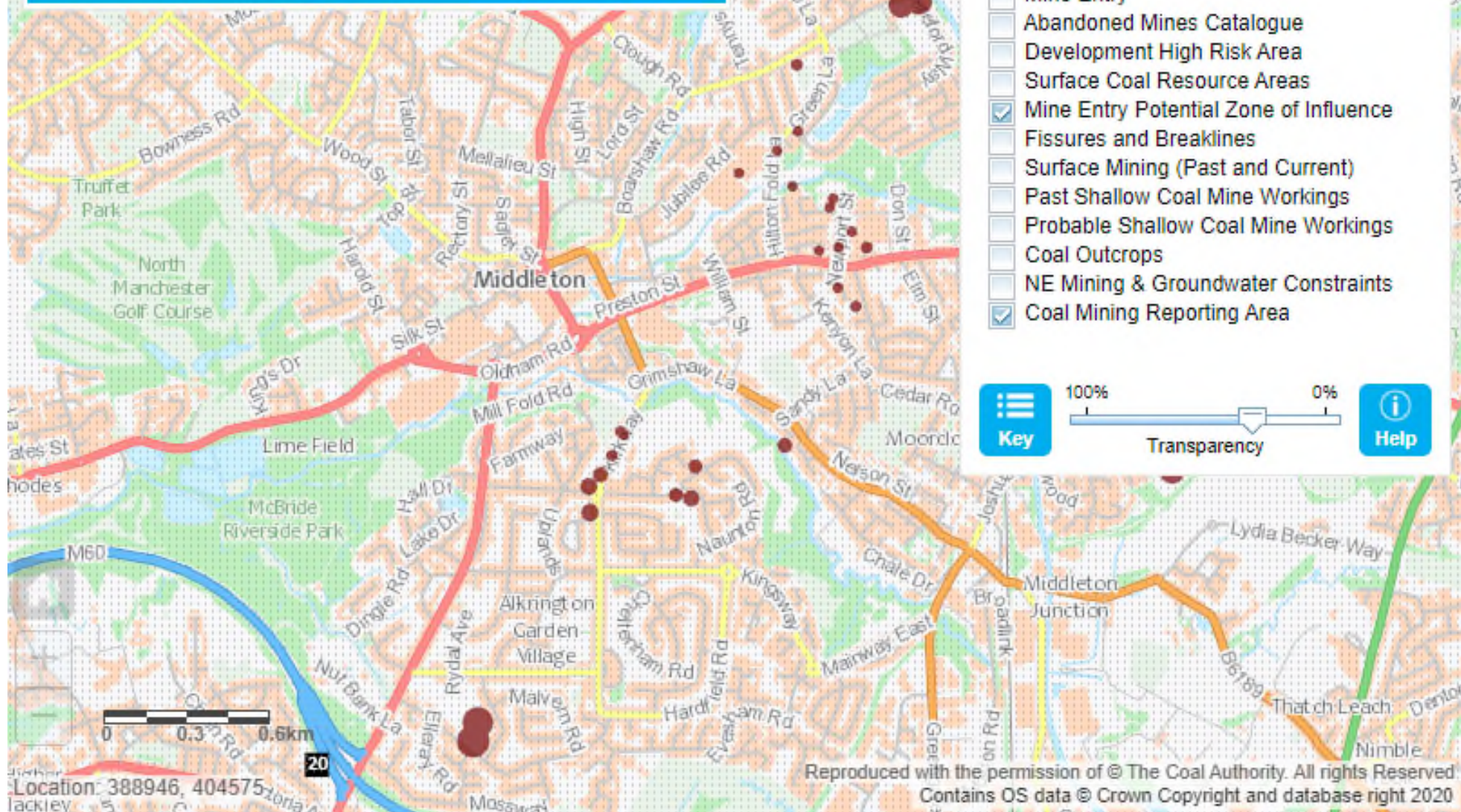




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Interactive Map

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Interactive Map

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Planning

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- ☐ Mine Entry
- ☐ Abandoned Mines Catalogue
- ☐ Development High Risk Area
- ☐ Surface Coal Resource Areas
- ☐ Mine Entry Potential Zone of Influence
- ☒ Fissures and Breaklines
- ☐ Surface Mining (Past and Current)
- ☐ Past Shallow Coal Mine Workings
- ☐ Probable Shallow Coal Mine Workings
- ☐ Coal Outcrops
- ☐ NE Mining & Groundwater Constraints
- ☒ Coal Mining Reporting Area



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- ☐ Abandoned Mines Catalogue
- ☐ Development High Risk Area
- ☐ Surface Coal Resource Areas
- ☐ Mine Entry Potential Zone of Influence
- ☐ Fissures and Breaklines
- ☒ Surface Mining (Past and Current)
- ☐ Past Shallow Coal Mine Workings
- ☐ Probable Shallow Coal Mine Workings
- ☐ Coal Outcrops
- ☐ NE Mining & Groundwater Constraints
- ☒ Coal Mining Reporting Area



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Location: 390421, 405720

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- ☐ Abandoned Mines Catalogue
- ☐ Development High Risk Area
- ☐ Surface Coal Resource Areas
- ☐ Mine Entry Potential Zone of Influence
- ☐ Fissures and Breaklines
- ☐ Surface Mining (Past and Current)
- ☒ Past Shallow Coal Mine Workings
- ☐ Probable Shallow Coal Mine Workings
- ☐ Coal Outcrops
- ☐ NE Mining & Groundwater Constraints
- ☒ Coal Mining Reporting Area



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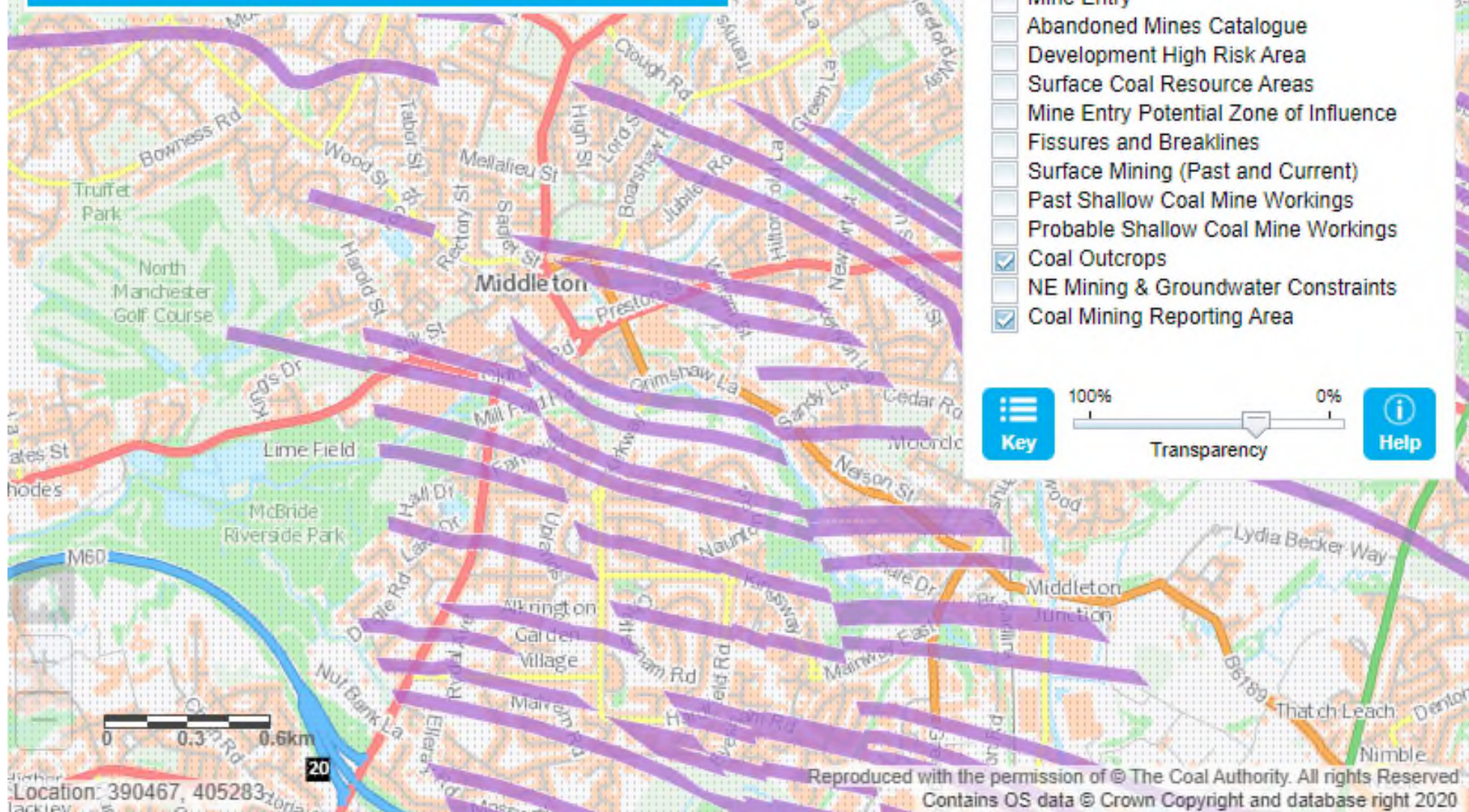
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- ☐ Mine Entry
- ☐ Abandoned Mines Catalogue
- ☐ Development High Risk Area
- ☐ Surface Coal Resource Areas
- ☐ Mine Entry Potential Zone of Influence
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- ☐ Past Shallow Coal Mine Workings
- ☐ Probable Shallow Coal Mine Workings
- ☒ Coal Outcrops
- ☐ NE Mining & Groundwater Constraints
- ☒ Coal Mining Reporting Area

