BROWNFIELD SOLUTIONS LTD

GEO-ENVIRONMENTAL ENGINEERING EXCELLENCE

KELLEN HOMES & GREATER MANCHESTER YOUTH FEDERATION

Mount Road, Gorton

Remedial Strategy

NA/C5150/11739 Rev F

May 2026

EXECUTIVE SUMMARY OF REMEDIAL PROPOSALS	
Remedial Requirements	**Verification Requirements**
Side wide strip of existing topsoil with combination of: • Removal off site to suitable facility / suitable end use. • Stockpiling for later re-use / direct placement in suitable areas of the site (e.g. below the sports pitches). Placement to be carried out under declared MMP under the DoWCoP. Excavation, screening and engineering / re-use of remaining soils to an appropriate specification, as required.	Materials destined for re-use to meet chemical criteria as per Appendix A. Records of materials placement locations and depths (survey data, load tracking and photographic evidence).
Installation of clean cover system above any existing made ground which should comprise (top down): • 600mm "clean" validated topsoil/subsoil in private gardens. • Minimum 600mm "clean" validated topsoil/subsoil plus an engineered geotextile element at the base to prevent soils mixing in the area of the sports pitches. • 450mm "clean" validated topsoil/subsoil in all other areas of Public Open Space (POS). Elsewhere hardstanding will break the pathway to site end users/ human health. For areas of proposed trees, a tree pit will need to be excavated and additional subsoil provided above the hard dig layer / membrane; tree and shrub pit proposals would comprise 900mm and 600mm pit depths respectively. The above is subject to agreement with the local authority, and requirements should be confirmed at the earliest opportunity.	Imported topsoil and subsoil, and any materials re-used to require chemical testing as per Appendix A. Thickness of clean cover systems requires validation. First 10 plots to be inspected then falling to 1 in 4 plots if results are acceptable. In areas of soft landscaping/public open space (POS), validation pits should be excavated at a frequency of circa one pit per 25m x 25m area of POS. BSL suggest this is reduced to a total of 10 No. pits across the sports pitches to avoid damage – survey data could also be utilised (spot heights prior to placement and after placement of clean soils).
On completion of the above follow final verification reporting requirements.	Final verification and reporting to include (but not limited to): • The size and extent of any remedial excavations (lateral extent and depth plotted on suitable plans). • All sampling locations and test results. • All the material imported to the site (including volume, source and chemical composition). • All the material exported from the site (including volume, destination and chemical composition). • Clean cover thickness validation records.

This executive summary should be read in conjunction with the full report, reference NA/C5150/11739 Rev F,and not as a standalone document.

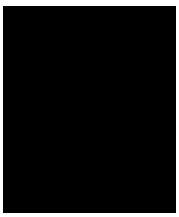
PROJECT QUALITY CONTROL DATA SHEET

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	A	26/07/2023	Update after supplementary investigation.
	B	11/09/2023	Update to drawing numbers.
	C	23/11/2023	Updates to site layout and development description.
	D	02/05/2024	Updates following MCC comments.
	E	19/11/2024	Updates following MCC comments.
	F	19/05/2026	Update following agreed amendment to soil testing frequencies.

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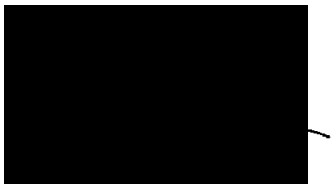


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Revision A – 19/05/2025

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DRAWINGS		
Drawing Number	**Rev**	**Title**
KH008-A-100	P8	CAD Site Layout
C5150/01	-	Site Location Plan
C5150/02	-	Site Features Plan
C5150/03A&B	-	Exploratory Hole Location Plan

APPENDICIES	
Appendix	**Title**
Appendix A	Chemical Specification for Soils
Appendix B	BSL Guidance -Re-use of Waste and Disposal
Appendix C	UU Pipeline Risk Assessment

1.0 INTRODUCTION

1.1 Context

This Remedial Strategy has been produced by Brownfield Solutions Limited (BSL) for Kellen Homes Ltd & GMYF on a site off Mount Road, Gorton and has been completed in general accordance with the following guidance:

- Environment Agency guidance - Land Contamination: Risk Management (LCRM).
- BS 10175:2011+A2:2017 Investigation of Potentially Contaminated Sites.
- NHBC Standards. Chapter 4.1: Land Quality - Managing Ground Conditions.

1.2 Background and Scope

This Remedial Strategy is to set out how the remediation of the site will be undertaken and how the works will be validated. The document explains how the works will be permitted under current regulatory regimes.

The scope of work for this document comprises a summary of the ground model, summaries of the of risk assessments carried out, a remedial options appraisal (LCRM Stage 2), Remedial Strategy (LCRM stage 3) implementation details and any validation requirements.

Note that geotechnical aspects are not specifically addressed within this document as it seeks to meet the requirements set out within LCRM. Geotechnical aspects should be considered within a Geotechnical Design Report in accordance with Eurocode 7 or a suitable site-specific Earthworks Strategy.

1.3 Proposed Development

"Full planning application proposing the erection of a youth, sports and community hub (Use Class E(d)(g)), F2(b)), 2no football pitches, combined netball and basketball court, cricket strip (Use Class F2 (c)), a two storey apartment building comprising 36no apartments for young person's accommodation (Use Class C3) and 267no dwellinghouses (Use Class C3a), with associated landscaping, public realm, ecological mitigation, refuse storage, drainage, car parking and other associated works, with access from Wembley Road and Mount Road".

1.4 Available Information

This report should be read in conjunction with the BSL Phase I Geo-Environmental Assessment Report (LC/C5150/11494/Rev B) issued in November 2023, and the BSL Phase II Geo-Environmental Assessment Report (MS/C5150/11591 Rev E) issued in November 2023.

A supplementary investigation was carried out to further characterise the topsoil in May 2023, report reference MB/C5150/12138.

It is assumed that the Local Planning Authority will have provided the above reports to the appropriate statutory consultees and the recommendations therein have been accepted for the purposes of this strategy.

1.5 Limitations

This report has been prepared for the sole use and reliance of the Client, Kellen Homes Ltd & GMYF. This report shall not be relied upon or transferred to any other parties without the express written

authorisation of BSL. If an unauthorised third party comes into possession of this report they rely on it at their risk and the authors owe them no duty of care or skill.

Current UK guidance and legislation has been used in the environmental assessment of the site, BSL is not liable for any subsequent changes in the guidance and legislation.

BSL have used reasonable skill, care and diligence in the production of this report. The findings and opinions conveyed via this report are based on information obtained from a number of sources as detailed within this report, BSL have assumed this information is correct and reliable. Nevertheless, BSL cannot and does not guarantee the authenticity or reliability of the information it has relied upon.

The recommendations within this report are based upon the proposed site end use provided to BSL at the time of writing. If the end use or development layout changes from the proposal, then the recommendations may change or become invalid.

The site plans enclosed in this report should not be scaled off. Any site boundary line depicted on plans does not imply legal ownership of land.

Any recommendations made in this report should be confirmed with the Regulatory Authorities prior to implementation to ensure compliance.

2.0 GROUND MODEL SUMMARY

2.1 Description of Site

The site is located off Mount Road, Gorton, M18 7SU. It is centred on National Grid Reference 388289, 395020 as shown on the Site Location Plan, Drawing No. C5150/01.

The main site features and potential issues identified during the time of the intrusive investigation are detailed below and are shown on the Site Features Plan, Drawing No C5150/02.

Feature	Description
Site Area	9.07 hectares.
Site Access	Access to the site is gained off Mount Road to the west of the site. The entrance is located in the northwest corner of the site.
Current Land Use and Site Features	The site as existing is vacant, with no public access, having previously been used as playing pitches until 2019. The site is rectangular in shape with the majority formed of grass land aside from an area of hard standing where the former changing facilities once stood. The former vehicular access is from Mount Road.
Potential Sources of Gross Contamination	No potential sources of contamination were identified during the site walkover.
Vegetation	There are sporadic mature/semi-mature trees located along the site boundaries.
Topography	The site is generally flat.
Site Boundaries	The north boundary comprises wooden fence panelling and mesh fencing backing onto gardens and a new housing development. The east boundary currently comprises temporary heras fencing. The south boundary comprises steel palisade fencing. The east boundary is defined by metal mesh fencing.
Surrounding Area	The site is set within a mixed commercial and residential area. The northern boundary of the site sits adjacent to a residential development build by Sedona Homes comprising terraced and semi detached properties, with Mannering Street running in between, separated by fencing. To the east is Wembley Road, which hosts a number of semidetached dwellings. To the west is Mount Road, with Gorton Primary School, Manchester Boxing Centre and Nutsford Vale Park adjacent to the street. To the south lies a footway which connects Mount Road to Wembley Road. Further south is Cedar Mount Academy.

2.2 Environmental Setting

Site History
In summary, the historical map evidence indicates that the site has remained as sports fields / football pitches since 1922. Several small buildings have been present across the site. The surrounding area is predominantly residential, however historically multiple ponds existed in close proximity to the site which are presumed to be infilled. Additionally, a large clay pit was present to the west of the site (later in use as a landfill).

Published Geology and Hydrogeology
From the Phase 1 Assessment and published geology, it was anticipated that ground conditions would comprise the following sequence of strata (top down):

- Made Ground; over
- Diamicton Till; over

- Chester Pebble Beds Formation.

Hydrogeology
Based on the inferred geology, a summary of the Environment Agency aquifer designations is presented in the table below:

Stratum	Coverage	Aquifer Designation
Diamicton Till	Full Site	Secondary Aquifer (Undifferentiated). The classification is assigned where it is not possible to attribute either category A or B to the aquifer.
Chester Pebble Beds Formation	Full Site	Principal Aquifer. This is Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale.

The site does not lie within 500m of a Source Protection Zone.

A historical groundwater abstraction for general cooling was located 246m south of the site, held by CBA Enterprises LTD. The nearest active abstraction is located approximately 1742m north and is held by Cemex UK Materials Limited. Review of the geology 2km away reveals this abstraction is from the Chester Pebble Beds Formation.

Hydrology
The nearest watercourse and surface water features is an unnamed and unmapped river crossing the east of the site. The closest major watercourse, the Gore Brook, is located 894m north of the site.

Potential Environmental Constraints
There is one BGS recorded landfill listed as being 305m west of the site at Matthews Lane. This site is also listed as an EA historical landfill extending to 97m west of the site and accepting inert, industrial, commercial, household, special and liquid sludge waste between 1969 and 1978. The Matthews Lane landfill site is located at the above-referenced clay pit. Information from Manchester City Council Environmental Protection Team indicates this is not gassing off-site.

Other historical landfill sites were recorded at Pink Bank Lane 244m northwest, accepting inert, commercial and household waste in 1981, and at Levenshulme Trading Estate 333m south accepting industrial and special waste, though does not specify dates of inputting.

There are two current waste management sites recorded within 250m of the site, both of which are 202m south of the site and relate to metal recycling.

There are three historical waste management sites recorded within 250m of the site, all of which relate to recycling facilities at an address 215m south of the site.

In addition, two ponds (potential gassing risks) were originally present onsite in the north on 1848 mapping, but no longer present from 1890. Multiple ponds are shown from the earliest mapping within 250m of the site. As the surrounding land became developed as part of Gorton, the ponds are no longer shown and are presumed to be infilled. Mapping from 1956 shows that all ponds were infilled.

Radon
Information from the environmental database report indicates the property is not in a radon affected area and therefore no radon protective measures are necessary in accordance with BRE Report 211 'Radon – Guidance on protective measures for new dwellings' 2015 Edition.

UXO Risk

In accordance with CIRIA Report C681, BSL have reviewed non-specialist UXO data for the site using the online Zetica Bomb Risk Mapping data. The map indicates the site to be in an area where the bomb risk is moderate.

Since the site is considered to be at moderate UXO risk, in order to determine if and what further action may be required to mitigate the risk, a Preliminary UXO Risk Assessment was commissioned from 1st Line Defence Limited, Report Ref PA16560-00, dated 23rd September 2022 in accordance with the recommended process set out in CIRIA Report C681.

The report indicates that during WWII the 48th Battalion Manchester Home Guard utilised the site, however given its location and proximity to housing, schools and roadways it is unlikely to have been used for extensive exercises or live weapons training. Additionally, no bombs were recorded within or adjacent to the site boundary.

The report concluded that UXO risks at the site are not considered to be higher than the 'background risk' of finding UXO in this part of the country, with the site assigned as low / minimal risk, and therefore no further action is recommended for the site.

2.3 Ground Conditions

Observed Geology and Groundwater
From the investigations carried out, the ground conditions can be summarised as below (top down):

- Made ground generally comprising sandy gravel from ground level to between 0.40m and 2.50mbgl.
- A layer of softer organic clay, assumed to be relict topsoil, was encountered between 0.70 and 2.60m across the site. This band was not found to be more than 0.50m thick, generally 0.30m or less thick.
- Natural superficial deposits generally comprising firm to stiff clay proven to depths between 2.20m and 4.45mbgl.
- Groundwater levels ranging between 2.30m and 3.00m bgl during site works.
- Post site works monitoring levels ranging between 0.52m and 4.01m bgl. The shallowest groundwater levels were in WS04 & WS07 which are the closest exploratory boreholes to the culverted river.

Observations
With the exception of ash and clinker observed as a minor constituent in the made ground soils, no other evidence of chemical contamination was observed at the site. It should also be noted that glass/sharps were observed in the topsoil and the made ground immediately underlying the topsoil.

3.0 SUMMARY OF RISK ASSESSMENTS

3.1 General

The site investigations and assessments have confirmed the presence of pervasive heavy metal and PAH contamination within the topsoil, made ground topsoil and general made ground, as detailed in the sections below.

3.2 Human Health Risks

As part of the initial phase II intrusive investigation, samples were tested for an assessment of the chemical contamination that may pose a risk to human health. The results were examined with reference the LQM/CIEH S4ULs and DEFRA C4SLs for a residential end use with homegrown produce. The apparent exceedance of the relevant screening value is taken as indicating further detailed assessment or remedial action is required.

Metals
The following elevated metals were detected:

Exploratory Hole	Depth (m)	Metal	Concentration (mg/kg)	Adopted Screening Value (mg/kg)	Strata
WS03	0.10-0.20	Arsenic	53	37	Topsoil
WS04	0.30-0.50	Arsenic	120	37	Made Ground
WS05	0.30-0.60	Arsenic	190	37	Made Ground
WS06	0.30-0.60	Arsenic	180	37	Made Ground
WS07	0.40-0.60	Arsenic	130	37	Made Ground
WS08	0.30-0.60	Arsenic	160	37	Made Ground
WS09	0.30-0.60	Arsenic	140	37	Made Ground
WS11	0.20-0.40	Arsenic	140	37	Made Ground
WS12	0.30-0.60	Arsenic	160	37	Made Ground
TP06	0.10-0.20	Arsenic	39	37	Topsoil
TP07	0.30-0.60	Arsenic	140	37	Made Ground
TP08	0.30-0.40	Arsenic	210	37	Made Ground
TP10	0.30-0.60	Arsenic	170	37	Made Ground
TP11	0.10-0.20	Arsenic	67	37	Made Ground Topsoil
TP12	0.30-0.45	Arsenic	130	37	Made Ground
TP13	0.30-0.60	Arsenic	140	37	Made Ground
TP14	0.30-0.60	Arsenic	190	37	Made Ground
TP17	0.30-0.60	Arsenic	240	37	Made Ground
TP20	0.30-0.60	Arsenic	180	37	Made Ground
TP21	0.30-0.60	Arsenic	190	37	Made Ground
TP23	0.30-0.60	Arsenic	120	37	Made Ground
TP24	0.10-0.20	Arsenic	48	37	Made Ground Topsoil
TP25	0.30-0.60	Arsenic	190	37	Made Ground
TP27	0.30-0.60	Arsenic	150	37	Made Ground
TP28	0.30-0.60	Arsenic	190	37	Made Ground
TP29	0.30-0.60	Arsenic	180	37	Made Ground
TP30	0.10-0.20	Arsenic	45	37	Made Ground Topsoil
TP31	0.30-0.60	Arsenic	130	37	Made Ground
TP32	0.30-0.60	Arsenic	120	37	Made Ground
TP34	0.30-0.60	Arsenic	210	37	Made Ground
TP35	0.30-0.60	Arsenic	180	37	Made Ground
TP36	0.30-0.60	Arsenic	170	37	Made Ground

Exploratory Hole	Depth (m)	Metal	Concentration (mg/kg)	Adopted Screening Value (mg/kg)	Strata
TP37	0.30-0.60	Arsenic	140	37	Made Ground
TP40	0.30-0.60	Arsenic	130	37	Made Ground
TP29	030-0.60	Copper	2700	2400	Made Ground
WS01	0.10	Lead	520	200	Made Ground Topsoil
WS03	0.10-0.20	Lead	390	200	Topsoil
WS04	0.30-0.50	Lead	3500	200	Made Ground
WS05	0.30-0.60	Lead	350	200	Made Ground
WS06	0.30-0.60	Lead	580	200	Made Ground
WS07	0.40-0.60	Lead	1700	200	Made Ground
WS08	0.30-0.60	Lead	640	200	Made Ground
WS09	0.30-0.60	Lead	1400	200	Made Ground
WS10	0.10-0.20	Lead	390	200	Made Ground Topsoil
WS11	0.20-0.40	Lead	980	200	Made Ground
WS12	0.30-0.60	Lead	700	200	Made Ground
TP05	0.10-0.20	Lead	220	200	Topsoil
TP06	0.10-0.20	Lead	370	200	Topsoil
TP07	0.30-0.60	Lead	990	200	Made Ground
TP08	0.30-0.40	Lead	1700	200	Made Ground
TP10	0.30-0.60	Lead	1700	200	Made Ground
TP11	0.10-0.20	Lead	1300	200	Made Ground Topsoil
TP12	0.30-0.45	Lead	980	200	Made Ground
TP13	0.30-0.60	Lead	1100	200	Made Ground
TP14	0.30-0.60	Lead	580	200	Made Ground
TP15	0.10-0.20	Lead	260	200	Topsoil
TP17	0.30-0.60	Lead	1600	200	Made Ground
TP20	0.30-0.60	Lead	610	200	Made Ground
TP21	0.30-0.60	Lead	640	200	Made Ground
TP23	0.30-0.60	Lead	840	200	Made Ground
TP24	0.10-0.20	Lead	960	200	Made Ground Topsoil
TP25	0.30-0.60	Lead	1200	200	Made Ground
TP27	0.30-0.60	Lead	660	200	Made Ground
TP28	0.30-0.60	Lead	800	200	Made Ground
TP29	0.30-0.60	Lead	760	200	Made Ground
TP30	0.10-0.20	Lead	500	200	Made Ground Topsoil
TP31	0.30-0.60	Lead	1600	200	Made Ground
TP32	0.30-0.60	Lead	910	200	Made Ground
TP34	0.30-0.60	Lead	1200	200	Made Ground
TP35	0.30-0.60	Lead	960	200	Made Ground
TP36	0.30-0.60	Lead	790	200	Made Ground
TP37	0.30-0.60	Lead	1300	200	Made Ground
TP40	0.30-0.60	Lead	1600	200	Made Ground
WS01	0.10	Mercury	1.4	1.2	Made Ground Topsoil
TP08	0.30-0.40	Mercury	4.8	1.2	Made Ground
TP11	0.10-0.20	Mercury	2.1	1.2	Made Ground Topsoil
TP12	0.30-0.45	Mercury	6.8	1.2	Made Ground
TP24	0.10-0.20	Mercury	4.1	1.2	Made Ground Topsoil
TP30	0.10-0.20	Mercury	2.0	1.2	Made Ground Topsoil
TP37	0.30-0.60	Mercury	8.9	1.2	Made Ground
WS08	0.30-0.60	Nickel	140	130	Made Ground
TP17	0.30-0.60	Nickel	140	130	Made Ground

Asbestos

No asbestos fibres have been detected in any of the 10 samples screened. Works were carried out by an engineer holding NLW CAT B asbestos training who reported that no visual evidence of asbestos was noted.

Poly Aromatic Hydrocarbons (PAHs)

Adopting the surrogate marker approach, elevated PAHs were recorded in numerous locations. The location(s) and elevated species of PAH's are shown in the table below:

Exploratory Hole	Depth (m)	Species	Concentration (mg/kg)	Adopted Screening Value (mg/kg)	Strata
WS01	0.10	Benzo(a)pyrene	56.0	5.0	Made Ground Topsoil
WS02	0.25-0.35	Benzo(a)pyrene	8.1	5.0	Made Ground
WS03	0.10-0.20	Benzo(a)pyrene	7.1	5.0	Topsoil
WS04	0.30-0.50	Benzo(a)pyrene	14.0	5.0	Made Ground
WS06	0.30-0.60	Benzo(a)pyrene	20.0	5.0	Made Ground
WS07	0.40-0.60	Benzo(a)pyrene	18.0	5.0	Made Ground
WS08	0.30-0.60	Benzo(a)pyrene	21.0	5.0	Made Ground
WS09	0.30-0.60	Benzo(a)pyrene	66.0	5.0	Made Ground
WS10	0.10-0.20	Benzo(a)pyrene	87.0	5.0	Made Ground Topsoil
WS11	0.20-0.40	Benzo(a)pyrene	37.0	5.0	Made Ground
WS12	0.30-0.60	Benzo(a)pyrene	130.0	5.0	Made Ground
TP05	0.10-0.20	Benzo(a)pyrene	71.0	5.0	Topsoil
TP07	0.30-0.60	Benzo(a)pyrene	20.0	5.0	Made Ground
TP08	0.30-0.40	Benzo(a)pyrene	13.0	5.0	Made Ground
TP10	0.30-0.60	Benzo(a)pyrene	23.0	5.0	Made Ground
TP12	0.35-0.45	Benzo(a)pyrene	16.0	5.0	Made Ground
TP13	0.30-0.60	Benzo(a)pyrene	48.0	5.0	Made Ground
TP15	0.10-0.20	Benzo(a)pyrene	6.0	5.0	Topsoil
TP17	0.30-0.60	Benzo(a)pyrene	14.0	5.0	Made Ground
TP21	0.30-0.60	Benzo(a)pyrene	33.0	5.0	Made Ground
TP23	0.30-0.60	Benzo(a)pyrene	35.0	5.0	Made Ground
TP25	0.30-0.60	Benzo(a)pyrene	5.2	5.0	Made Ground
TP27	0.30-0.60	Benzo(a)pyrene	26.0	5.0	Made Ground
TP29	0.30-0.60	Benzo(a)pyrene	7.4	5.0	Made Ground
TP30	0.10-0.20	Benzo(a)pyrene	130.0	5.0	Made Ground Topsoil
TP32	0.30-0.60	Benzo(a)pyrene	30.0	5.0	Made Ground
TP36	0.30-0.60	Benzo(a)pyrene	120.0	5.0	Made Ground

* Based on Soil Organic Matter content

Total Petroleum Hydrocarbons (TPH CWG) and BTEX Compounds

No petroleum hydrocarbons have been identified above the adopted screening criteria and no BTEX or MTBE compounds have been identified above the adopted screening criteria.