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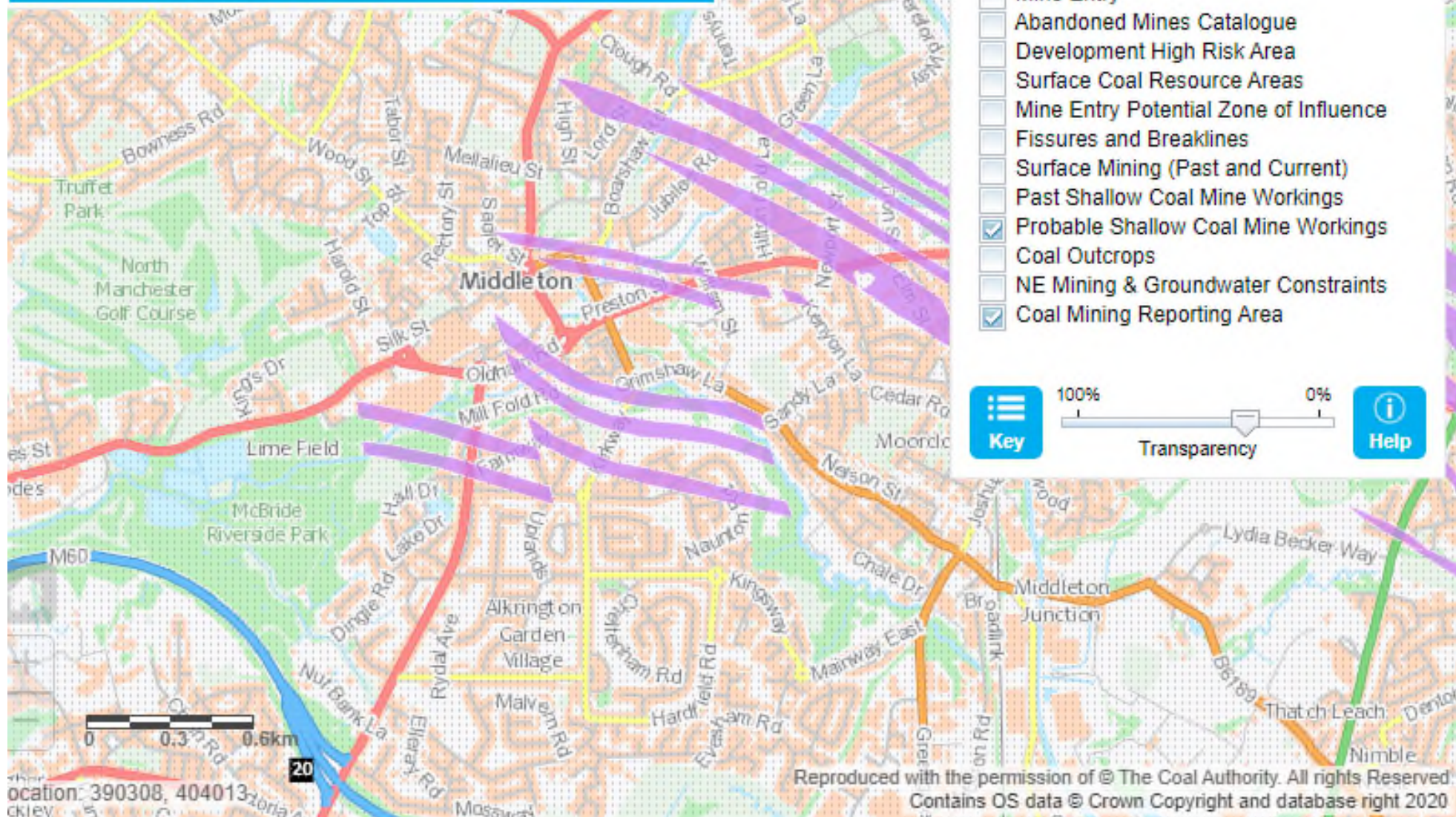
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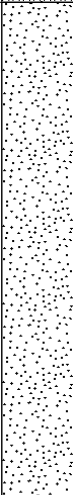
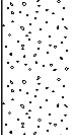
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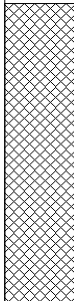
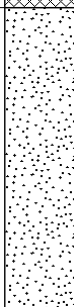
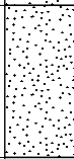


APPENDIX C

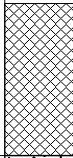
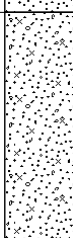
Borehole Records

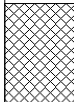
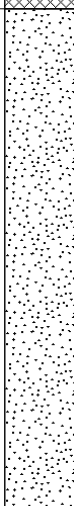
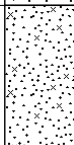
THE ARLEY CONSULTING COMPANY LIMITED						Site 38-44 Townley Street, Middleton		Number 1	
Excavation Method 100 mm drill barrel		Dimensions		Ground Level (mOD)		Client Universal Bargains Limited		Job Number 22005	
		Location		Dates 16/12/2022		Engineer ML		Sheet 1/1	
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description		Legend	Water
1.00-1.45	SPT(C) N=8		... service inspection pit excavated to 1.0 m by hand 2,2/2,2,2,2		0.10	Brown medium sand with brick fragments and occasional mixed lithology gravel (MADE GROUND)			
					(2.40)	Loose light brown fine SAND			
2.00-2.45	SPT(C) N=5		1,1/1,1,1,2		2.50	Soft grey fine sandy SILT			
					(0.50)				
3.00-3.45	SPT(C) N=4		1,1/1,1,1,1		3.00	Brown/orange brown, slightly clayey slightly silty SAND with occasional rounded to subrounded medium gravel			
					(1.00)				
4.00-4.45	SPT(C) N=16		1,1/1,4,5,6		4.00	Light brown.light grey/orange fine to medium SAND, wet			
					(1.20)				
5.00-5.45	SPT(C) N=12		Hole collapsing in wet granular soils 4,4/3,3,3,3 Very Slow(1) at 5.20m.		5.20	Brown SAND & subrounded GRAVEL, wet			V ₁
					(0.70)				
					5.90	Complete at 5.90m			
Remarks								Scale (approx) 1:50	Logged By IC
								Figure No. 22005.1	

THE ARLEY CONSULTING COMPANY LIMITED						Site 38-44 Townley Street, Middleton		Number 2		
Excavation Method 100 mm drill barrel		Dimensions		Ground Level (mOD)		Client Universal Bargains Limited		Job Number 22005		
		Location		Dates 16/12/2022		Engineer ML		Sheet 1/1		
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description		Legend	Water	
1.00-1.45	SPT(C) N=8		... service inspection pit excavated to 1.0 m by hand 2,2/2,2,2,2		(0.30) 0.30	Brown medium sand with brick fragments and occasional mixed lithology gravel (MADE GROUND)				
						Loose light brown/orange fine to medoiium SAND				
2.00-2.45	SPT(C) N=4		1,1/1,1,1,1		(3.30)					
3.00-3.45	SPT(C) N=4		1,1/1,1,1,1							
					3.60	Loose grey silty fine SAND				
4.00-4.45	SPT(C) N=0		Seepage(1) at 4.00m. 0,0/0,0,0,0		(0.40) 4.00	Loose ight brown fine to medium SAND & rounded to subrounded GRAVEL, wet				
			Hole collapsing in wet granular soils		(1.00)					
5.00-5.45	SPT(C) N=35		3,4/8,13,10,4		5.00	Medium dense light brown SAND & rounded to subrounded GRAVEL, wet				
					(1.00) 6.00	Complete at 6.00m				
Remarks Borehole backfilled with arisings								Scale (approx) 1:50	Logged By IC	
								Figure No. 22005.2		

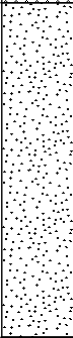
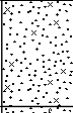
THE ARLEY CONSULTING COMPANY LIMITED						Site 38-44 Townley Street, Middleton		Number 3	
Excavation Method 100 mm drill barrel		Dimensions		Ground Level (mOD)		Client Universal Bargains Limited		Job Number 22005	
		Location		Dates 16/12/2022		Engineer ML		Sheet 1/1	
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	
1.00-1.45	SPT(C) N=1		... service inspection pit excavated to 1.0 m by hand 1,0/0,0,0,1		(2.00)	Brown medium sand with brick fragments and occasional mixed lithology gravel (MADE GROUND)		V ₁	
2.00-2.45	SPT(C) N=4		1,1/1,1,1,1		2.00	Loose light brown fine to medium SAND			
3.00-3.45	SPT(C) N=4		1,1/1,1,1,1		(2.00)				
4.00-4.45	SPT(C) N=0		0,0/0,0,0,0 Seepage(1) at 4.20m. Hole collapsing in wet granular soils		4.00 (1.00)	Loose grey fine SAND, wet			
5.00-5.45	SPT(C) N=9		1,2/2,2,2,3		5.00	Borehole collapsing continued with continuous CPTs			
5.45-5.90	SPT(C) N=18		4,4/4,4,4,6		(1.35)				
5.90-6.35	SPT(C) N=37		12,15/10,10,9,8		6.35	Complete at 6.35m			
Remarks Borehole backfilled with arisings							Scale (approx) 1:50	Logged By IC	
							Figure No. 22005.1		

[illegible]

THE ARLEY CONSULTING COMPANY LIMITED						Site 38-44 Townley Street, Middleton		Number 4	
Excavation Method 100 mm drill barrel		Dimensions 100mm to 3.00m		Ground Level (mOD)		Client Universal Bargains Limited		Job Number 22005	
		Location		Dates 10/01/2023		Engineer ML		Sheet 1/1	
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	
1.00-1.45	SPT(C) N=14		... service inspection pit excavated to 1.0 m by hand 2,2/3,3,4,4		(1.00)	Brown sand with brick fragments and occasional mixed lithology gravel (MADE GROUND)			
					1.00	Loose light brown/orange fine to medium SAND			
2.00-2.45	SPT(C) N=6		1,1/1,1,2,2		(2.00)				
3.00-3.45	SPT(C) N=4		1,1/1,1,1,1		3.00	Medium dense light brown silty fine to medium SAND with occasional gravel			
4.00-4.45	SPT(C) N=19		3,3/4,5,5,5		(1.50)				
					4.50	Medium dense light brown/orange occasionally silty SAND & subrounded GRAVEL, wet			
5.00-5.45	SPT(C) N=16		... poor returns below 4.5 m (25-65%) Slow(1) at 5.00m. 5,4/5,5,3,3		(1.50)				
6.00-6.45	SPT(C) N=12		3,3/3,3,3,3		6.00	Complete at 6.45m			
Remarks Borehole backfilled with arisings							Scale (approx)	Logged By	
							1:50	IC	
							Figure No. 22005.4		

THE ARLEY CONSULTING COMPANY LIMITED						Site 38-44 Townley Street, Middleton		Number 5	
Excavation Method 100 mm drill barrel		Dimensions 100mm to 3.00m		Ground Level (mOD)		Client Universal Bargains Limited		Job Number 22005	
		Location		Dates 10/01/2023		Engineer ML		Sheet 1/1	
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	
1.00-1.45	SPT(C) N=4		... service inspection pit excavated to 1.0 m by hand 1,1/1,1,1,1		(0.70)	Brown sand with brick fragments and occasional mixed lithology gravel (MADE GROUND)		V ₁	
					0.70	Loose light brown/orange fine to medium SAND			
2.00-2.45	SPT(C) N=5		2,2/2,1,1,1		(3.30)				
3.00-3.45	SPT(C) N=4		1,1/1,1,1,1						
4.00-4.45	SPT(C) N=11		2,2/2,3,3,3		4.00	Medium dense light brown slightly silty fine SAND			
					(1.00)				
5.00-5.45	SPT(C) N=16		Slow(1) at 5.00m. 3,4/4,5,4,3 ... poor returns below 5 m (25-65%)		5.00	Medium dense brown/orange occasionally silty SAND & subrounded GRAVEL, wet			
					(1.00)				
6.00-6.45	SPT(C) N=21		4,4/4,5,5,7		6.00	Complete at 6.45m			
Remarks							Scale (approx)	Logged By	
							1:50	IC	
							Figure No. 22005.5		