Supplementary Investigation Testing

The aim of the supplementary investigation was to identify and further assess the levels of contamination associated with near surface soils, in particular the topsoil, to determine potential suitable re-use routes and assess waste classification for potential offsite disposal of soils.

A further 141 samples were analysed for a general broad suite of contaminants, including metals, asbestos, PAHs and TPH CWG.

Summary of Assessments and Outline Remedial Recommendations
It was considered unlikely that the site is being affected by offsite contamination sources as the site is underlain by clay strata and therefore contamination is unlikely migrate onto the site.

Based on the testing and assessment undertaken it would appear that there is pervasive contamination within the topsoil, made ground topsoil and made ground in the form of heavy metals and PAHs.

It should also be noted that there are still numerous exceedances in heavy metals and PAHs when the chemical testing results are compared against Public Open Space (POS) park screening values as would be applicable for the proposed sports pitches area in the west.

The initial phase II assessment stated that the above pose a risk to human health and requires further consideration. Outline remedial measures included either off site removal and / or re-use below a clean cover system.

Based on the supplementary assessment, it would appear that the majority of the topsoil would be unsuitable for the end use scenarios of commercial, POS and residential uses in their current state. However, with appropriate screening / sorting to remove glass this could negate ~50% of soils being removed off site to landfill with them being suitable for re-use on a commercial site or in POS areas (with relevant permits/exemptions etc in place from a waste regulation perspective).

To aid sustainability of the development and minimise the volume of soils to be removed from site, one remedial option for the impacted topsoil could be to place the material underneath the lower sensitivity proposed sports pitches, below a layer of clean cover to break the pathway to end users.

3.3 Permanent Ground Gases and Vapours

A summary of the ground gas monitoring carried out by BSL is presented below:

- BSL conducted 6 monitoring visits over 3 months.
- Methane was not recorded above the detection limit of the monitoring equipment (i.e. <0.1% v/v).
- Carbon dioxide concentrations were recorded up to 3.9% v/v.
- Oxygen concentrations ranged between 10.4% v/v and 22.2% v/v.
- The maximum steady state gas flow rate was 0.1 l/hr.

On the basis of the above and the assessment carried out, and liaison with Manchester City Council (MCC) Environmental Protection Team reading the frequency of visits, the site has been classified as Green in accordance with the NHBC Traffic Light Classification and therefore no mitigation measures are required.

3.4 Risk to Controlled Waters

Based on the investigation works undertaken to date and subject to agreement with the Environment Agency, the site is not considered to pose a significant risk to controlled water for the following reasons:

- There is no indication under present conditions of pollution of controlled waters and conditions following development of the site will not be any worse, indeed they may improve with increased hard cover and water retaining imported garden soils.
- No significant mobile contamination has been identified on site in soils based on the results obtained as a potential indicator of groundwater contamination.
- The site is underlain by very low permeability clays as proven by the infiltration testing which will inhibit lateral and vertical contaminant migration. There is believed to be over 30m of low permeability clay above the bedrock aquifer based on wider area BGS boreholes.
- The site does not lie within 500m of an SPZ.
- There are no groundwater abstractions within 1700m.
- There are no potable (sensitive) water abstractions within 2000m.

Based on the above, the site is not considered to pose an unacceptable risk to controlled waters. Therefore, no specific remedial requirements for controlled waters are necessary.

3.5 Risks to Potable Water Supply Pipelines

A United Utilities pipeline risk assessment has been carried out for the subject site. The assessment has determined that standard PE pipework is adequate; the assessment is presented in Appendix C.

3.6 Waste Classification Summary

Test results were assessed through a waste classification database which allows users to code and classify waste as defined in the EWC (European Waste Catalogue) based on EC Regulation 1272/2008 on the Classification, Labelling and Packaging of Substances and Mixtures (CLP) and latest Environment Agency guidance (WM3 “Guidance on the classification and assessment of waste -Technical Guidance”).

139 samples of topsoil were tested to assess whether they contained any contaminants in the hazardous range when screened against assessment criteria within WM3 using the HazWasteOnline tool.

Based on the waste classification database assessment, the majority of the topsoil has been classified as non-hazardous. The results of the waste assessment where hazardous properties have been flagged based on total concentrations are summarised in the table below:

Location	Depth (m)	Stratum	Waste Classification	Comments
TP103	0-0.20	MADE GROUND TOPSOIL	Hazardous	HP 10, HP 14
TP104	0-0.20	MADE GROUND TOPSOIL	Hazardous	HP 14
TP106	0-0.20	MADE GROUND TOPSOIL	Hazardous	HP 14
TP238	0-0.20	MADE GROUND TOPSOIL	Hazardous	HP 14
TP109	0-0.15	MADE GROUND TOPSOIL	Hazardous	HP 7, HP 11
TP240	0-0.20	MADE GROUND TOPSOIL	Hazardous	HP 7, HP 11
TP127	0-0.05	MADE GROUND TOPSOIL	Hazardous	HP 7, HP 11
TP180	0-0.10	MADE GROUND TOPSOIL	Hazardous	HP 7, HP 11
TP186	0-0.10	MADE GROUND TOPSOIL	Hazardous	HP 10, HP 14
TP209	0-0.10	MADE GROUND TOPSOIL	Hazardous	HP 7, HP 11
TP219	0-0.10	MADE GROUND TOPSOIL	Hazardous	HP 7, HP 11
WS04	0.30-0.50	MADE GROUND	Hazardous	HP14
WS07	0.40-0.60	MADE GROUND	Hazardous	HP14
WS08	0.30-0.60	MADE GROUND	Hazardous	HP7, HP11

When segregating soils on site, a worst case should be assumed that the materials extend up to the exploratory positions classified as non-hazardous.

Note that further testing of the soils (WAC testing) may be required on the actual arisings in order to satisfactorily categorise the soil for its suitability if disposal to landfill is the only option.

3.7 Summary

A summary of the findings of the previous investigations and assessments where a risk is present (i.e. an unacceptable source-pathway-receptor linkage) which requires mitigation is presented in the table below:

Source	Receptor
<- Poses an unacceptable risk to ->	
Elevated concentrations of heavy metals (arsenic, copper, lead, mercury, nickel) and PAHs (BaP via surrogate marker approach) are present within the topsoil and made ground, in addition to sharps/glass.	Human health / construction workers (Residential with homegrown produce / Public Open Space screening criteria adopted)

Based on the above, it was recommended that a Remedial Strategy was prepared that identifies the specific remediation requirements for the site.

4.0 REMEDIAL OPTIONS APPRAISAL

4.1 Remediation Options

This section has been produced in general accordance with the requirements of LCRM: Stage 2 Options Appraisal.

The Investigations and risk assessment have concluded that the site will require remediation is the action required to prevent, minimise, remedy or mitigate the effects of the identified unacceptable risks listed in the section above.

The remediation of the site will need to ensure that upon completion of the development, the ground conditions at the site can be shown to be appropriate for the intended use and that they will not pose unacceptable contamination risks to the identified receptors.

For the options appraisal, there are 3 steps to follow:

1) Identify feasible remediation options.
2) Do a detailed evaluation of options.
3) Select the final remediation option.

The objectives of the remediation will be to sever one or more of the linkages within the source-pathway-receptor (S-P-R) model. There are three broad approaches which can be adopted:

- Remove or treat the source of pollutants.
- Remove or modify the migration pathway.
- Remove or modify the behaviour of the receptor.

The options appraisal process considers the available remedial techniques to achieve the above based on following key criteria:

- Effectiveness.
- Practicality.
- Durability.
- Relative Cost.
- Relative Operational Time (in terms of installation or the activity).
- Sustainability.

The feasibility of each of the listed remedial option is assessed in terms of effectiveness at treating the contamination, which is broken down into; effective (Yes), partially effective (Partially) or not effective (No).

The listed techniques are also assessed in terms of relative cost ranging from negligible cost (£) through moderately expensive (££) to prohibitively expensive (£££).

Timescales over which the remediation technique is operational has been relatively assessed as weeks, months, years and decades. If a given technique is only effective over a period in the order of years to decades then its overall feasibility is diminished.

A sustainable approach can help to ensure that the benefit of doing the remediation is greater than its impact.

The table below summarises the possible remedial options and assesses each against the six key criteria listed above:

Remedial Activity	Effective	Relative Cost	Operational Time	Comments (Practicality / Sustainability / Durability)	Feasible
Civil Engineering Methods					
Cover System	Yes	£	Weeks	Will prevent contact between site end users and shallow contaminated soils, breaking the S-P-R linkage.	Yes – considered to be a suitable remediation option to mitigate the risk to human health.
Excavation and Disposal (may also require pre-treatment by screening & sorting).	Yes	£££	Weeks	This will effectively remove the source of the contamination (i.e. the existing topsoil), but is much less sustainable compared to other feasible options (excessive cost, take up of landfill space, transport issues, need to replace with clean material)	Yes – considered a suitable remediation option to mitigate the risk to human health in conjunction with other options.
Materials Management (Excavation and Re-Use of Suitable Materials)	Yes	££	Weeks	Excavation and re-use of any suitable materials and potential re-use of treated materials at a suitable depth. Import of suitable clean topsoil and subsoil from suitable donor sites. Would need to be undertaken in association with a Materials Management Plan (MMP) prepared in accordance with the CLAIRE Definition of Waste Code of Practice and signed off by a Qualified Person.	Yes – in conjunction with other options.
New water supply pipelines – Barrier Pipe	Yes	£	Weeks	Barrier pipe would prevent ingress of contaminants into the water supply, however a UU PRA indicates standard PE is acceptable.	Yes – but assessmnet has determined standard PE pipe is suitable.
Biological Methods					
Not considered to be relevant to the subject site.					
Chemical Methods					
Not considered to be relevant to the subject site.					
Physical Methods					
Not considered to be relevant to the subject site.					
Passive Methods					
Not considered to be relevant to the subject site.					

4.2 Selected Remedial Options

Based on the above remedial options appraisal, the most appropriate combination of approaches to the residual risks are listed below:

- Excavation and off-site removal/disposal of unsuitable and excess materials.
- Implement a clean cover system to break the pathway to end users.
- Carry out materials movements and import of clean cover system soils under a Materials Management Plan.

The current topsoil on site is not suitable for the intended residential and public open space end uses and will require removal, or dependant on requirements some materials could be retained on site in POS areas under a cover layer to mitigate the risk to end users e.g. below sports pitches or below landscaping/acoustic bunds if part of the design/layout. Re-use would need to be carried out under a suitable Material Management Plan.

The options selected have been chosen because they are considered to be effective, can be carried out practically within the available time periods and are commercially viable.

4.3 Site Remediation Requirements

The key requirements are summarised in the table below:

Source	Contaminants of Concern	Remediation Method	Further Details / Remedial Requirements
1 - Topsoil, Made Ground Topsoil	Arsenic, Lead, PAHs, glass/sharps	Excavation and off-site removal	Soils unsuitable for intended end use – to be removed from site; either to a suitably licenced facility, soils recycling plant or to an appropriate end use scenarios (e.g. a commercial end use site after screening/sorting and under appropriate permits).
2 - Made Ground	Arsenic, Lead, PAHs, glass/sharps	Clean cover system Materials Management	In private gardens and soft landscaping areas, a cover system comprising "clean" validated topsoil should be installed. Soils to be re-used under declared MMP where suitable.

In addition to the specific remedial requirements listed in the tables above which are intended to mitigate the risks from known sources, it is recommended that a watching brief be maintained during the groundworks and construction for any evidence of contamination and BSL consulted for advice, where required.

Detailed requirements are discussed in section 5.0 below.

5.0 DETAILED REMEDIAL REQUIREMENTS AND OTHER CONSTRAINTS

5.1 General

This section is intended to fulfil the requirements of LCRM Stage 3: Remediation and Verification.

All remedial works are to be overseen by suitably experienced and qualified site staff and a site watching brief will be in place alongside regular visits by a suitably qualified person to undertake the necessary verification works described.

The table below provides a summary of requirements in terms of the approximate order of works. It should be noted that the precise sequencing has not yet been confirmed by an appointed Contractor. This Remedial Strategy may also be subject to revision, dependant on the requirements of the regulators.

Task	Description
1.	**Pre-Commencement** Approval of this Remedial Strategy with the Local Authority, Warranty Provider (e.g. NHBC) and Environment Agency (EA) prior to site works commencing. Appointment of contractor for the works, who is to obtain appropriate permits, licences and approvals. Other appointments as per CDM requirements. Production and declaration of a Materials Management Plan (MMP) under the DoWCoP prior to any works commencing or confirmation of waste exceptions (U1) to be in place.
2.	**Site Clearance** Subject to all necessary ecological and arboricultural surveys being undertaken and appropriate mitigation measures in place, the site should be cleared and any vegetation below areas of proposed development should be stripped in accordance with Series 200 of the Specification for Highway Works. Removal of relict hardstanding, floor slabs, drainage runs etc. Conduct site wide strip of made topsoil and stockpile for offsite removal or re-use in suitable areas at depth. A watching brief should be maintained during demolition and clearance/soils strip for any previously unidentified contamination.
3.	**Excavation and Re-use of Site Won Material and Importation of Soils (Earthworks)** Excavation, screening, treatment (if required) and engineering / re-use of soils where suitable, to an appropriate Earthworks Specification in accordance with SHW Series 600.
4.	**Installation of a Clean Cover System** Importation of "clean" cover system soil with suitable testing to prove suitability and provenance. Importation to be carried out under a declared MMP (unless from a manufactured source). Installation of "clean" validated cover system in soft landscaping areas, including private gardens and areas of POS, where required to provide growing medium. Imported soils to be used as part of the cover layer should meet the chemical criteria outlined in Appendix A.
5.	**Verification and Reporting of Remedial Work** The gardens and landscaped areas will require depth validation. Collation of information relating to site clearance, chemical testing, any remedial works, remedial verification, material movements and waste transfer documentation where appropriate. A closure Verification Report will be required to close out the declared Materials Management Plan and submitted to CL:AIRE, if implemented.

Task	Description
	Complete remedial validation report(s) in line with regulatory guidance and warranty provider requirements. The report(s) should be submitted to the Local Authority and warranty provider for approval following completion.

5.2 Earthworks

General Considerations
Work procedures should be designed to minimise the risk of dust becoming airborne by suitable means, such as keeping the exposed soils damp or covered at all times. It is important that the control measures in place are sufficiently robust to prevent release of contaminated dust into the surrounding environment.

Geotechnical Considerations
Whilst geotechnical aspects are not specifically considered within this Remedial Strategy, all earthworks should be undertaken in accordance with an appropriate Earthworks' Specification.

If present, unsuitable materials (e.g. timber, metals and plastics) removed during screening should be segregated and stored in a suitable location prior to off-site disposal to a suitable licence facility. Where practicable materials should be re-used or recycled.

The contractor should be responsible for controlling groundwater entry into excavations.

Materials Management
Any works involving the movement of soils within the site boundary shall be done in accordance with a Materials Management Plan (MMP) under the CL:AIRE Definition of Waste Code of Practice (CoP) or shall be done in accordance with an appropriate exception (U1). Further guidance is presented in Appendix B.

To implement the DoWCoP, there is a requirement to notify the Environment Agency and Local Authority of the intention to use the code of practice in principal, after which there is a 21-day notice period for their response.

In order to re-use soils under the DoWCoP, there are four key criteria that need to be met:

- The aims and objectives of the project meet the requirements of the Waste Framework Directive.
- The soils can be demonstrated to be suitable for use (backed up by chemical/geotechnical testing and assessment).
- There is certainty of use (i.e. materials tacking which should be in place as part of good site practice in any case).
- Quantity (the quantity of materials used should be known).

Information on existing site levels, proposed levels, volumes generated (e.g. foundation / drainage excavation arisings) would need to be known in order to complete the MMP.

If the DoWCoP is the chosen route, it is an absolute that the MMP should be in place and declared by a Qualified Persons (QP) before works commence, otherwise excavated soils could constitute an illegal deposit of waste and enforcement action could be taken by the EA and HMRC.

In regard to "clean" naturally occurring soils only that are to be re-used on their site of origin, these are covered by a Waste Framework Directive (WFD) exclusion. So long as the project can prove the four criteria (listed above) then permits or the DoWCoP are not required. However, many projects still use the DoWCoP to ensure compliance.

Re-use of soils containing asbestos should comply with the CL:AIRE publication 'Interpretation for Managing and working with Asbestos in Soil and Construction and Demolition Materials' (CAR-SOILTM) and CAR 2012.

In terms of the re-use of brick/concrete crush materials, the DoWCoP does cover aggregates, but only on the site of origin and the EA WRAP aggregate Quality Protocol might best apply to ensure quality standards.

Imported Materials and Materials for Re-use
Any soils or materials imported or to be re-used as part of the works should be tested for chemical compliance and suitability in line with the guidance stipulated in Appendix A and the proposed end use.

Any imported material should be approved by BSL and the Local Authority prior to being imported onto site.

Where feasible, imported topsoil should conform to the requirements of BS 3882:2015 (Specification for Topsoil and requirements for use), or as agreed with the client. Imported subsoil should also conform to the requirements of BS 38601:2013 (Specification for subsoil and requirements for use), or as agreed with the client.

In addition, all materials must be free from aggressive / invasive weeds (such as Japanese Knotweed and Giant Hogweed) and bulk vegetative growth.

5.3 Cover Layer

A cover system comprising "clean" validated topsoil/subsoil should be placed in proposed private gardens and soft landscaped areas, including grassed sports pitches.

Imported soils to be used as part of the cover layer should meet the chemical criteria outlined in Appendix A.

It is proposed that as part of the enabling works onsite, naturally occurring superficial deposits will be re-used onsite for use as subsoil in the clean cover system. Manchester City Council Planning & Contaminated Land Technical Guidance (2021) states that on brownfield sites, soils used in residential gardens should be tested at a frequency of 1:50m^3, however although the site has made ground deposits, very limited previous development has taken place onsite, with the site comprising of a playing field prior to the proposed current development. BSL contacted Rebecca Twigg at Manchester City Council on 5th November 2024 to agree a reduced testing frequency for site won naturally occurring soils. Due to the limited development onsite, it was agreed that a 1:100m^3 testing frequency would be adopted instead. This was confirmed by Rebecca Twigg at Manchester City Council on 27th November 2024, the email is included within Appendix A.

It should be noted that the screening criteria and scenarios adopted within Appendix A are conservative, thus an exceedance of a contaminant will not necessarily deem the material to be unsuitable. Any exceedances detected and overall material suitability will be assessed on a case by case basis, with the results included and discussed in the Validation Report.

The installation of a clean cover system will break the pathway to human health from the identified contamination and act as a growing medium. The cover layer in private garden areas should comprise (top down):

- 200mm "clean" validated topsoil; over

- 400mm "clean" validated subsoil.

The cover layer in public open space areas and soft landscaping should comprise (top down):

- 200mm "clean" validated topsoil; over
- 250mm "clean" validated subsoil.

The cover layer beneath the grassed football pitches should comprise (top down):

- 200mm "clean" validated topsoil; over
- 400mm "clean" validated subsoil; over
- High visibility geotextile separation layer.

For areas of proposed trees, a tree pit will need to be excavated and additional subsoil provided above the hard dig layer / membrane, further guidance over suitable thickness' should be obtained from a landscape architect, however in accordance with Manchester City Council's Planning and Contaminated Land Technical Guidance document, a rooting depth of 900mm will be required for trees and 600mm for shrubs; 600mm depth shrub pits in POS areas are required if relevant.

Minor variances in the thickness of individual soils layers cover may be tolerated, provided the overall clean cover system is a minimum depth of 600mm (or 450mm in POS) to minimise soils mixing (e.g. min 100mm topsoil over 500mm subsoil). If the thickness is varied, the topsoil layer should be a minimum thickness of 100mm in accordance with warranty provider standards (or thicker if in accordance with the clients minimum internal standards e.g. 150mm).

If a warning geotextile is utilised, this should be sufficiently durable and robust for the lifetime of the development.

Where made ground is absent and only natural strata present, only a nominal cover of clean topsoil will be required of 100mm, in line with minimum warranty provider requirements, however greater depths than the proposed 100mm topsoil is required for shrubs/trees where made ground has been completely removed; advice of such depths should be taken from a landscape specialist and is likely to vary based on tree/shrub types. Testing to date generally indicates the natural strata are chemically suitable for re-use, however additional testing to confirm its suitability within the proposed clean cover systems will be undertaken.

Site drainage should be taken into consideration with the implementation of the clean cover layer. It is also essential to provide a structured, uncompacted and well-aerated soil profile for the successful establishment and subsequent growth of plants and grass. However, where heavy machinery and large volumes of soil are excavated and stored, soil structure can easily be destroyed by over-compaction, leading to poor drainage and failed garden planting. This can often be mitigated by careful site planning or rotavating the soils as required.

The above is subject to agreement with the Local Authority and the warranty provider; requirements should be confirmed at the earliest opportunity.

5.4 Records

Accurate records and as-built drawings will need to be kept, updated and provided for all aspects of the remedial works as they progress.

The construction works should be devised in a way to allow the maximum re-use of site won materials adhering to current waste regulations. To allow this and demonstrate compliance with Waste Management Licensing Regulations the Contractor should maintain an accurate Materials Management Plan (MMP). These shall show the source, description, classification and placement location of all fill used on the site. The plans shall be revised regularly with archive versions maintained for future reporting purposes. The MMP should show the extent of any excavations undertaken on site.

5.5 Stockpile Management

Segregation of materials and stockpiles should be maintained, and accurate records kept to avoid the potential for cross contamination. Good site practice for stockpile management includes, but is not limited to:

- Damping down of the site surface, excavations and stockpiles to prevent the generation of dust (wind blown asbestos fibres can contaminate "clean" topsoil stockpiles potentially resulting in expensive disposal costs).
- Stockpiles sizes should be kept to a minimum to reduce 'wind whip' causing potentially hazardous material to be blown from the pile.
- Once at the intended size, stockpiles should be "sealed" to ensure no excess materials are placed and mixed into the stockpiled to prevent cross contamination.
- Clean, validated material proposed for re-use as part of the cover system should ideally be placed on a suitable polythene membrane or clean concrete hardstanding to prevent any cross contamination.
- Appropriate loading of plant to prevent spillages.
- Appropriate signage should be displayed so that site workers/visitors are aware of the intended use and are alerted to the potential hazards associated with the material to be stored on site.