THE ARLEY CONSULTING COMPANY LIMITED						Site 38-44 Townley Street, Middleton		Number 6	
Excavation Method 100 mm drill barrel		Dimensions 100mm to 3.00m		Ground Level (mOD)		Client Universal Bargains Limited		Job Number 22005	
		Location				Engineer ML		Sheet 1/1	
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	
1.00-1.45	SPT(C) N=8		... service inspection pit excavated to 1.0 m by hand 2,2/2,2,2,2		(0.25)	Brown sand with brick fragments and occasional mixed lithology gravel (MADE GROUND)			
					0.25	Loose light brown/orange fine to medium SAND			
2.00-2.45	SPT(C) N=4		1,1/1,1,1,1		(3.25)				
3.00-3.45	SPT(C) N=11		3,3/4,4,2,1		3.50	Loose to medium dense light brown silty fine to medium SAND			
					(0.50)				
4.00-4.45	SPT(C) N=16		3,3/4,4,4,4 ... poor returns below 4 m (30-60%) Seepage(1) at 4.30m.		4.00	Medium dense light brown/orange occasionally gravelly SAND, wet			V1
					(1.00)				
5.00-5.45	SPT(C) N=21		Slow(2) at 5.00m. 6,5/5,5,5,6		5.00	No Returns - possible SAND & GRAVEL			V2
					(1.00)				
6.00-6.45	SPT(C) N=45		6,6/7,11,13,14		6.00	Complete at 6.45m			
Remarks Borehole backfilled with arisings							Scale (approx)		Logged By
							1:50		IC
							Figure No. 22005.6		

THE ARLEY CONSULTING COMPANY LIMITED						Site 38-44 Townley Street, Middleton		Number 7	
Excavation Method 100 mm drill barrel		Dimensions 100mm to 2.0m		Ground Level (mOD)		Client Universal Bargains Limited		Job Number 22005	
		Location				Dates 10/01/2023		Engineer ML	
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	
			... service inspection pit excavated to 1.0 m by hand		(0.60) 0.60	Brown sand with brick fragments and occasional mixed lithology gravel (MADE GROUND)			
					(2.20)	Light brown/orange fine SAND			
					2.80 (0.70)	Light brown/grey occasionally silty fine SAND			
			... poor returns below 3.5 m (30-60%)		3.50	Light brown occasionally slightly silty gravelly fine to medium SAND			
					(2.50)	... becoming increasingly fravelly with depth. Gravel is subrounded.		V ₁	
			Seepage(1) at 5.00m.		6.00	Complete at 6.00m			
Remarks Borehole backfilled with arisings Borehole backfilled with arisings							Scale (approx)	Logged By	
							1:50	IC	
							Figure No. 22005.7		

THE ARLEY CONSULTING COMPANY LIMITED						Site 38-44 Townley Street, Middleton		Number 8	
Excavation Method 100 mm drill barrel		Dimensions 100mm to 2.0m		Ground Level (mOD)		Client Universal Bargains Limited		Job Number 22005	
		Location				Engineer ML		Sheet 1/1	
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	
			... service inspection pit excavated to 1.0 m by hand <						

APPENDIX D

Chemical Test Results

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 22/12460
Issue Number: 1

Date: 23 December, 2022

Client: Arley Consulting
Chorleian House
49-51 St Thomas Road
Chorley
PR7 1JE

Project Manager: Martin Lovelock
Project Name: 38-44 Townley Street, Middleton
Project Ref: 22005
Order No: 7589/11561
Date Samples Received: 19/12/22
Date Instructions Received: 19/12/22
Date Analysis Completed: 23/12/22

Approved by:



Richard Wong
Client Manager

Envirolab Job Number: 22/12460

Client Project Name: 38-44 Townley Street, Middleton

Client Project Ref: 22005

Lab Sample ID	22/12460/1	22/12460/2	22/12460/3	22/12460/4	22/12460/5			Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	BH1	BH1	BH2	BH2	BH3					
Depth to Top	0.50	1.00	0.50	1.00	0.50					
Depth To Bottom										
Date Sampled	16-Dec-22	16-Dec-22	16-Dec-22	16-Dec-22	16-Dec-22					
Sample Type	Soil - D	Soil - D	Soil - D	Soil - D	Soil - D					
Sample Matrix Code	4A	4A	4A	4A	4AB					
% Stones >10mm _A	10.9	<0.1	<0.1	1.7	3.8			% w/w	0.1	A-T-044
pH _D ^{M#}	8.25	-	7.80	-	8.74			pH	0.01	A-T-031s
Sulphate (water sol 2:1) _D ^{M#}	0.04	-	0.06	-	0.22			g/l	0.01	A-T-026s
Sulphate (acid soluble) _D ^{M#}	<200	-	220	-	1600			mg/kg	200	A-T-028s
Cyanide (total) _A ^{M#}	<1	-	<1	-	<1			mg/kg	1	A-T-042sTCN
Phenols - Total by HPLC _A	<0.2	-	<0.2	-	<0.2			mg/kg	0.2	A-T-050s
Organic Matter _D ^{M#}	0.7	-	1.5	-	6.0			% w/w	0.1	A-T-032 OM
Arsenic _D ^{M#}	4	-	18	-	13			mg/kg	1	A-T-024s
Boron (water soluble) _D	<1.0	-	<1.0	-	<1.0			mg/kg	1	A-T-027s
Cadmium _D ^{M#}	0.5	-	0.6	-	1.2			mg/kg	0.5	A-T-024s
Copper _D ^{M#}	11	-	12	-	62			mg/kg	1	A-T-024s
Chromium _D ^{M#}	8	-	12	-	13			mg/kg	1	A-T-024s
Chromium (hexavalent) _D	<1	-	<1	-	<1			mg/kg	1	A-T-040s
Lead _D ^{M#}	15	-	23	-	249			mg/kg	1	A-T-024s
Mercury _D	<0.17	-	<0.17	-	0.50			mg/kg	0.17	A-T-024s
Nickel _D ^{M#}	9	-	12	-	18			mg/kg	1	A-T-024s
Selenium _D ^{M#}	<1	-	<1	-	<1			mg/kg	1	A-T-024s
Zinc _D ^{M#}	29	-	31	-	98			mg/kg	5	A-T-024s

Envirolab Job Number: 22/12460

Client Project Name: 38-44 Townley Street, Middleton

Client Project Ref: 22005

Lab Sample ID	22/12460/1	22/12460/2	22/12460/3	22/12460/4	22/12460/5			Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	BH1	BH1	BH2	BH2	BH3					
Depth to Top	0.50	1.00	0.50	1.00	0.50					
Depth To Bottom										
Date Sampled	16-Dec-22	16-Dec-22	16-Dec-22	16-Dec-22	16-Dec-22					
Sample Type	Soil - D	Soil - D	Soil - D	Soil - D	Soil - D					
Sample Matrix Code	4A	4A	4A	4A	4AB					
Asbestos in Soil (inc. matrix) ^										
Asbestos in soil [#]	-	-	-	-	NAD					A-T-045
Asbestos Matrix (visual) _D	-	-	-	-	-					A-T-045
Asbestos Matrix (microscope) _D	-	-	-	-	-					A-T-045
Asbestos ACM - Suitable for Water Absorption Test? _D	-	-	-	-	N/A					A-T-045

Envirolab Job Number: 22/12460

Client Project Name: 38-44 Townley Street, Middleton

Client Project Ref: 22005

Lab Sample ID	22/12460/1	22/12460/2	22/12460/3	22/12460/4	22/12460/5			Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	BH1	BH1	BH2	BH2	BH3					
Depth to Top	0.50	1.00	0.50	1.00	0.50					
Depth To Bottom										
Date Sampled	16-Dec-22	16-Dec-22	16-Dec-22	16-Dec-22	16-Dec-22					
Sample Type	Soil - D	Soil - D	Soil - D	Soil - D	Soil - D					
Sample Matrix Code	4A	4A	4A	4A	4AB					
PAH-16MS										
Acenaphthene _A ^{M#}	<0.01	-	<0.01	-	0.39			mg/kg	0.01	A-T-019s
Acenaphthylene _A ^{M#}	<0.01	-	<0.01	-	0.02			mg/kg	0.01	A-T-019s
Anthracene _A ^{M#}	<0.02	-	<0.02	-	0.46			mg/kg	0.02	A-T-019s
Benzo(a)anthracene _A ^{M#}	<0.04	-	0.11	-	1.28			mg/kg	0.04	A-T-019s
Benzo(a)pyrene _A ^{M#}	<0.04	-	0.31	-	1.21			mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene _A ^{M#}	<0.05	-	0.24	-	1.38			mg/kg	0.05	A-T-019s
Benzo(ghi)perylene _A ^{M#}	<0.05	-	0.24	-	0.57			mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene _A ^{M#}	<0.07	-	0.10	-	0.51			mg/kg	0.07	A-T-019s
Chrysene _A ^{M#}	<0.06	-	0.12	-	1.46			mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene _A ^{M#}	<0.04	-	0.05	-	0.15			mg/kg	0.04	A-T-019s
Fluoranthene _A ^{M#}	<0.08	-	0.09	-	3.12			mg/kg	0.08	A-T-019s
Fluorene _A ^{M#}	<0.01	-	<0.01	-	0.22			mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene _A ^{M#}	<0.03	-	0.24	-	0.61			mg/kg	0.03	A-T-019s
Naphthalene _A ^{M#}	<0.03	-	<0.03	-	0.10			mg/kg	0.03	A-T-019s
Phenanthrene _A ^{M#}	<0.03	-	0.04	-	2.34			mg/kg	0.03	A-T-019s
Pyrene _A ^{M#}	<0.07	-	0.11	-	2.87			mg/kg	0.07	A-T-019s
Total PAH-16MS _A ^{M#}	<0.08	-	1.65	-	16.7			mg/kg	0.01	A-T-019s

Envirolab Job Number: 22/12460

Client Project Name: 38-44 Townley Street, Middleton

Client Project Ref: 22005

Lab Sample ID	22/12460/1	22/12460/2	22/12460/3	22/12460/4	22/12460/5			Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	BH1	BH1	BH2	BH2	BH3					
Depth to Top	0.50	1.00	0.50	1.00	0.50					
Depth To Bottom										
Date Sampled	16-Dec-22	16-Dec-22	16-Dec-22	16-Dec-22	16-Dec-22					
Sample Type	Soil - D	Soil - D	Soil - D	Soil - D	Soil - D					
Sample Matrix Code	4A	4A	4A	4A	4AB					
SVOC										
4-Bromophenyl phenyl ether _A	-	<100	-	-	-			µg/kg	100	A-T-052s
Hexachlorobenzene _A	-	<100	-	-	-			µg/kg	100	A-T-052s
Diethyl phthalate _A	-	<100	-	-	-			µg/kg	100	A-T-052s
Dimethyl phthalate _A	-	<100	-	-	-			µg/kg	100	A-T-052s
Dibenzofuran _A	-	<100	-	-	-			µg/kg	100	A-T-052s
Carbazole _A	-	<100	-	-	-			µg/kg	100	A-T-052s
Butylbenzyl phthalate _A	-	<100	-	-	-			µg/kg	100	A-T-052s
Bis(2-ethylhexyl)phthalate _A	-	<500	-	-	-			µg/kg	500	A-T-052s
Bis(2-chloroethoxy)methane _A	-	<100	-	-	-			µg/kg	100	A-T-052s
Bis(2-chloroethyl)ether _A	-	<100	-	-	-			µg/kg	100	A-T-052s
4-Nitrophenol _A	-	<100	-	-	-			µg/kg	100	A-T-052s
3+4-Methylphenol _A	-	<100	-	-	-			µg/kg	100	A-T-052s
4-Chloro-3-methylphenol _A	-	<100	-	-	-			µg/kg	100	A-T-052s
2-Nitrophenol _A	-	<100	-	-	-			µg/kg	100	A-T-052s
2-Methylphenol _A	-	<100	-	-	-			µg/kg	100	A-T-052s
1,2,4-Trichlorobenzene _A	-	<100	-	-	-			µg/kg	100	A-T-052s
2-Chlorophenol _A	-	<100	-	-	-			µg/kg	100	A-T-052s
2,6-Dinitrotoluene _A	-	<100	-	-	-			µg/kg	100	A-T-052s
2,4-Dinitrotoluene _A	-	<100	-	-	-			µg/kg	100	A-T-052s
2,4-Dimethylphenol _A	-	<100	-	-	-			µg/kg	100	A-T-052s
2,4-Dichlorophenol _A	-	<100	-	-	-			µg/kg	100	A-T-052s
2,4,6-Trichlorophenol _A	-	<100	-	-	-			µg/kg	100	A-T-052s
2,4,5-Trichlorophenol _A	-	<100	-	-	-			µg/kg	100	A-T-052s
1,4-Dichlorobenzene _A	-	<100	-	-	-			µg/kg	100	A-T-052s
1,3-Dichlorobenzene _A	-	<100	-	-	-			µg/kg	100	A-T-052s
1,2-Dichlorobenzene _A	-	<100	-	-	-			µg/kg	100	A-T-052s
2-Chloronaphthalene _A	-	<100	-	-	-			µg/kg	100	A-T-052s
2-Methylnaphthalene _A	-	<100	-	-	-			µg/kg	100	A-T-052s
Acenaphthylene _A	-	<100	-	-	-			µg/kg	100	A-T-052s
Acenaphthene _A	-	<100	-	-	-			µg/kg	100	A-T-052s
Anthracene _A	-	<100	-	-	-			µg/kg	100	A-T-052s
Benzo(a)anthracene _A	-	<100	-	-	-			µg/kg	100	A-T-052s