Examples of good site practice for stockpile management are presented below:

Stockpile sealed and cordoned off with warning sign	Sheeting of contaminated materials
	

5.6 Testing

Prior to commencing any works the Contractor will submit to the Clients Representative (Suitably qualified Geo-environmental Engineers) details for the testing laboratories to be used together with their UKAS and MCERTS accreditations (as appropriate). The Clients Representative will approve the laboratories subject

to them holding the relevant certifications. Alternatively, providing the Client's Representative is a suitably qualified Engineer, then they may attend site to obtain samples for appropriate testing.

Tests carried out by a laboratory without the approval of the Client's Representative will be rejected.

All samples will be taken in accordance with relevant guidance (e.g. BS 10175:2011+A2:2017).

The contractor is responsible for the testing of the physical properties of any imported or processed material to be used in the engineering works. This applies to both site won and any imported materials.

Site won material shall be tested to confirm its chemical suitability. Contaminated material for disposal should be tested to define the most economical disposal route. In addition, any material to be imported to the site shall be tested and its suitability demonstrated prior to it being brought to the site.

The geotechnical suitability of site-won materials will be confirmed before reuse, by appropriate earthworks testing, in accordance with an Earthworks Specification (preparation of which is outside the scope of this remedial strategy).

5.7 Permits

The appointed contractor will need to hold or obtain relevant waste permits or exemptions (where applicable) in accordance with the Environmental Permitting Regulations 2016 to carry out waste recovery, treatment and re-use activities on site. Alternatively, waste recovery and re-use operations shall be in accordance with the CL:AIRE Definition of Waste Code of Practice (DoWCoP), 2011 and an approved Materials Management Plan (MMP) declared under the DoWCoP by a Qualified Person (QP).

A crusher/screener will also require a waste permit or exemption. Aggregates should be processed in accordance with relevant WRAP Quality Protocol to produce a non-waste product.

It is the contractor's duty of care to ensure that any waste to be treated or disposed off-site is transported by a licenced waste carrier and that the waste facility is licenced, permitted or holds an appropriate exemption.

Evidence of the above should be maintained and provided on request along with any waste transfer or consignment notes for materials removed off-site.

5.8 Surface Water Runoff

The contractor should provide and maintain means to intercept surface run off in accordance with good site practice. Run-off from the site shall not be allowed to enter adjacent waterways or drainage gullies without the permission of the Drainage and Highway Authorities.

Surface waters from the site shall be discharged to the mains sewer under consent from the local Water Authority.

It should be noted that groundwater impacted by hydrocarbons may require some form of treatment prior to discharge, alternatively if only small amounts of water are encountered, this could be stored and removed to a suitable waste disposal facility.

5.9 Unexpected Contamination

If any unexpected contaminated materials are encountered by the contractor, then works should cease in that area and the contractor should consulted BSL for advice prior to any irrevocable action at the site.

6.0 STAKEHOLDERS AND RESPONSIBILTIES

6.1 Key Stakeholders

A summary of the key project stakeholders is presented below (not exhaustive):

Client / Developer	Consultant / Engineer	Contractor	CDM Stakeholders	Regulators
Kellen Homes Ltd & GMYF	Brownfield Solutions Ltd (BSL)	Demolition, Remediation and Groundworks Contractors (TBC)	Principal Contractor (TBC) Principal Designer (TBC) Health and Safety Executive (HSE)	Manchester City Council (regulator - Human Health risk and planning consent) Environment Agency (EA) (regulator - controlled waters and waste) Warranty provider

6.2 Client

The remediation works will come under the umbrella of CDM 2015 Regulations. The Client is responsible for formally appointing a Principal Designer and Principal Contractor, otherwise the Client assumes the role of Principal Designer. All pre-construction information will need to be made available to the appointed duty holders and sufficient time and resources allowed.

6.3 Consultant/Engineer (Client's Representative)

A suitably qualified Geo-Environmental Engineer/consultant should be appointed as the client's representative to oversee the works, who will have a visiting role throughout and provide advice when required.

They should be responsible for:

- Providing appropriate supervision of the remedial works (either part time or full time).
- Monitoring the works to ensure compliance with this strategy and specification.
- Audit testing of materials. (However, it is the responsibility of the contractors to demonstrate the suitability/acceptability and the compliance of the material with the specification).
- Approval of test results.
- Validation of the works.

They will maintain records of the works to include the following:

- Record sheets to include a summary of the activities.
- Aspects relating to Environmental Control or non-compliance with this strategy.
- Test Results.

Liaison will be carried out with relevant regulators prior to commencing on site. The design of the Remedial Strategy can be adapted to avoid unnecessary delays at a later date.

Validation information will be supplied to the Local Authority for approval in a Verification Report. The report will include relevant site records and stand as certification that the remedial works have been carried out in accordance with this strategy.

6.4 Contractor

The contractor appointed to oversee the development construction works should comply with the following regulations, guidance and legislation relating to the works:

- Environmental Protection Act 1990.
- Health and Safety Executive "Protection of Workers and the General Public during the Redevelopment of Contaminated Land", HS(G)66, HMSO 1991.
- Duty of Care Regulations 1991.
- Water Resources Act 1991.
- Water Industry Act 1991.
- Environment Act 1995.
- The Control of Substances Hazardous to Health Regulations 2002.
- Hazardous Waste Regulations.
- Control of Asbestos Regulations (CAR) 2012.
- Control of Asbestos Regulations 2012: Interpretation for Managing and Working with Asbestos in Soil and Construction & Demolition materials: Industry Guidance (shortened name CAR-SOIL™)".
- The Construction, Design and Management Regulations 2015.

The contractor should provide adequate supervision for all the site works. This shall include a suitably experienced Remediation Engineer or Site Manager who will validate the work and maintain records allowing preparation of a validation report for the works.

The appointed contractors will be responsible for maintaining all records in connection with the works.

Records shall include details of:

- All the material imported to the site (including volume, source and chemical composition).
- All the material exported from the site (including volume, destination and chemical composition).
- The size and extent of the remedial excavations (lateral extent and depth plotted on suitable plans).
- Any treatment undertaken.
- Details of the contractor's waste exemptions, if applicable.
- Discharge of any groundwater.

6.5 CDM Stakeholders - Health & Safety

The appointed Principal Contractor (PC) will need to produce a Construction Phase Plan for the work, prepare risk assessments and method statements. The PC will be responsible for the coordination of welfare and H&S matters on-site including sub-contractors.

The Principal Designer/Client will review the Construction Phase Plan and notify the local office of the Health and Safety Executive (HSE) of the works prior to commencing (via form F10). Unless otherwise agreed with the client, the table below provides a broad outline of the overall project team.

All works should be carried out in a manner that will safeguard all site employees. This should include but not be limited to; site induction for all staff and visitors, training/safety awareness training, issue of Personal Protective Equipment (PPE) and the provision of suitable welfare facilities. Further advice is

provided within HSE publication 'HSG 66 Protection of Workers and the General Public during Redevelopment of Contaminated Land'.

The works should be carried out in a manner to protect against damage to property or nuisance to property or persons on the site or within its immediate vicinity. Noise and dust issues should be considered. Members of the public should be excluded from the works areas and the contractor should maintain suitable security to ensure unauthorised persons cannot access the works.

Appropriate temporary protection and warning signs should be erected to warn of hazards that may result as a consequence of the works.

6.6 Regulators

Implement the regulations and environmental standards set by government. The contents of this report will need to be agreed in advance of works with the regulators.

7.0 VERIFICATION PLAN

7.1 Clean Cover System

Soils used within the top 600mm in private gardens / sports pitches and 450mm in soft landscaping will comply with the chemical specification and testing frequencies provided within Appendix A.

Prior to importing any soils, test results for the proposed import will be provided to the clients representative, alongside the confirmation of the source (greenfield/brownfield/recycled etc).

For the subject site, MCC have agreed to a reduced 1:100m^3 testing frequency confirmed by Rebecca Twigg at Manchester City Council on 27th November 2024.

Once installed by the groundworks contractor, there is a requirement to provide evidence of the chemical suitability and depths of the clean cover system, with inspections to be carried out by a suitably qualified Geo-environmental Engineer in a randomly selected area of plots. Confirmatory photographs will be taken for inclusion in the validation report. An example of good practice for depth validation is provided below:

Containing staff, datum bar and photo board, clearly showing spoil and pit depth	Plot Overview
	

The frequency of garden validations shall be specified as every plot for the first ten plots constructed, then falling to one depth validation inspection pit per every four plots ready at the time of inspection (1 in 4). Photos of all other plots with soils in place during the time of the inspection should also be provided.

In areas of soft landscaping/public open space (POS), validation pits should be excavated at a frequency of circa one pit per 25m x 25m area of POS. In the area of the sports pitches, we propose 10 No. locations should be validated to avoid damage to the pitches; survey data (before and after placement of soils) may also be utilised to demonstrate the clean cover thickness.

Minor variances in the thickness of individual soils layers cover may be tolerated, provided the overall clean cover systems are of the minimum specified depths to minimise soils mixing.

Where made ground has been completely removed from an entire plot, the cover system as such is not required, however a “clean” topsoil/subsoil layer comprising a minimum of 100mm “clean” topsoil is still required to act as a growing medium. Evidence of the removal of made ground soils down to natural strata will be required in such areas (visual inspection by an engineer with photos taken or survey data provided with photos from the contractor).

If the cover system is deemed to be insufficient, the groundworks contractor will be informed and advised on how much more material is needed for the cover system to be meet requirements, with an additional verification pits will be re-excavated after rectification to confirm that a sufficient thickness of soil is present.

7.2 Contingency Planning

Should significantly contaminated material be encountered during the development (e.g. gross hydrocarbon impaction) then a suitably qualified geo-environmental engineer should be consulted for advice. Measures may include the excavation of the material which should stockpiled on 2000-gauge polythene sheeting, sampled and tested for an appropriate range of contaminants.

Once the laboratory analysis of the material is available, an assessment will be undertaken to determine whether it will need to be disposed off-site to a suitable facility or if the materials could be retained on site re-used with or without some form of treatment within regulatory requirements.

Depending on the nature of any such impact it may be necessary to undertake validation testing of the excavation faces in order to demonstrate that no such materials are left in-situ.

Should gross asbestos contamination be identified, then all works should cease until an Asbestos Management Plan is put into place (if not done so already) and remedial requirements are confirmed by a suitably qualified geo-environmental engineer. Note remedial works under such instances may be classified as either licenced or non-licenced and may be notifiable to the Health and Safety Executive (HSE). Works would need to comply with CAR 2012 and CARSOILS™.

7.3 Reporting

On receipt of all information, the appointed Geo-Environmental Engineer will compile a Verification Report(s). The report will be a concise document that provides records and collected evidence of the remediation carried out at the site. The final report should contain:

- Introduction, including description of the project and background to the works.
- Summary references to site investigation data, risk assessments and the Remedial Strategy.
- A description of the works undertaken and any treatment records.
- Details of chemical validation testing.
- Reference to the MMP (if utilised), records of where material was moved from/imported from/to and final destinations, including volumes, suitable for use criteria, QP declaration references etc.
- Details of how any out of specification materials were dealt with and final destination, including waste transfer notes.
- Appropriate site plans and photographic record.
- Conclusions, detailing any additional works that may be required.
- Details of any long term monitoring requirements, if any.

This should then be submitted to the regulators and warranty providers for approval, which should close out the requirements of this Remedial Strategy.

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DRAWINGS

N

MANNERING STREET

MOUNT ROAD

WEMBLEY ROAD

HARLOW DR

WEMBL

Mount
.cademy

Grange School

Shelter

Ward Bdy

DRAINAGE EASEMENT

MATTHEWS LANE

BRITLAND AVENUE

BRAITTON DRIVE

BARRET

Gorton Education
Village

Cedar Mount Academy

Melland High School

ROAD 1

ROAD 3

ROAD 4

ROAD 5

ROAD 6

ROAD 7

ROAD 8

ROAD 9

ROAD 10

ROAD 11

3m level buffer

110yds (100.584m) x 70yds (64.008m)

20yard (18m) x 3.00m)

4 no. car parking spaces

6.00

0 2.5 5 10 15 25 m

SCALE BAR 1:500

Legend

- Indicates 1.8m high feature fence
- Indicates 1.8m high plot divisional screen fence.
- Indicates bin stores.
- Indicates principle entrance door to dwelling.
- Indicates secondary entrance door to dwelling.
- Indicates application site boundary.
- Indicates affordable units
- Indicates adaptable units
- Indicates footpath connection points
- Indicates proposed trees
- Indicates substation
- Indicates pumping station
- Indicates electric vehicle charging points.

All plots to be provided with a secure cycle point.

Accommodation Schedule
Mount Road, Gorton

KELLEN HOMES

House Type		Bed No.	Type	No.	Sqft	Total Sqft	Split
Private							
Hic	Hickory	2	Semi	73	767	55991	24.09%
Olive	Olive	2	Semi	8	770	6160	2.64%
Ced	Cedar	3	Semi	82	936	76752	27.06%
Aca	Acacia	3	Semi	26	940	24440	8.38%
Eme	Emerson	4	Semi	18	1064	19152	5.94%
				207		**182495**	**68.32%**
Affordables							
Adu835	adu835	2	Semi	2	835	1670	0.66%
Adu1009	adu1009	3	Semi	2	1009	2018	0.66%
Hic	Hickory	2	Semi	25	767	19175	8.25%
Ced	Cedar	3	Semi	19	936	17784	6.27%
Aca	Acacia	3	Semi	6	940	5640	1.98%
Oli	Olive	2	Semi	2	770	1540	0.66%
Eme	Emerson	4	Semi	4	1064	4256	1.32%
				60		**52083**	**19.80%**
			Total	**267**		**234578**	
YP Studio Apartments	Apts	1	Apartments	36	280	10080	11.88%
				36		**10080**	**11.88%**
							11.68%
			Total	**303**		**244658**	**100.00%**

Gross Site Area:	22.4	Acres	9.07	Hectares	
Nett Residential Site Area:	**15.640**	**Acres**	**6.33**	**Hectares**	
Gross Density:	13.53	Units/Acre	33.43	Units/Hectare	
Nett Density:	**19.37**	**Units/Acre**	**47.87**	**Units/Hectare**	
Gross Footage:	10922.23	SQFT/Acre	2507.37	SQM/Hectare	
Nett Footage:	**15643.09**	**SQFT/Acre**	**3591.13**	**SQM/Hectare**	

Revision	Date	Amendment	Initials
P8	07.11.23	Cricket pitch added to layout.	BOP
P7	03.10.23	EV Charging points added, Subs amended.	BOP
P6	02.10.23	Combined Netball & Basketball Court added.	BOP
P5	15.09.23	Hickory HT semi's roofs changed back to up and over and not hipped.	RGC
P4	11.09.23	Plot 74 amended to show hipped roof. Drive to plot 74 amended and emergency access	KLW
P3	07.09.23	Cedar sqft updated 940 to 936.	KLW
P2	05.09.23	Affordable units increased to 60 plots. Mix updated accordingly	KLW
P1	25.08.23	Detailed site layout completed	BOP

Development
MOUNT_ROAD
Location
GORTON
Marketing Name

Drawing Title
CADSITELAYOUT
Job No.
KH008
Drawing No.
A-100
Revision
P8
Scale @ A0
1:500
Drawn By
BOP
Date
25.08.23
Checked by
RGC
Date Checked

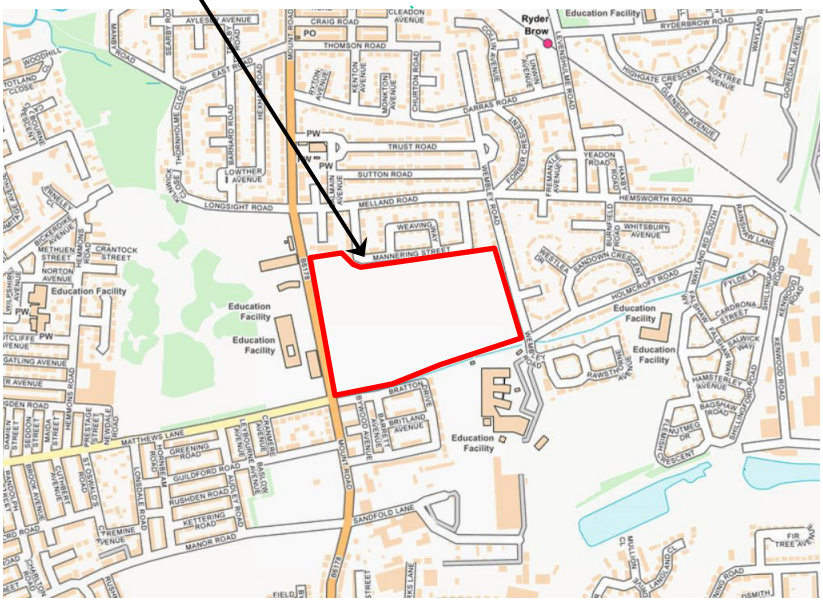
1st Floor, 103 Dalton Avenue, Birchwood Park, Warrington WA3 6YE
T: 01925 363108 W: www.kellenhomes.com
KELLEN HOMES



SITE LOCATION

NEAREST POSTCODE: M18 7SU

SITE ENTRANCE WHAT3WORDS: ///DASH.HAVING.TABLES



REV	DATE	DESCRIPTION	BY	CKD

BROWNFIELD SOLUTIONS LTD
GEO-ENVIRONMENTAL ENGINEERING EXCELLENCE

CLIENT
KELLEN HOMES LTD

PROJECT TITLE
MOUNT ROAD, GORTON

DRAWING TITLE
SITE LOCATION PLAN

DRAWING No.	REVISION	SCALE	DATE
C5150/01	-	NTS	20/09/22

DRAWN BY	CHECKED BY
SD	LC



KEY

APPROXIMATE SITE BOUNDARY

REV	DATE	DESCRIPTION	BY	CKD

BROWNFIELD SOLUTIONS LTD
GEO-ENVIRONMENTAL ENGINEERING EXCELLENCE

CLIENT
KELLEN HOMES LTD

PROJECT TITLE
MOUNT ROAD, GORTON

DRAWING TITLE
SITE FEATURES PLAN

DRAWING No.	REVISION	SCALE	DATE
C5150/02	-	NTS	19/10/22

DRAWN BY	CHECKED BY
MS	LC



KEY	
	APPROXIMATE SITE BOUNDARY
TPXX	TRIAL PIT
WSXX	WINDOW SAMPLE BOREHOLE
LWDXX	LWD
	SOAKAWAY INFILTRATION TEST
	BOREHOLE INSTALLATION

NOTES

1. ALL DIMENSIONS TO BE CHECKED ON SITE BEFORE COMMENCING WORKS. ANY DISCREPANCIES ARE TO BE REPORTED TO THE ARCHITECT & ENGINEER FOR VERIFICATION. FIGURED DIMENSIONS ONLY ARE TO BE TAKEN FROM THIS DRAWING.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ENGINEERS REPORTS. THIS DRAWING IS COPYRIGHT OF BSL.
3. DRAWING NOT FOR CONSTRUCTION PURPOSES.

REV	DATE	DESCRIPTION	BY	CKD

BROWNFIELD SOLUTIONS LTD

CLIENT

KELLEN HOMES

PROJECT TITLE

MOUNT ROAD, GORTON

DRAWING TITLE

EXPLORATORY HOLE PLAN

DRAWING No.	REVISION	SCALE	DATE
C5150/03B	-	NTS	05/10/22

DRAWN BY	CHECKED BY
MS	AJS


KEY
APPROXIMATE SITE BOUNDARY
TPXX TRIAL PIT
WSXX WINDOW SAMPLE BOREHOLE
LWDXX LWD
SOAKAWAY INFILTRATION TEST
BOREHOLE INSTALLATION
MADE GROUND TOPSOIL SAMPLE IDENTIFIED AS HAZARDOUS FOR OFF SITE DISPOSAL PURPOSES
NB: SYMBOL FOR LOCATIONS HIGHLIGHTED AS HAZARDOUS DOES NOT INDICATE LATERAL EXTENT OF HAZARDOUS MATERIAL - THERE MAY BE NO VISUAL DIFFERENCE IN SUCH MATERIALS.
NOTES
1. ALL DIMENSIONS TO BE CHECKED ON SITE BEFORE COMMENCING WORKS. ANY DISCREPANCIES ARE TO BE REPORTED TO THE ARCHITECT & ENGINEER FOR VERIFICATION. FIGURED DIMENSIONS ONLY ARE TO BE TAKEN FROM THIS DRAWING.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ENGINEERS REPORTS. THIS DRAWING IS COPYRIGHT OF BSL.
3. DRAWING NOT FOR CONSTRUCTION PURPOSES.
REV DATE DESCRIPTION BY CKD
B 05/06/23 FINAL LOCATIONS BASED ON SURVEYED CO-ORDS. MB AJS
BROWNFIELD SOLUTIONS LTD
CLIENT
KELLEN HOMES
PROJECT TITLE
MOUNT ROAD, GORTON
DRAWING TITLE
EXPLORATORY HOLE PLAN
DRAWING No. C5150/03A&B
REVISION B
SCALE NTS
DATE 05/06/2023
DRAWN BY MB
CHECKED BY AJS

APPENDIX A

Chemical Specification for Soils

Quality Control Methodology for Imported and Re-used Soils

Prior to Importation and Re-use

Reliable testing results should be provided, or samples should be obtained at the source and tested prior to either importation to the subject site or re-use on site of origin as early as possible.

The frequency and scope of testing will vary depending on the source, the required testing for possible sources is provided below. These rates are based on professional judgement and acceptance of similar criteria used on similar sites to the satisfaction of the local regulatory authority. Results should be compared to the acceptance criteria also with this appendix.

Material Use	Testing Frequency*	Suite of Analysis					
		1	2	3	4	5	6
Topsoil							
Greenfield Source including Site Won (Top 600mm)	*1 per 200m^3	■	■				
Brownfield/Recycled Source including Site Won (Top 600mm)	**1 per 50m^3	■	■	■			
Subsoil							
Greenfield Source (Top 600mm)	*1 per 200m^3	■	■				
Brownfield/Recycled Source (Top 600mm)	**1 per 100m^3	■	■	■			
Site Won Natural clay/sand (Top 600mm)	*1 per 1000m^3	■	■	■			
First Generation (i.e. quarried sand)	No testing required. Certificate of material provenance is required.						
Physical Stone Break Layer							
First Generation (i.e. quarried stone)	No testing required. Certificate of material provenance is required.						
Site Generated / Imported 6F2	*1 per 500m^3	■	■	■			
General Fill* **							
Site Generated / Imported 6F2	*1 per 1000m^3	■	■				
Site Won Made Ground	*1 per 250m^3						■
	*1 per 1000m^3	■	■	■			
Site Won Natural Arisings on Brownfield Site***	*1 per 1500m^3	■	■				■
Site Won Natural Arisings on Greenfield Site***	*1 per 2000m^3	■	■				

Notes

1 – BSL Default Suite - *Arsenic, Cadmium, Chromium (total and hex), Copper, Nickel, Mercury, Lead, Zinc, Selenium, speciated polycyclic hydrocarbons (PAH 16), water soluble sulphate (2:1 Extract), soil organic matter, and pH.*
2 – Asbestos ID (and Quantification if detected).
3 – TPH Analysis - *Speciated Total Petroleum Hydrocarbons (TPH CWG) including BTEX and MTBE.*
4 – VOC Analysis - *Volatile Organic compounds (VOCs) by GC-MS (ex TIC).*
5 – SVOC Analysis - *Semi-Volatile Organic compounds (SVOCs) by GC-MS (ex TIC).*
6 – Visual Inspection & on-site screening for VOC using calibrated PID.