Envirolab Job Number: 22/12460

Client Project Name: 38-44 Townley Street, Middleton

Client Project Ref: 22005

Lab Sample ID	22/12460/1	22/12460/2	22/12460/3	22/12460/4	22/12460/5			Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	BH1	BH1	BH2	BH2	BH3					
Depth to Top	0.50	1.00	0.50	1.00	0.50					
Depth To Bottom										
Date Sampled	16-Dec-22	16-Dec-22	16-Dec-22	16-Dec-22	16-Dec-22					
Sample Type	Soil - D	Soil - D	Soil - D	Soil - D	Soil - D					
Sample Matrix Code	4A	4A	4A	4A	4AB					
Benzo(b)fluoranthene _A	-	<100	-	-	-			µg/kg	100	A-T-052s
Benzo(k)fluoranthene _A	-	<100	-	-	-			µg/kg	100	A-T-052s
Benzo(a)pyrene _A	-	<100	-	-	-			µg/kg	100	A-T-052s
Benzo(ghi)perylene _A	-	<100	-	-	-			µg/kg	100	A-T-052s
Chrysene _A	-	<100	-	-	-			µg/kg	100	A-T-052s
Fluoranthene _A	-	<100	-	-	-			µg/kg	100	A-T-052s
Fluorene _A	-	<100	-	-	-			µg/kg	100	A-T-052s
Indeno(1,2,3-cd)pyrene _A	-	<100	-	-	-			µg/kg	100	A-T-052s
Phenanthrene _A	-	<100	-	-	-			µg/kg	100	A-T-052s
Pyrene _A	-	<100	-	-	-			µg/kg	100	A-T-052s
Naphthalene _A	-	<100	-	-	-			µg/kg	100	A-T-052s
Dibenzo(ah)anthracene _A	-	<100	-	-	-			µg/kg	100	A-T-052s
Bis(2-chloroisopropyl)ether _A	-	<100	-	-	-			µg/kg	100	A-T-052s
Phenol _A	-	<100	-	-	-			µg/kg	100	A-T-052s
Pentachlorophenol _A	-	<100	-	-	-			µg/kg	100	A-T-052s
n-Nitroso-n-dipropylamine _A	-	<100	-	-	-			µg/kg	100	A-T-052s
n-Dioctylphthalate _A	-	<500	-	-	-			µg/kg	500	A-T-052s
n-Dibutylphthalate _A	-	<100	-	-	-			µg/kg	100	A-T-052s
Nitrobenzene _A	-	<100	-	-	-			µg/kg	100	A-T-052s
Isophorone _A	-	<100	-	-	-			µg/kg	100	A-T-052s
Hexachloroethane _A	-	<100	-	-	-			µg/kg	100	A-T-052s
Hexachlorocyclopentadiene _A	-	<100	-	-	-			µg/kg	100	A-T-052s
Hexachlorobutadiene _A	-	<100	-	-	-			µg/kg	100	A-T-052s
Perylene _A	-	<100	-	-	-			µg/kg	100	A-T-052s

Envirolab Job Number: 22/12460

Client Project Name: 38-44 Townley Street, Middleton

Client Project Ref: 22005

Lab Sample ID	22/12460/1	22/12460/2	22/12460/3	22/12460/4	22/12460/5			Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	BH1	BH1	BH2	BH2	BH3					
Depth to Top	0.50	1.00	0.50	1.00	0.50					
Depth To Bottom										
Date Sampled	16-Dec-22	16-Dec-22	16-Dec-22	16-Dec-22	16-Dec-22					
Sample Type	Soil - D	Soil - D	Soil - D	Soil - D	Soil - D					
Sample Matrix Code	4A	4A	4A	4A	4AB					
VOC										
Dichlorodifluoromethane _A	-	<1	-	-	-			µg/kg	1	A-T-006s
Chloromethane _A	-	<10	-	-	-			µg/kg	10	A-T-006s
Vinyl Chloride (Chloroethene) _A [#]	-	<1	-	-	-			µg/kg	1	A-T-006s
Bromomethane _A [#]	-	<1	-	-	-			µg/kg	1	A-T-006s
Chloroethane _A [#]	-	<1	-	-	-			µg/kg	1	A-T-006s
Trichlorofluoromethane _A [#]	-	<1	-	-	-			µg/kg	1	A-T-006s
1,1-Dichloroethene _A [#]	-	<1	-	-	-			µg/kg	1	A-T-006s
Carbon Disulphide _A [#]	-	<1	-	-	-			µg/kg	1	A-T-006s
Dichloromethane _A	-	<5	-	-	-			µg/kg	5	A-T-006s
trans 1,2-Dichloroethene _A [#]	-	<1	-	-	-			µg/kg	1	A-T-006s
1,1-Dichloroethane _A [#]	-	<1	-	-	-			µg/kg	1	A-T-006s
cis 1,2-Dichloroethene _A [#]	-	<1	-	-	-			µg/kg	1	A-T-006s
2,2-Dichloropropane _A [#]	-	<1	-	-	-			µg/kg	1	A-T-006s
Bromochloromethane _A [#]	-	<5	-	-	-			µg/kg	5	A-T-006s
Chloroform _A [#]	-	<1	-	-	-			µg/kg	1	A-T-006s
1,1,1-Trichloroethane _A [#]	-	<1	-	-	-			µg/kg	1	A-T-006s
1,1-Dichloropropene _A [#]	-	<1	-	-	-			µg/kg	1	A-T-006s
Carbon Tetrachloride _A [#]	-	<1	-	-	-			µg/kg	1	A-T-006s
1,2-Dichloroethane _A [#]	-	<2	-	-	-			µg/kg	2	A-T-006s
Benzene _A [#]	-	<1	-	-	-			µg/kg	1	A-T-006s
Trichloroethene _A [#]	-	<1	-	-	-			µg/kg	1	A-T-006s
1,2-Dichloropropane _A [#]	-	<1	-	-	-			µg/kg	1	A-T-006s
Dibromomethane _A [#]	-	<1	-	-	-			µg/kg	1	A-T-006s
Bromodichloromethane _A [#]	-	<10	-	-	-			µg/kg	10	A-T-006s
cis 1,3-Dichloropropene _A [#]	-	<1	-	-	-			µg/kg	1	A-T-006s
Toluene _A [#]	-	<1	-	-	-			µg/kg	1	A-T-006s
trans 1,3-Dichloropropene _A [#]	-	<1	-	-	-			µg/kg	1	A-T-006s
1,1,2-Trichloroethane _A [#]	-	<1	-	-	-			µg/kg	1	A-T-006s
1,3-Dichloropropane _A [#]	-	<1	-	-	-			µg/kg	1	A-T-006s
Tetrachloroethene _A [#]	-	<1	-	-	-			µg/kg	1	A-T-006s
Dibromochloromethane _A [#]	-	<3	-	-	-			µg/kg	3	A-T-006s
1,2-Dibromoethane _A [#]	-	<1	-	-	-			µg/kg	1	A-T-006s

Envirolab Job Number: 22/12460

Client Project Name: 38-44 Townley Street, Middleton

Client Project Ref: 22005

Lab Sample ID	22/12460/1	22/12460/2	22/12460/3	22/12460/4	22/12460/5			Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	BH1	BH1	BH2	BH2	BH3					
Depth to Top	0.50	1.00	0.50	1.00	0.50					
Depth To Bottom										
Date Sampled	16-Dec-22	16-Dec-22	16-Dec-22	16-Dec-22	16-Dec-22					
Sample Type	Soil - D	Soil - D	Soil - D	Soil - D	Soil - D					
Sample Matrix Code	4A	4A	4A	4A	4AB					
Chlorobenzene _A [#]	-	<1	-	-	-			µg/kg	1	A-T-006s
1,1,1,2-Tetrachloroethane _A	-	<1	-	-	-			µg/kg	1	A-T-006s
Ethylbenzene _A [#]	-	<1	-	-	-			µg/kg	1	A-T-006s
m & p Xylene _A [#]	-	<1	-	-	-			µg/kg	1	A-T-006s
o-Xylene _A [#]	-	<1	-	-	-			µg/kg	1	A-T-006s
Styrene _A [#]	-	<1	-	-	-			µg/kg	1	A-T-006s
Bromoform _A [#]	-	<1	-	-	-			µg/kg	1	A-T-006s
Isopropylbenzene _A [#]	-	<1	-	-	-			µg/kg	1	A-T-006s
1,1,2,2-Tetrachloroethane _A	-	<1	-	-	-			µg/kg	1	A-T-006s
1,2,3-Trichloropropane _A [#]	-	<1	-	-	-			µg/kg	1	A-T-006s
Bromobenzene _A [#]	-	<1	-	-	-			µg/kg	1	A-T-006s
n-Propylbenzene _A [#]	-	<1	-	-	-			µg/kg	1	A-T-006s
2-Chlorotoluene _A [#]	-	<1	-	-	-			µg/kg	1	A-T-006s
1,3,5-Trimethylbenzene _A [#]	-	<1	-	-	-			µg/kg	1	A-T-006s
4-Chlorotoluene _A [#]	-	<1	-	-	-			µg/kg	1	A-T-006s
tert-Butylbenzene _A [#]	-	<2	-	-	-			µg/kg	2	A-T-006s
1,2,4-Trimethylbenzene _A [#]	-	<1	-	-	-			µg/kg	1	A-T-006s
sec-Butylbenzene _A [#]	-	<1	-	-	-			µg/kg	1	A-T-006s
4-Isopropyltoluene _A [#]	-	<1	-	-	-			µg/kg	1	A-T-006s
1,3-Dichlorobenzene _A	-	<1	-	-	-			µg/kg	1	A-T-006s
1,4-Dichlorobenzene _A [#]	-	<1	-	-	-			µg/kg	1	A-T-006s
n-Butylbenzene _A [#]	-	<1	-	-	-			µg/kg	1	A-T-006s
1,2-Dichlorobenzene _A [#]	-	<1	-	-	-			µg/kg	1	A-T-006s
1,2-Dibromo-3-chloropropane (DCBP) _A	-	<2	-	-	-			µg/kg	2	A-T-006s
1,2,4-Trichlorobenzene _A	-	<3	-	-	-			µg/kg	3	A-T-006s
Hexachlorobutadiene _A [#]	-	<1	-	-	-			µg/kg	1	A-T-006s
1,2,3-Trichlorobenzene _A	-	<3	-	-	-			µg/kg	3	A-T-006s