* - Minimum of 3 samples per source.
** Minimum of 6 samples per source.
***To be used at depths >600mm bgl or below building/hardstanding.

The testing should be undertaken at a UKAS accredited laboratory and be MCERTS accredited and all results should be below existing residential guideline values which are presented in Appendix A.

Topsoil/Subsoil

The above specification is to determine if material is chemically clean, for suitability as a growing medium reference should be made to BS3882:2015 Specification for Topsoil and BS 8601:2013 Specification for Subsoil and Requirements for Use.

In addition to the above sampling frequencies and testing, all imported topsoil/subsoil should also confirm to the following criteria:

- Have a maximum stone size of 75mm.
- Be clean and free of foreign debris including building waste materials or contaminants e.g. brick, glass, asbestos and plasterboard, etc.

For imported soils, approval should be obtained from the Local Authority prior to importing to site.

Site Won Crushed Hardcore/Concrete (for use below building/hardstanding only)

In addition to the above sampling frequencies and testing; for re-use of hardcore/concrete (Grade 6) on the site of origin, BSL proposes the following inspection criteria:

- No visual contamination (oil staining etc).
- Limited deleterious material (organics, wood, etc).
- Limited metal.
- No visible asbestos containing material (ACM).
- Quantifiable Asbestos at or <0.001 w/w%.

Production of Grade 6 materials should be done under WRAP quality protocols or similar. Inspections and sampling would need to be carried out by a qualified geo-environmental engineer. For geotechnical performance, reference should be made to Series 600 Earthworks Guidance.

If the above criteria for asbestos is exceeded, then further consideration and assessment will be required. Works would need to be undertaken in compliance with the Control of Asbestos Regulations (CAR) 2012 and an Asbestos Plan of Works may be required.

Post Importation

The imported soils should be inspected on site to confirm it is the same material inspected at source and it is suitable for use. Once imported to site, tests should also be undertaken to confirm the batch is suitable prior to use and has not been contaminated in transit.

A management plan should be in place on site for storage and transportation. The material should be stockpiled separately and well segregated on site to prevent cross contamination in accordance with good site practice.

Accurate records of movement of soils should be kept in order to be incorporated in the final verification report.

Approval should be obtained from the Local Authority prior to use on site.

Validation and Verification Report

Site
A final verification report should be issued to the Local Authority/Warranty Provider (e.g. NHBC) detailing records of the re-use and importation of soils, alongside their use on the site.

Cover Layer
Once the chemical suitability of soils used for a cover system in soft landscaping and garden areas has been confirmed, the material can be placed in these areas.

The depth of the cover layer should be recorded, and photographs taken as evidence to be issued to the Local Authority/warranty provider in the verification report.

Approval for the placement of the cover layer should be obtained from the Local Authority/Warranty Provider.

APPENDIX B

BSL Guidance – Re-use and Disposal of Waste

Re-Use Of Waste - Guidance Note

Definition of Waste
The Environment Agency considers waste to be *"...any material that is discarded, or intended to be discarded..."* This includes any soil from trenches, footing, site strip etc. It is no longer required in its original location, therefore it is considered to be waste.

CL:AIRE: Code of Practice
Where materials are excavated for construction purposes, wherever possible these should be retained on site for engineering purposes if they are suitable for use. This can be implemented under the CL:AIRE "Development Industry Code of Practice for the Definition of Waste" (CL:AIRE DoWCoP), also commonly referred to as a "Materials Management Plan".

The developer/contractor is advised to complete all works under the DoWCoP.

Potential scenarios where soils may be able to be re-used:

- Material capable of being used in another place on the same site without treatment.
- Material capable of being used in another place on the same site following ex-situ treatment on site.
- Material capable of being used in another development site without treatment (Direct Transfer).
- Material capable of being used in another development site following ex-situ treatment on another site eg Hub site.

The Code of Practice requires 4 No. Factors to be addressed:

1. Protection of human health and protection of the environment.
2. Suitability of use, without further treatment.
3. Certainty of use.
4. Quantity of material.

In order to satisfy these requirements the following are required:

i) Consultation/approval with Local Authority & Environment Agency to confirm they have no objections to the proposed re-use of waste soils, or the risk assessments for the site.
ii) Risk Assessments to demonstrate that the site does not present an Environmental Hazard.
iii) Remediation Strategy for contaminated sites (or Design Statement for non-contaminated sites).
iv) Materials Management Plan (MMP) which details material generated stockpiles and the end use.
v) Volume calculations.
vi) Planning permission for the development.
vii) Contractual details to be clear, regarding who steps in is a contractor goes into administration/liquidation.

The use of the CoP is effectively industry regulated, there is a requirement to appoint an independent Qualified Person (QP) who checks all the requirements have been met and registers the documentation with the Environment Agency. This person must not have had any involvement with the preparing of the risk assessments or remedial strategy on the site.
Soils which require treatment on site (eg bioremediation, stabilisation) will require an Environmental Permit for treatment, together with justification and validation to prove, once treated, this material is suitable for use.
Site management procedures need to be in place to ensure that material is tracked through from excavation stockpiling, treatment and remediation processes. Should the process of material tracking be considered non-robust, or not adhered to, this may fail the test whether excavated materials may be considered non-waste.

Alternatives include the EA U1 exemption (soils and stones <1000 tonnes and aggregates <5000 tonnes) and the Waste Framework Directive, which applies to naturally occurring soils used on site of origin only. Aggregates can also fall under the EA WRAP Quality Protocols.

Waste Classification For Soils

Introduction
Waste producers have a duty of care to classify the waste they are producing:

- before it is collected, disposed of or recovered.
- to identify the controls that apply to the movement of the waste.
- to complete waste documents and records.
- to identify suitably authorised waste management options.
- to prevent harm to people and the environment.

The most sustainable and economic method of dealing with waste soil is usually the retention and re-use on site. Where this is not possible there are three main options for the disposal of soils:

1. Disposal to a permitted waste recycling facility.
2. Re-use on another site (subject to the suitability).
3. Disposal to a landfill site.

The disposal to a permitted facility will be subject to the **specific conditions of the permits for each individual facility** and will vary dependent on location and environmental sensitivity of the receiving site. Re-use on another site will also be subject to the acceptability criteria of that site.

The guidance below relates to disposal to **landfill sites only**.

Background for Landfill Disposal
In July 2005 the United Kingdom implemented the European Directive 1999/31/EC (The Landfill Directive), this introduced the current regime for waste and waste disposal to landfill. The Landfill Directive places controls on waste disposal. These controls include requirements to follow the waste acceptance procedures and criteria that have been agreed by the Council of the European Union and are laid out in Council Decision 2003/33/EC.

Before a waste can be accepted at a landfill site, the landfill **operator** must be satisfied that the waste meets his permit conditions, the waste acceptance procedures (WAP) and waste acceptance criteria (WAC).

If disposal to landfill is the best management option for the waste soils, these procedures **must** be followed or the operator may refuse to accept the waste.

Key Points

- Not all waste can be landfilled
- Landfills are classified according to whether they can accept **hazardous**, **non-hazardous** or **inert** wastes.
- Wastes can only be accepted at a landfill if they meet the waste acceptance criteria (WAC) for that class of landfill.
- Most wastes must be treated before you can send them to landfill.
- There are formal processes for identifying and checking wastes that must be followed before wastes can be accepted at a landfill site.

Classification
Wastes are listed in the European Waste Catalogue (EWC 2002) and grouped according to generic industry, process or waste types. Wastes within the EWC are either hazardous or non-hazardous. Some of these wastes are hazardous without further assessment (absolute entries) or are 'mirror' entries that require further assessment of their hazardous properties in order to determine whether they are hazardous waste.

Waste soil has mirror entries on the EWC and as such the first phase of the waste classification process is that of determining if the waste is hazardous or not i.e the hazard assessment. The most common EWC waste codes related to soil are:

17 05	**soil (including excavated soil from contaminated sites), stones and dredging spoil**
17 05 03*	soil and stones containing dangerous substances
17 05 04	soil and stones other than those mentioned in 17 05 03

Soils may contain certain contaminants (eg asbestos, oil,) which have prescribed concentration thresholds, that if breached will render the material hazardous waste. These are based on specific "hazardous properties" which include hazards such as carcinogenicity, flammability and toxicity.

In the first instance the concentrations of plausible contaminants within the soil should be identified and wastes should be **classified based on their total concentrations**.

Waste Definitions

Inert	• Will not undergo any significant physical, chemical or biological transformations. • Will not dissolve. • Will not burn. • Will not physically or chemically react. • Will not biodegrade. • Will not adversely affect other matter with which it comes into contact in a way likely to give rise to environmental pollution or harm to human health. • Has insignificant total leachability and pollutant content. • Produces a leachate with an ecotoxicity that is insignificant (if it produces leachate).
Non-Hazardous	Is not inert (see above) Is not hazardous (see below)
Hazardous	Soil has hazardous properties as defined in WM3 (Guidance on the classification and assessment of waste (1st edition 2015)- Technical Guidance)
Stable Non-reactive hazardous waste#	Hazardous waste, the leaching behaviour of which will not change adversely in the long-term, under landfill design conditions or foreseeable accidents either: in the waste alone (for example, by biodegradation), under the impact of long-term ambient conditions (for example, water, air, temperature or mechanical constraints) or by the impact of other wastes (including waste products such as leachate and gas).

This option allows hazardous waste that is stable and thus has a low leaching potential to be deposited in cells with a standard of containment consistent with non-hazardous wastes.

WAC Testing

The purpose of WAC analysis is to confirm that the waste complies with the relevant WAC for the receiving landfill. If the waste has any disposal route other than a landfill site (e.g. recycling facility, incineration etc) the **WAC is not relevant.** Furthermore the WAC limits **cannot be used to make an assessment of whether a waste is hazardous**. WAC testing does however define if a non-hazardous waste is suitable for an inert landfill.

Classification based on Total Concentrations[1]	Non-Hazardous Waste		Hazardous Waste	
WAC testing	Below inert WAC limit values:	Above inert WAC limit values:	Below hazardous WAC limit values	Above hazardous WAC limit values
Landfill requirements	INERT landfill	NON-HAZARDOUS landfill[2]	HAZARDOUS landfill	PRE-TREATMENT[3]

1 Total concentrations are defined as tests results on solids as opposed to leachate (i.e. a liquid).
2 Individual sites may have certain limit values pre-determined in their licence.
3 After pre-treatment the material characteristics may have changed to an extent that allow the soil to be re-classified.

Hydrocarbons in Soils

WM3 uses the term Oil or Waste Oil to cover hydrocarbons products such as fuel oil, petrol or diesel. These are defined by WM3 as hazardous under an absolute entry in the List of Wastes. However hydrocarbons in soils are a mixture rather than a pure product and are therefore not absolute entries.