Envirolab Job Number: 22/12460

Client Project Name: 38-44 Townley Street, Middleton

Client Project Ref: 22005

Lab Sample ID	22/12460/1	22/12460/2	22/12460/3	22/12460/4	22/12460/5			Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	BH1	BH1	BH2	BH2	BH3					
Depth to Top	0.50	1.00	0.50	1.00	0.50					
Depth To Bottom										
Date Sampled	16-Dec-22	16-Dec-22	16-Dec-22	16-Dec-22	16-Dec-22					
Sample Type	Soil - D	Soil - D	Soil - D	Soil - D	Soil - D					
Sample Matrix Code	4A	4A	4A	4A	4AB					
TPH CWG with Clean Up										
Ali >C5-C6 _A [#]	<0.01	-	-	<0.01	<0.01			mg/kg	0.01	A-T-022s
Ali >C6-C8 _A [#]	<0.01	-	-	<0.01	<0.01			mg/kg	0.01	A-T-022s
Ali >C8-C10 _A	<1	-	-	<1	2			mg/kg	1	A-T-055s
Ali >C10-C12 _A ^{M#}	<1	-	-	<1	1			mg/kg	1	A-T-055s
Ali >C12-C16 _A ^{M#}	<1	-	-	<1	4			mg/kg	1	A-T-055s
Ali >C16-C21 _A ^{M#}	<1	-	-	<1	4			mg/kg	1	A-T-055s
Ali >C21-C35 _A ^{M#}	<1	-	-	<1	17			mg/kg	1	A-T-055s
Total Aliphatics _A	<1	-	-	<1	29			mg/kg	1	Calc-As Recd
Aro >C5-C7 _A [#]	<0.01	-	-	<0.01	<0.01			mg/kg	0.01	A-T-022s
Aro >C7-C8 _A [#]	<0.01	-	-	<0.01	<0.01			mg/kg	0.01	A-T-022s
Aro >C8-C10 _A	<1	-	-	<1	2			mg/kg	1	A-T-055s
Aro >C10-C12 _A	<1	-	-	<1	3			mg/kg	1	A-T-055s
Aro >C12-C16 _A	<1	-	-	<1	24			mg/kg	1	A-T-055s
Aro >C16-C21 _A ^{M#}	<1	-	-	<1	90			mg/kg	1	A-T-055s
Aro >C21-C35 _A ^{M#}	<1	-	-	<1	273			mg/kg	1	A-T-055s
Total Aromatics _A	<1	-	-	<1	392			mg/kg	1	Calc-As Recd
TPH (Ali & Aro >C5-C35) _A	<1	-	-	<1	422			mg/kg	1	Calc-As Recd
BTEX - Benzene _A [#]	<0.01	-	-	<0.01	<0.01			mg/kg	0.01	A-T-022s
BTEX - Toluene _A [#]	<0.01	-	-	<0.01	<0.01			mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene _A [#]	<0.01	-	-	<0.01	<0.01			mg/kg	0.01	A-T-022s
BTEX - m & p Xylene _A [#]	<0.01	-	-	<0.01	<0.01			mg/kg	0.01	A-T-022s
BTEX - o Xylene _A [#]	<0.01	-	-	<0.01	<0.01			mg/kg	0.01	A-T-022s
MTBE _A [#]	<0.01	-	-	<0.01	<0.01			mg/kg	0.01	A-T-022s

REPORT NOTES

General

This report shall not be reproduced, except in full, without written approval from Envirolab.
 The results reported herein relate only to the material supplied to the laboratory.
 The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
 Analytical results reflect the quality of the sample at the time of analysis only.
 Opinions and interpretations expressed are outside the scope of our accreditation.
 If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
 A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
 The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:

All results are reported as dry weight (<40°C).
 For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
 For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any "A" subscripts
 All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:

Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:

Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:

Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
 Stones etc. are not removed from the sample prior to analysis.
 Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:

1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.
 Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.

Secondary Matrix Codes:

A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal,
 E = contains roots/twigs.

Key:

IS indicates Insufficient Sample for analysis.
 US indicates Unsuitable Sample for analysis.
 NDP indicates No Determination Possible.
 NAD indicates No Asbestos Detected.
 N/A indicates Not Applicable.
 Superscript # indicates method accredited to ISO 17025.
 Superscript "M" indicates method accredited to MCERTS.
 Subscript "A" indicates analysis performed on the sample as received.
 Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve
 Subscript "A" indicates analysis has dependant options against results. Testing dependant on results appear in the comments area of your sample receipt.
 EPH CWG results have humics mathematically subtracted through instrument calculation
 TPH results "with Cleanup" indicates results cleaned up with Silica during extraction

EPH CWG GCxGC ID from TPH CWG

Where we have identified humic substances in any ID's from TPH CWG with Clean Up please note that the concentration of these humic substances is not included in the quantified results and are included in the ID for information.

Please contact us if you need any further information.

Envirolab Analysis Dates

Lab Sample ID	22/12460/1	22/12460/2	22/12460/3	22/12460/4	22/12460/5
Client Sample No					
Client Sample ID/Depth	BH1 0.50m	BH1 1.00m	BH2 0.50m	BH2 1.00m	BH3 0.50m
Date Sampled	16/12/22	16/12/22	16/12/22	16/12/22	16/12/22
A-T-006s		21/12/2022			
A-T-019s	22/12/2022		22/12/2022		22/12/2022
A-T-022s	22/12/2022			22/12/2022	22/12/2022
A-T-024s	23/12/2022		23/12/2022		23/12/2022
A-T-026s	22/12/2022		22/12/2022		22/12/2022
A-T-027s	22/12/2022		22/12/2022		22/12/2022
A-T-028s	22/12/2022		22/12/2022		22/12/2022
A-T-031s	22/12/2022		22/12/2022		22/12/2022
A-T-032 OM	23/12/2022		23/12/2022		23/12/2022
A-T-040s	22/12/2022		22/12/2022		22/12/2022
A-T-042sTCN	22/12/2022		22/12/2022		22/12/2022
A-T-044	22/12/2022	22/12/2022	22/12/2022	22/12/2022	22/12/2022
A-T-045					20/12/2022
A-T-050s	21/12/2022		21/12/2022		21/12/2022
A-T-052s		22/12/2022			
A-T-055s	21/12/2022			21/12/2022	21/12/2022
Calc-As Recd	22/12/2022			22/12/2022	22/12/2022

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

APPENDIX E

Gas Monitoring Results

THE ARLEY CONSULTING COMPANY LIMITED

GAS MONITORING RECORD SHEET

JOB NUMBER: 22005

SITE: Land off Adelaide Street, Middleton

CLIENT: Universal Bargains Limited

ENGINEER: MYB

DATE: 19/12/22

WEATHER: Cloudy

PRESSURE AT:

Start: 984 mB

Finish: 984 mB

Sheet: 1 of 1

BH No	Flow (l/hour)	Peak CH ₄ (% v/v)	Steady CH ₄ (% v/v)	Peak CO ₂ (% v/v)	Steady CO ₂ (% v/v)	O ₂ (% v/v)	VOC (ppm)	Water Level (m bgl)	Depth to Base (m bgl)
BH1	0.0	-	0.0	-	0.9	19.4	-	-	-

Notes:

THE ARLEY CONSULTING COMPANY LIMITED

GAS MONITORING RECORD SHEET

JOB NUMBER: 22005

SITE: Land off Adelaide Street, Middleton

CLIENT: Universal Bargains Limited

ENGINEER: MYB

DATE: 29/12/22

WEATHER: Cloudy

PRESSURE AT:

Start: 998	mB
------------	----

Finish: 998 mB

Sheet: 1 of 1

BH No	Flow (l/hour)	Peak CH ₄ (% v/v)	Steady CH ₄ (% v/v)	Peak CO ₂ (% v/v)	Steady CO ₂ (% v/v)	O ₂ (% v/v)	VOC (ppm)	Water Level (m bgl)	Depth to Base (m bgl)
BH1	0.0	-	0.0	-	1.0	18.9	-	-	-
Notes:									

THE ARLEY CONSULTING COMPANY LIMITED

GAS MONITORING RECORD SHEET

JOB NUMBER: 22005	WEATHER: Showers/Cloudy, 10C
SITE: Land off Adelaide Street, Middleton	PRESSURE AT:
CLIENT: Universal Bargains Limited	Start: 995 mB
ENGINEER: MYB	Finish: 995 mB
DATE: 12/1/23	Sheet: 1 of 1

BH No	Flow (l/hour)	Peak CH ₄ (% v/v)	Steady CH ₄ (% v/v)	Peak CO ₂ (% v/v)	Steady CO ₂ (% v/v)	O ₂ (% v/v)	VOC (ppm)	Water Level (m bgl)	Depth to Base (m bgl)
BH1	0.0	-	0.0	-	1.0	18.7	-	3.64	-
BH5	0.0	-	0.0	-	1.3	18.1	-	3.45	-

Notes:

THE ARLEY CONSULTING COMPANY LIMITED

GAS MONITORING RECORD SHEET

JOB NUMBER: 22005 SITE: Land off Adelaide Street, Middleton CLIENT: Universal Bargains Limited ENGINEER: MYB DATE: 18/1/23	WEATHER: Sunny, 3C PRESSURE AT: Start: 997 mB Finish: 997 mB Sheet: 1 of 1
---	---

BH No	Flow (l/hour)	Peak CH ₄ (% v/v)	Steady CH ₄ (% v/v)	Peak CO ₂ (% v/v)	Steady CO ₂ (% v/v)	O ₂ (% v/v)	VOC (ppm)	Water Level (m bgl)	Depth to Base (m bgl)
BH1	0.0	-	0.0	-	1.0	18.7	-	3.67	-
BH5	0.0	-	0.0	-	1.2	18.6	-	3.40	-

Notes:

THE ARLEY CONSULTING COMPANY LIMITED

GAS MONITORING RECORD SHEET

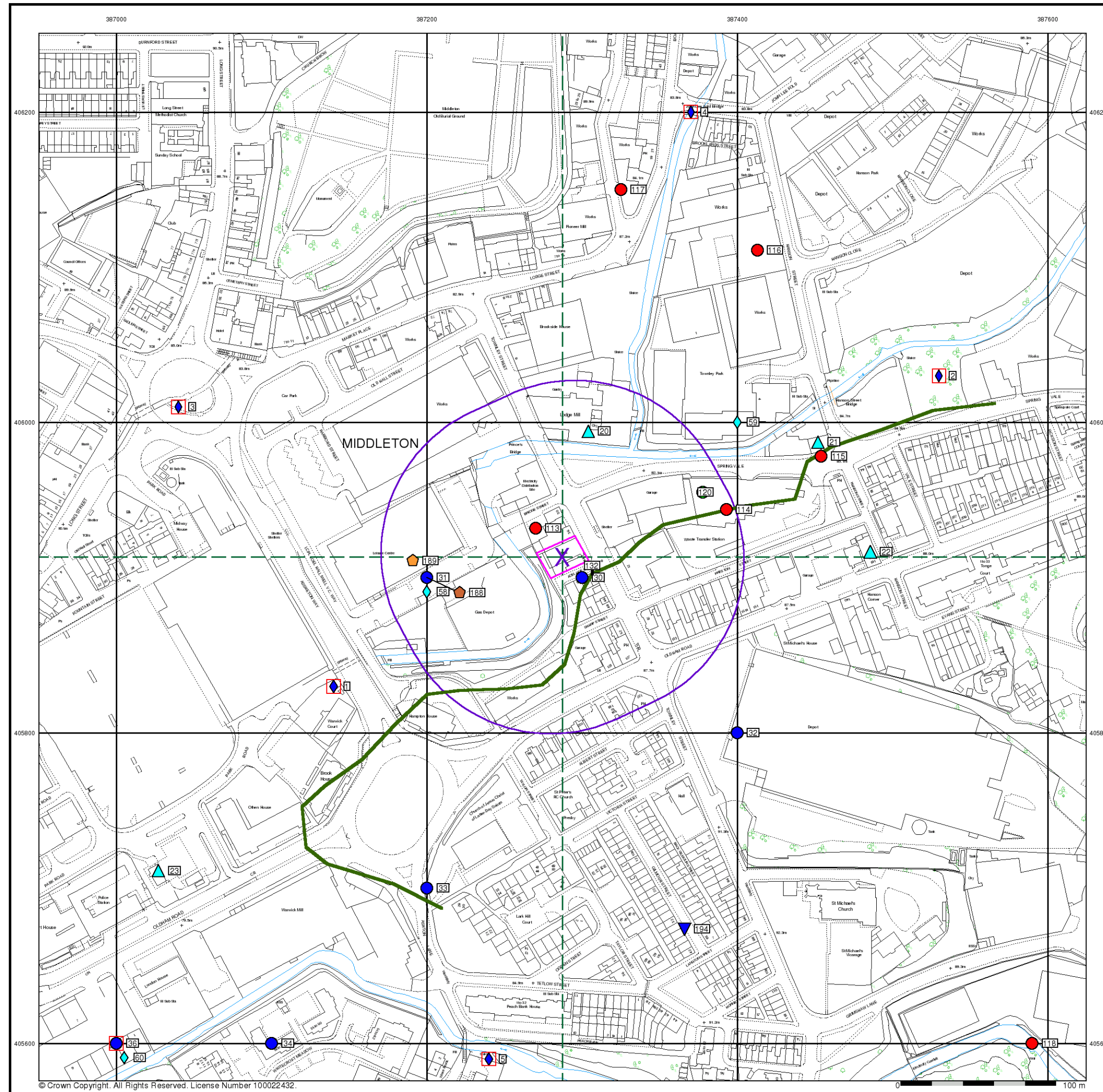
JOB NUMBER: 22005	WEATHER: Sunny, 3C
SITE: Land off Adelaide Street, Middleton	PRESSURE AT:
CLIENT: Universal Bargains Limited	Start: 1033 mB
ENGINEER: MYB	Finish: 1033 mB
DATE: 21/1/23	Sheet: 1 of 1

BH No	Flow (l/hour)	Peak CH ₄ (% v/v)	Steady CH ₄ (% v/v)	Peak CO ₂ (% v/v)	Steady CO ₂ (% v/v)	O ₂ (% v/v)	VOC (ppm)	Water Level (m bgl)	Depth to Base (m bgl)
BH1	0.0	-	0.0	-	1.8	19.0	-	3.83	3.95
BH5	0.0	-	0.0	-	0.5	19.7	-	3.60	4.9

Notes:

APPENDIX E

Envirocheck Report Extracts



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- ### General

 - Specified Site
 - Specified Buffer(s)
 - Bearing Reference Point
 - Map ID
 - Several of Type at Location
 - Pylon
 - Overhead Transmission Line
- ### Agency and Hydrological

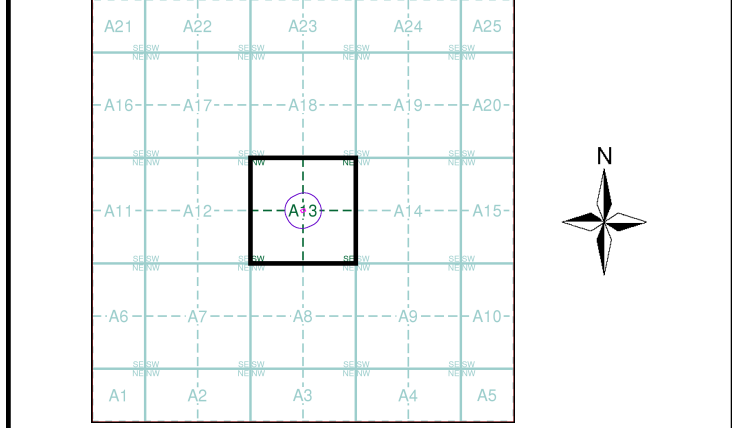
 - Contaminated Land Register Entry or Notice (Location)
 - Contaminated Land Register Entry or Notice
 - Discharge Consent
 - Enforcement or Prohibition Notice
 - Integrated Pollution Control
 - Integrated Pollution Prevention Control
 - Local Authority Integrated Pollution Prevention and Control
 - Local Authority Pollution Prevention and Control
 - Local Authority Pollution Prevention and Control Enforcement
 - Pollution Incident to Controlled Waters
 - Prosecution Relating to Authorised Processes
 - Prosecution Relating to Controlled Waters
 - Registered Radioactive Substance
 - River Network or Water Feature
 - River Quality Sampling Point
 - Substantiated Pollution Incident Register
 - Water Abstraction
 - Water Industry Act Referral
- ### Waste

 - BGS Recorded Landfill Site (Location)
 - BGS Recorded Landfill Site
 - EA Historic Landfill (Buffered Point)
 - EA Historic Landfill (Polygon)
 - Integrated Pollution Control Registered Waste Site
 - Licensed Waste Management Facility (Landfill Boundary)
 - Licensed Waste Management Facility (Location)
 - Local Authority Recorded Landfill Site (Location)
 - Local Authority Recorded Landfill Site
 - Potentially Infilled Land (Non-water)
 - Potentially Infilled Land (Non-water)
 - Potentially Infilled Land (Non-water)
 - Potentially Infilled Land (Water)
 - Potentially Infilled Land (Water)
 - Potentially Infilled Land (Water)
 - Registered Landfill Site
 - Registered Landfill Site (Location)
 - Registered Landfill Site (Point Buffered to 100m)
 - Registered Landfill Site (Point Buffered to 250m)
 - Registered Waste Transfer Site (Location)
 - Registered Waste Transfer Site
 - Registered Waste Treatment or Disposal Site (Location)
 - Registered Waste Treatment or Disposal Site
- ### Hazardous Substances

 - COMAH Site
 - Explosive Site
 - NIHHS Site
 - Planning Hazardous Substance Consent
 - Planning Hazardous Substance Enforcement
- ### Geological

 - BGS Recorded Mineral Site

Site Sensitivity Map - Segment A13



Order Details

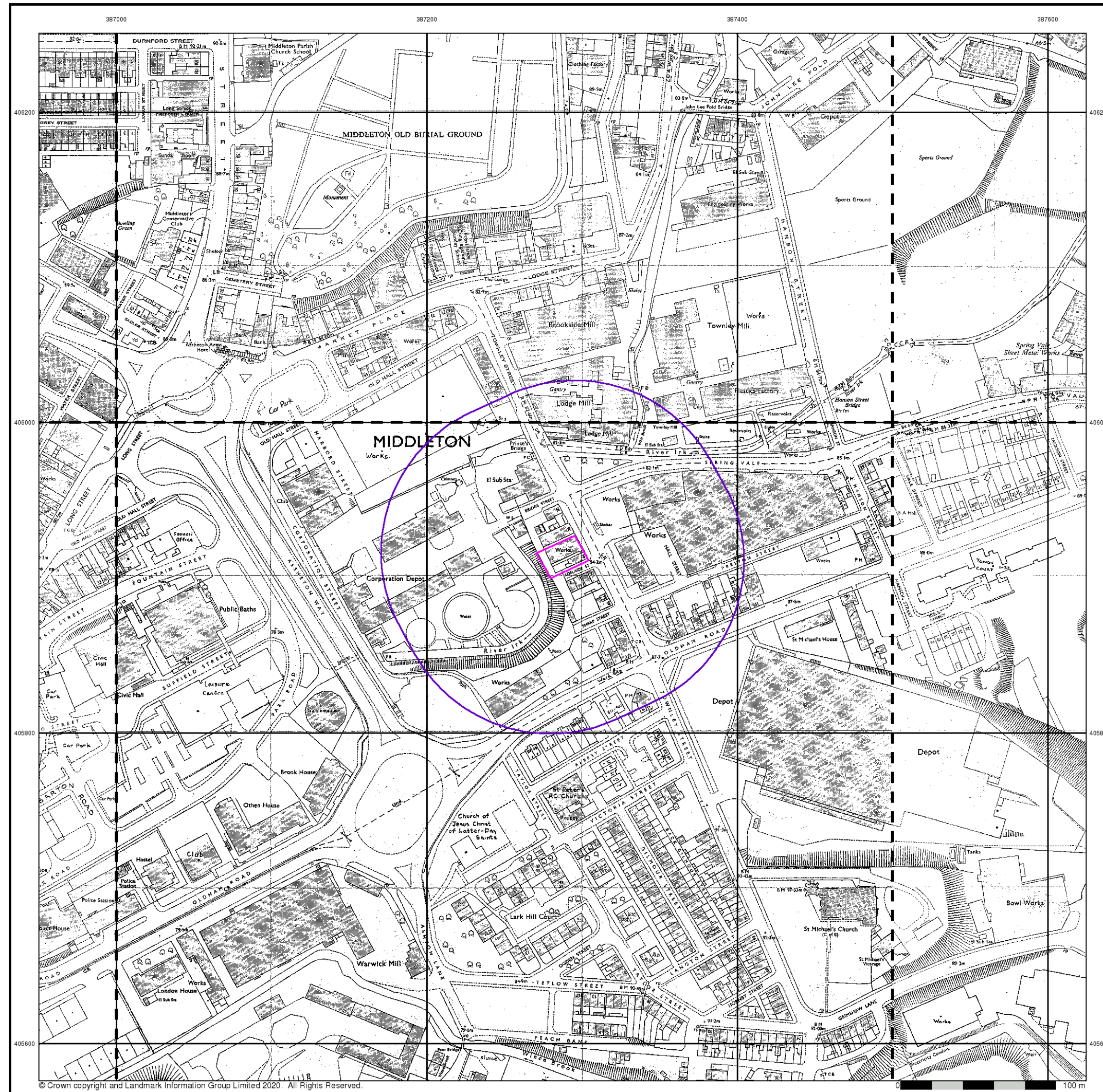
Order Number: 253207722_1_1
Customer Ref: M24 1BF
National Grid Reference: 387290, 405910
Slice: A
Site Area (Ha): 0.06
Plot Buffer (m): 100

Site Details

, 38-42, Townley Street, Middleton, Manchester, M24 1AS

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
119	Licensed Waste Management Facilities (Locations) Licence Number: 400109 Location: Peel Waste Limited, Grimshaw Lane, Middleton, Manchester, M24 2AE Operator Name: Peel Waste Limited Operator Location: Not Supplied Authority: Environment Agency - North West Region, South Area Site Category: HCl Waste TS + treatment Licence Status: Expired Issued: 26th March 2013 Last Modified: Not Supplied Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: Not Supplied IPPC Reference: Not Supplied Positional Accuracy: Located by supplier to within 10m	A9NW (SE)	672	2	387879 405564
	Local Authority Landfill Coverage Name: Rochdale Metropolitan Borough Council - Has no landfill data to supply		0	3	387287 405913
120	Potentially Infilled Land (Non-Water) Bearing Ref: NE Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1984	A13NE (NE)	86	-	387378 405955
121	Potentially Infilled Land (Non-Water) Bearing Ref: SE Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1984	A13SE (SE)	171	-	387361 405750
122	Potentially Infilled Land (Non-Water) Bearing Ref: N Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1984	A13NE (N)	190	-	387312 406116
123	Potentially Infilled Land (Non-Water) Bearing Ref: S Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1984	A13SW (S)	306	-	387266 405595
124	Potentially Infilled Land (Non-Water) Bearing Ref: S Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1984	A8NW (S)	365	-	387162 405555
125	Potentially Infilled Land (Non-Water) Bearing Ref: SW Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1984	A8NW (SW)	465	-	387035 405505
126	Potentially Infilled Land (Non-Water) Bearing Ref: E Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1984	A14SW (E)	564	-	387868 405901
127	Potentially Infilled Land (Non-Water) Bearing Ref: SE Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1984	A9NW (SE)	692	-	387655 405315
128	Potentially Infilled Land (Non-Water) Bearing Ref: NE Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1984	A19SW (NE)	725	-	387687 406537
129	Potentially Infilled Land (Non-Water) Bearing Ref: S Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1984	A8SW (S)	779	-	387242 405122
130	Potentially Infilled Land (Non-Water) Bearing Ref: NE Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1984	A19SE (NE)	793	-	388006 406280
131	Potentially Infilled Land (Non-Water) Bearing Ref: NE Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1984	A19SE (NE)	920	-	388061 406436

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
132	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1848	A13SE (SE)	9	-	387306 405902
133	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1848	A13NW (N)	151	-	387270 406075
134	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1848	A13NW (NW)	221	-	387076 406020
135	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1848	A13NW (NW)	224	-	387160 406110
136	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A13NE (NE)	349	-	387564 406148
137	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1848	A12NE (W)	357	-	386914 405924
138	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A18SE (N)	400	-	387341 406324
139	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1848	A12NE (W)	403	-	386869 405939
140	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1894	A12SE (SW)	410	-	386900 405742
141	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1894	A8NE (S)	416	-	387391 405500
142	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1848	A18SW (N)	434	-	387132 406329
143	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1848	A12NE (NW)	452	-	386887 406155
144	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1894	A7NE (SW)	496	-	386910 405569
145	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1848	A8NE (S)	511	-	387438 405415
146	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1848	A9NW (SE)	574	-	387683 405481
147	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A14SW (E)	578	-	387838 405691
148	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1848	A17SE (NW)	580	-	386867 406331
149	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1848	A9NW (SE)	632	-	387798 405518
150	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1956	A14SW (SE)	637	-	387885 405652
151	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1848	A7NE (SW)	644	-	386743 405544
152	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1848	A12NW (W)	667	-	386612 406014



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Additional SIMs

Published 1978 - 1984

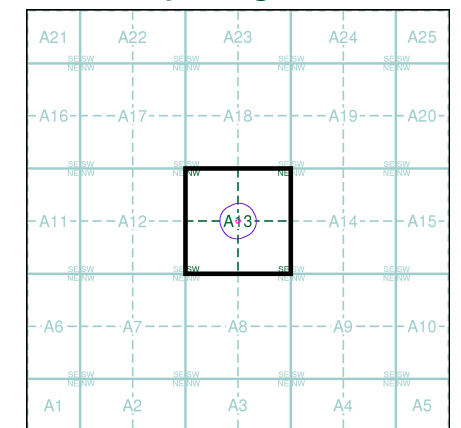
Source map scale - 1:1,250

The SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') are further, minor editions of mapping which were produced and published in between the main editions as an area was updated. They date from 1947 to 1994, and contain detailed information on buildings, roads and land-use. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)

SD8606SE 1981 1:1,250	SD8706SW 1978 1:1,250	SD8706SE 1981 1:1,250
SD8605NE 1983 1:1,250	SD8705NW 1984 1:1,250	SD8705NE 1983 1:1,250

Historical Map - Segment A13



Order Details

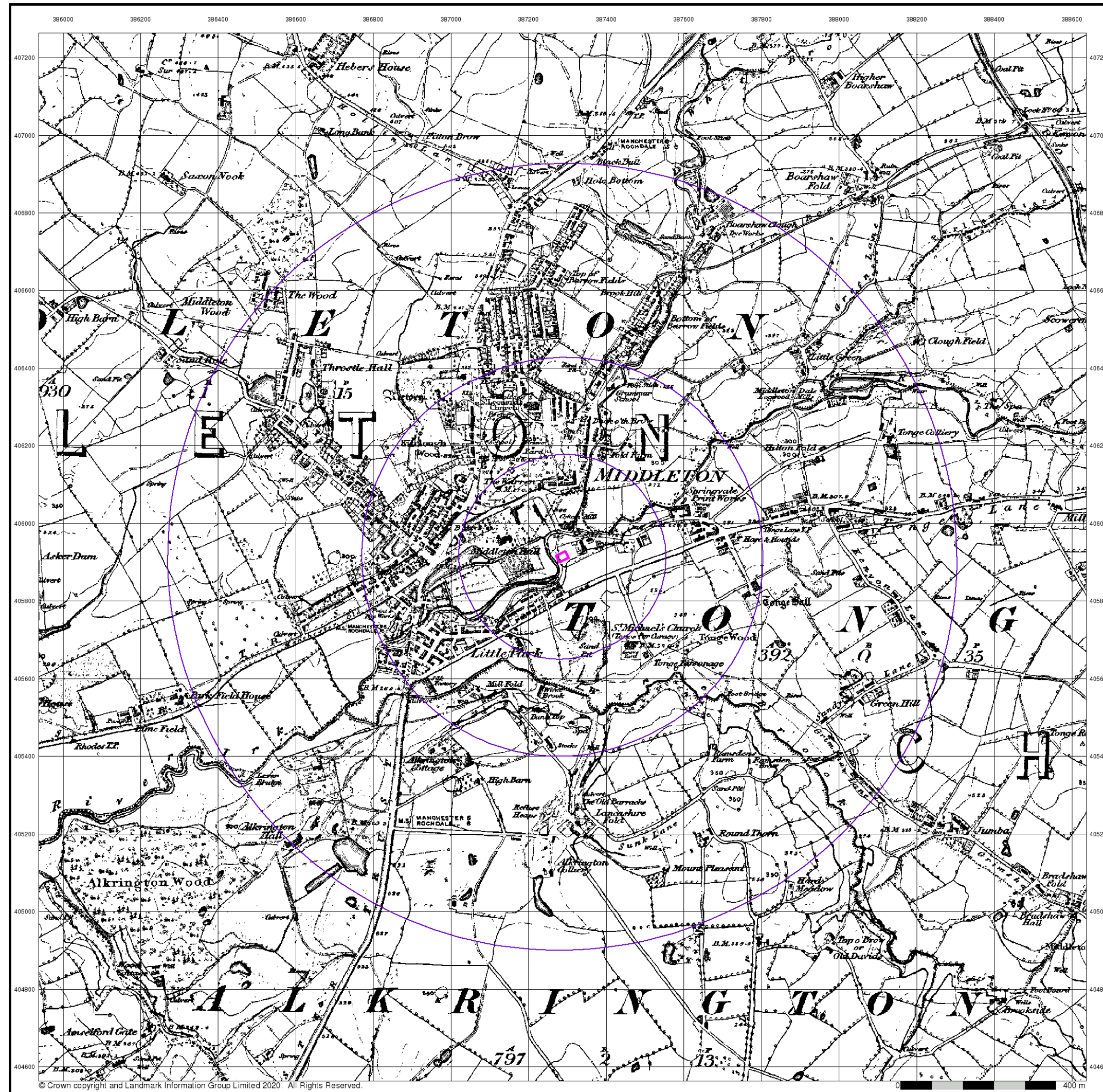
Order Number: 253207722_1_1
Customer Ref: M24 1BF
National Grid Reference: 387290, 405910
Slice: A
Site Area (Ha): 0.06
Search Buffer (m): 100

Site Details

, 38-42, Townley Street, Middleton, Manchester, M24 1AS

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Fax: 0844 844 9951
Web: www.envirocheck.co.uk



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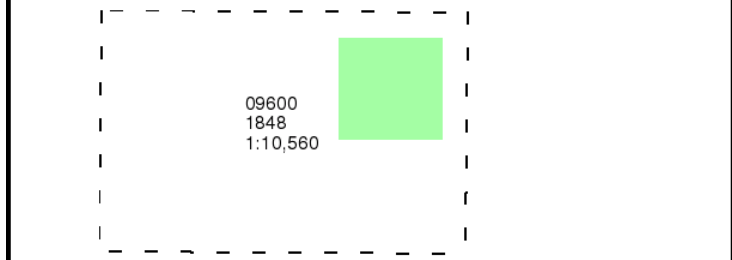
Lancashire And Furness

Published 1848

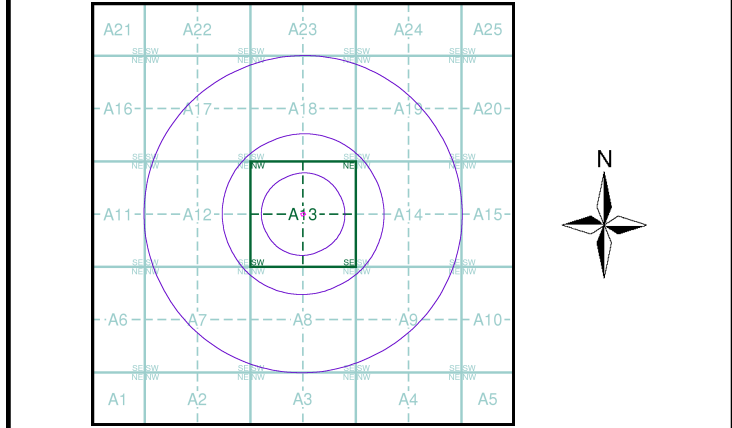
Source map scale - 1:10,560

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940's, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)



Historical Map - Slice A



Order Details	
Order Number:	253207722_1_1
Customer Ref:	M24 1BF
National Grid Reference:	387290, 405910
Slice:	A
Site Area (Ha):	0.06
Search Buffer (m):	1000

Site Details

, 38-42, Townley Street, Middleton, Manchester, M24 1AS

APPENDIX G

Photographs

38-44 Townley Street, Middleton, Rochdale
Photographs – August to December 2022



Photograph No 1: View from Townley Street Pre-Demolition



Photograph No 2: View of Southern Elevation Pre-Demolition

38-44 Townley Street, Middleton, Rochdale
Photographs – August to December 2022



Photograph No 3: View of Outside Space Pre-Demolition



Photograph No 4: View from Townley Street Post Demolition

38-44 Townley Street, Middleton, Rochdale
Photographs – August to December 2022



Photograph No 5: View of Site from South-East Corner



Photograph No 6: View of Site from the North-West Corner

38-44 Townley Street, Middleton, Rochdale
Photographs – August to December 2022



Photograph No 7: Drilling Borehole No 2



Photograph No 8: Drilling Borehole No 3/3A

APPENDIX H

Drawings & Figures



EXTRACT FROM OS STREET VIEW DATA OBTAINED FROM OS OPENDATA
ORDNANCE SURVEY © CROWN COPYRIGHT 1991. ALL RIGHTS RESERVED. LICENCE NUMBER 100031841.

THE ARLEY CONSULTING COMPANY LIMITED

Chorleian House
49-51 St Thomas's Road
Chorley, Lancashire PR7 1JE



Tel: 01257 278300
Fax: 01257 268063
E-mail: mailbox@taccl.co.uk

CLIENT

UNIVERSAL BARGAINS LIMITED

JOB TITLE

LAND OFF ADELAIDE STREET, MIDDLETON

DRAWING TITLE

SITE LOCATION PLAN

DRAWN BY.

M.Y.B.

APPROVED BY.

M.L.

DATE.

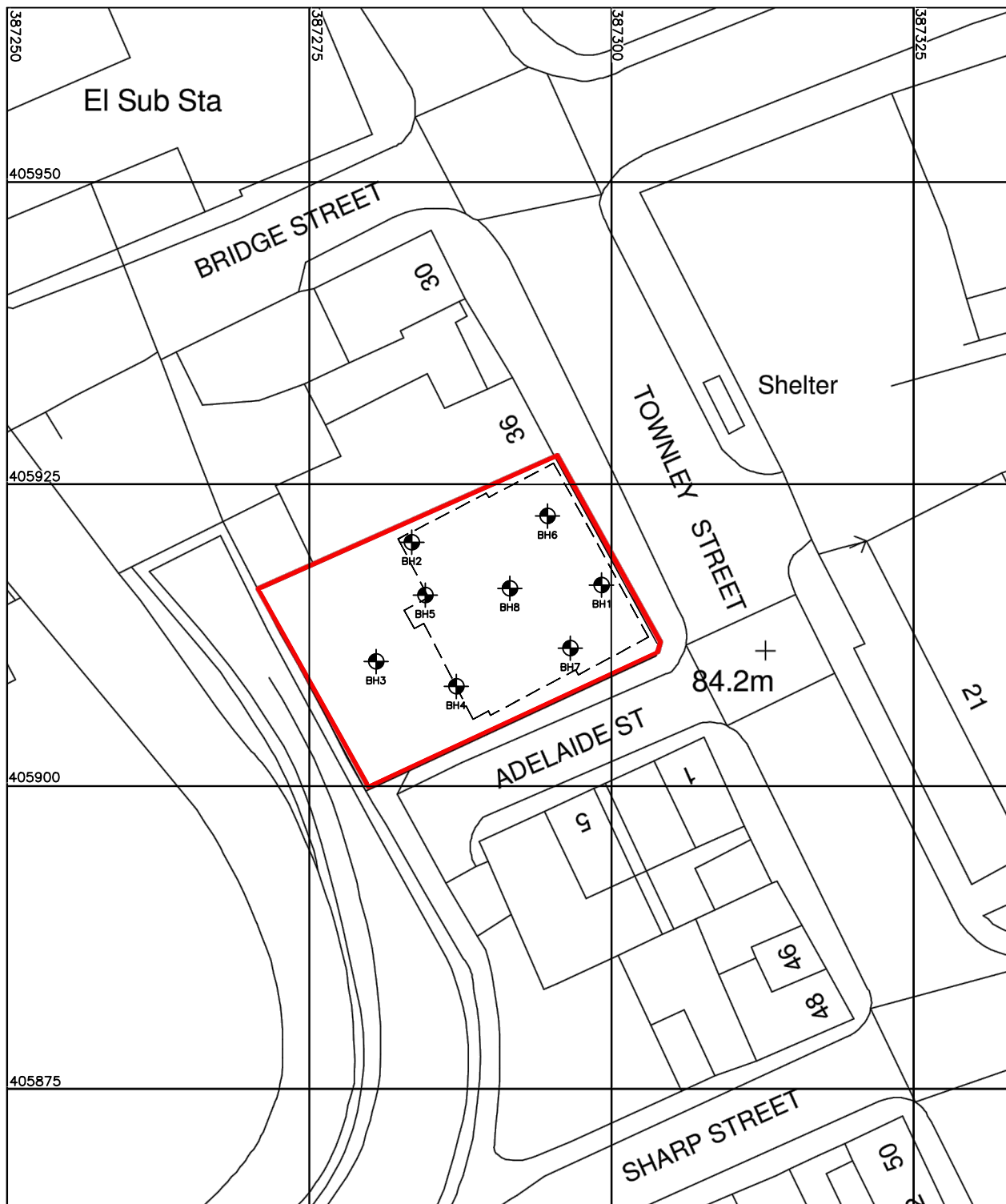
21/12/2022

SCALE AT A4.

1:50,000

DRAWING No.

22005/01



LEGEND

- SITE BOUNDARY
- - - PROPOSED BUILDING
-  BOREHOLE

THE ARLEY CONSULTING COMPANY LIMITED

Chorleian House
49-51 St Thomas's Road
Chorley, Lancashire PR7 1JE



Tel: 01257 278300
Fax: 01257 268063
E-mail: mailbox@taccl.co.uk

CLIENT

UNIVERSAL BARGAINS LIMITED

JOB TITLE

LAND OFF ADELAIDE STREET, MIDDLETON

DRAWING TITLE

BOREHOLE LAYOUT PLAN

DRAWN BY.

M.Y.B.

APPROVED BY.

M.L.

DATE.

21/12/2022

SCALE AT A4.

1:500

DRAWING No.

22005/02A

Note: Do not scale, Contractor must check all dimensions on site prior to commencing any works. This Drawing and design is the Copyright of Greenfield Design Services Ltd and must not be copied or reproduced without written consent. This drawing is produced for Planning & Building Regulations Permission Only



DENOTES: SITE BOUNDARY
SITE AREA = 495M²

DENOTES: BUILDING AREA
BUILDING AREA = 240M²



PROPOSED SITE PLAN
1 : 100

The site was originally housing and is now a bar, past uses include textiles and possible engineering (or similar).

Off-site industry relevant to the site are a garage workshop.

Potential contaminants: Heavy metals, Sulphate, Cyanide, VOCs, BTEX Compound, TPHs, Phenols, Asbestos, PAHs.

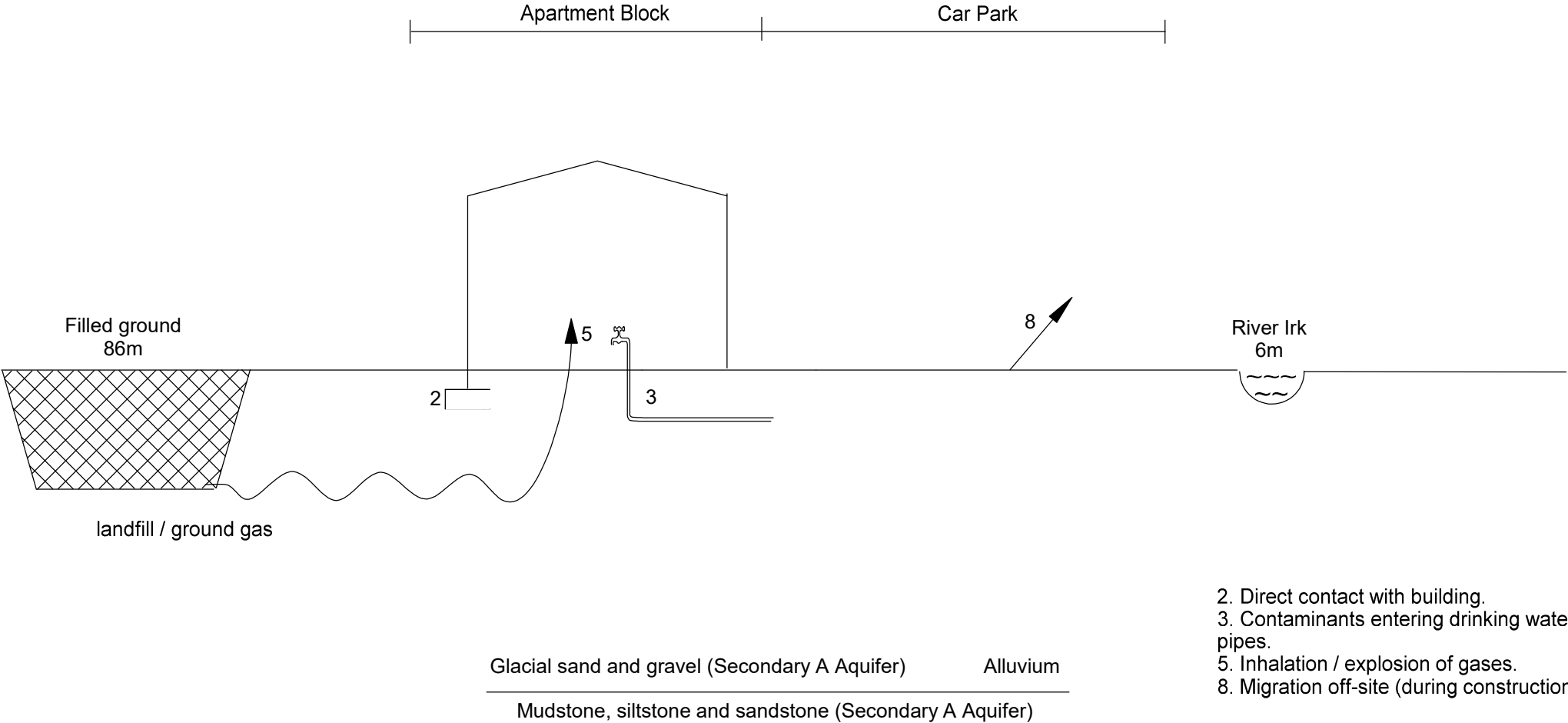
No risk to controlled waters expected.

No risk to householders expected.

Low gas risk to the development anticipated.

No radon protection measures required.

38 - 44 TOWNLEY STREET, MIDDLETON, M24 1BF		WORMS EYE
Conceptual Model based on PRA		52 Bank Parade Burnley, BB11 1TS
Not to Scale	03.09.2020	01282 414 649



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