Known Oils

The simplest scenario is where the identity of the contaminating oil is known or can be identified. If the oil is known the manufacturer's or supplier's REACH compliant safety data sheet for the specific oil can be obtained and the hazard statement codes on that Safety Data Sheet can be used for the hazardous waste assessment.

Where the identity of the oil can only be identified down to a petroleum group level (i.e. the contaminating oil is known to be diesel, but the specific type/brand is unknown), then the classification of that petroleum group should be used in the assessment. The marker compounds associated with that petroleum group may be used to confirm carcinogenicity.

Oils may contain a range of hydrocarbons, so the presence of for instance Diesel Range Organics (DRO) does not enable the assessor to conclude that diesel is present. These hydrocarbons may have arisen from other oils, the laboratory needs to provide an interpretation of the chromatograph to determine if it is consistent with diesel or weathered diesel as a whole.

The concentration of known oils should be determined using a method that as a minimum spans the range in which the carbon numbers for that known oil fall.

Unknown Oils
Where hydrocarbons are contaminating soils it is likely that the oil will be unknown or cannot be determined.

WM3 states that:

> For contaminated land specific consideration must be given to the following before proceeding;
>
> - The presence of other organic contaminants, for example solvents or coal tar that could be detected as hydrocarbons. Coal Tar is not an oil and is considered separately in WM3 example 2. Where the site history or investigation indicates the presence of hydrocarbons from oil and other sources (e.g. coal tar), and the origin of the hydrocarbons cannot reliably be assigned to either, then a worst case approach of considering the hydrocarbons both as waste oil (in accordance with this example) and from other sources, for example coal tar should be taken.
> - The presence of diesel, or weathered diesel, should be specifically considered by the laboratory and where this is confirmed by the hydrocarbon profile the oil should be assessed as a known or identified oil (diesel).

The use of **marker compounds** is optional; however it is recommended that where possible the marker compounds should be used.
WM3 states:

> If the identity of the oil is unknown, and the petroleum group cannot be established, then the oil contaminating the waste can be classified as non-carcinogenic/mutagenic due to the presence of oil if all three of the following criteria are met:
>
> - The waste contains benzo[a]pyrene (BaP) at a concentration of less than 0.01% (1/10,000th) of the TPH concentration (This is the carcinogenic limit specified in table 3.1 of the CLP for BaP)
> - This has been determined by an appropriate and representative sampling approach in accordance with the principles set out in Appendix D of WM3, and
> - The analysis clearly demonstrates, for example by carbon bands or chromatograph, and the laboratory has reasonably concluded that the hydrocarbons present have not arisen from petrol or diesel.

For example:

TPH Concentration (mg/kg)	Petrol or Diesel	BaP (mg/kg)	Classification
10,000	No	0.9	Non- Hazardous
1,000	No	Not available	Hazardous
1,000	Yes	Not relevant	Hazardous

References

1. Environmental Permitting (England and Wales) Regulations 2010 (as amended) (EP Regulations), the Landfill Directive (1999/31/EC) and the subsequent Council Decisions.
2. Environment Agency Environmental Permitting Regulations: "Inert Waste Guidance- Standards and Measures for the Deposit of Inert Waste on Land" 2009.
3. Environment Agency "Waste acceptance at landfills - Guidance on waste acceptance procedures and criteria" Nov 2010.
4. Environment Agency "Guidance on the classification and assessment of waste (Technical Guidance WM3)".
5. Classification, Labelling and Packaging of Substances Regulation (EC 1272/2008) (CLP).
6. Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives
7. 2014/955/EU: Commission Decision of 18 December 2014 amending Decision 2000/532/EC on the list of waste pursuant to Directive 2008/98/EC of the European Parliament
8. Environmental Permitting Guidance The Landfill Directive For the Environmental Permitting (England and Wales) Regulations 2010 Updated March 2010 Version 3.1
9. Classification, Labelling and Packaging of Substances Regulation (EC 1272/2008) (CLP).

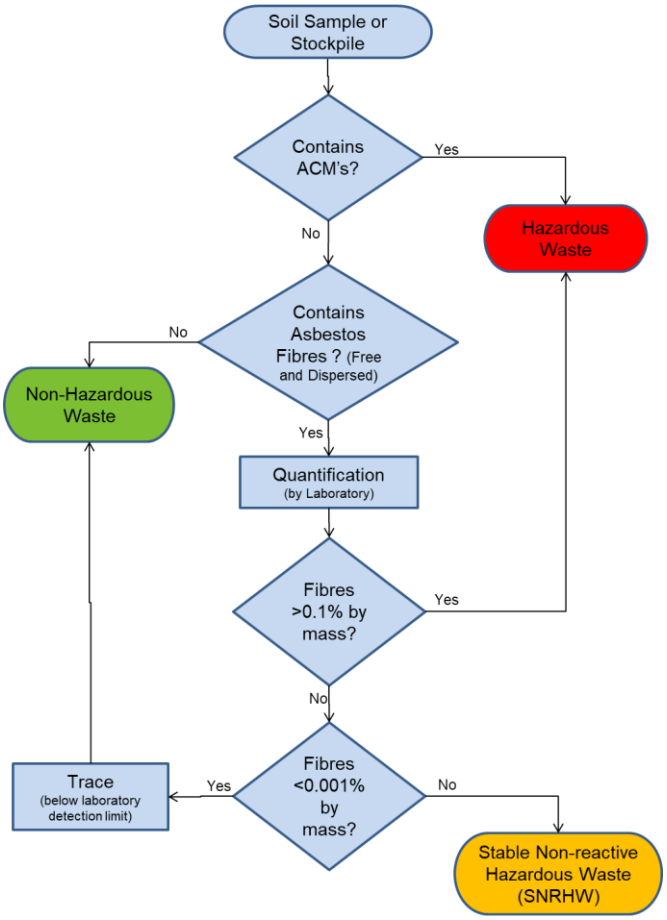
Additional Asbestos Guidance Notes

Disposal

The 1st Edition of WM3 "Guidance on the classification and assessment of waste", details the way in which Asbestos is assessed within soils.

The assessment of asbestos containing waste is dependent on whether the asbestos is present as:

- Fibres that are free and dispersed, or
- Identifiable pieces of asbestos containing materials (ACM's)



Identifiable pieces of asbestos are any particle of a size that can be identified as potentially being asbestos by a competent person if examined by the naked eye. The result is that commonly soils with visible ACM's are sorted and the ACM's removed by hand picking and separate disposal.

Asbestos concentrations below 0.001% by mass are below standard laboratory detection limits and are not currently regarded as containing asbestos for the purposes of disposal and may be disposed of to an inert landfill site[1]. These levels are often termed "trace" by laboratories.

Asbestos concentrations between 0.001% and 0.1% are stable non-reactive hazardous waste (SNRHW)[1]. Waste transfer stations where soil recycling takes place may be able to take SNRHW, but are unlikely to take soils containing asbestos above trace concentrations.

The following codes should be assigned to the asbestos waste as appropriate:

17 06	**Insulation materials and asbestos-containing construction materials**
17 06 01	Insulation materials containing asbestos
17 06 03	Other insulation materials consisting of or containing hazardous substances
17 06 04	Insulation materials other than those mentioned in 17 06 01 and 17 06 03
17 06 05	Construction material containing asbestos

WM3 indicates that 17 06 05 would normally be used in preference to 17 06 01 for the asbestos in asbestos contaminated soil and stones.

Construction materials containing asbestos and "*other suitable materials*" may be landfilled at landfills for non-hazardous waste in accordance with the Landfill Directive without testing.

This means that wastes that are only hazardous because of their asbestos content can be disposed of at landfills for non-hazardous waste in separate landfill cells that only accept asbestos wastes and other suitable materials. The Landfill Directive requires that stable non-reactive hazardous waste shall not be deposited with biodegradable waste (for example organic material, household waste, paper etc..) and must meet the waste acceptance criteria set out in accordance with Annex II.

Construction

Health and Safety Executive (HSE) guidance on asbestos is not directly related to soil and much of the guidance focuses on the removal of asbestos from buildings. The overarching legislation is the Control of Asbestos Regulation (CAR 2012). However where work involves (or is likely to involve) contact with asbestos then CAR 2012 requires a risk assessment including whether or not the work is licensed or notifiable non-licensed work and may require an Asbestos Management Plan. Work becomes notifiable if it is considered that the control limit could be exceeded.

Brownfield sites frequently have soils that contain asbestos and the presence of asbestos needs to be considered within the context of construction, particularly in relation to groundworks. The exposure of soils and the use of excavators and plant to move soil around increases the possibility of fibres becoming airborne. However it is good site practice to not generate dusts and to employ dust suppression on all sites regardless of the presence of asbestos.

The legal control limit for asbestos is 0.1f/ml over a continuous four hour period. The control limit is not a '*safe*' level and exposure from work activities involving asbestos must be reduced to as far below the control limit as possible.

Clearly the higher the concentrations in the soil the greater potential there is for fibres to be released, however IOM publication TM/88/14 "the release of dispersed asbestos fibres from soil" 1988 concludes that:

- Mixtures of asbestos in dry soils with asbestos content as low as 0.001% can produce airborne respirable asbestos concentrations greater than 0.1f/ml in dust clouds where the respirable dust concentrations are less than 5mg/m^3.
- An action limit is recommended of no higher than 0.001% asbestos in soils above which steps should be taken to minimise exposure to airborne fibres (eg by wetting).
- The addition of relatively small quantities (10%) of water can reduce the airborne fibre concentrations by an order of magnitude.

Where asbestos has been identified at concentrations above 0.001% as free and dispersed fibres in the soil precautions need to be adopted. Concentrations below this are considered to be normal background, although good site practice dictates that the generation of dusts should be avoided and therefore any fugitive fibre release from minor concentrations should be kept to a practical minimum.

End Use

The use of materials containing asbestos and material containing asbestos is prohibited under EU legislation. There is currently a Joint Industry Working Group (JIWG) tasked with producing a Code of Practice for Asbestos in Soil, Made Ground and Construction & Demolition Material that will clarify in due course the position of the various government agencies.

Asbestos containing materials can remain in situ under a suitable cover system which may be hardsurfacing or soft landscaping (with or without hard dig layers and markers).

There is a risk that future maintenance may compromise such systems and details of the presence of asbestos should be kept in the Health and Safety File.

Preliminary publications from JIWG (April 2015) provide guides for decision making in relation to construction. These are at a "Beta" test stage and further publications will be provided in due course.

The re-use of waste soils should be undertaken in accordance with the CL:AIRE Code of Practice and is subject to suitable risk assessments demonstrating low risk . There is nothing that specifically excludes the re-use of soils containing asbestos as fill to raise levels. However the movement of materials increases the risk of fibres becoming airborne and suitable precautions will be required.

The re-use of soils containing asbestos at concentrations above hazardous waste levels is likely to meet with regulatory opposition. Assuming a suitable strategy could be agreed this would take a considerable amount of time and is only likely to be feasible where there is a long program for implementation.

APPENDIX C

UU Pipeline Risk Assessment

William Smith House, 173-183 Witton Street, Northwich,
Cheshire, CW9 5LP
Tel: +44(0)1606 334 844
www.brownfield-solutions.com

AJS/C5150/12946

13 March 2024

Kellen Homes
1st Floor
103 Dalton Avenue
Birchwood Park
Warrington
WA3 6YF

For the Attention of Stuart Ellis

Dear Stuart

Re: Mount Road, Gorton– United Utilities Potable (UU PRA) Water Supply Pipeline Risk Assessment

Please find enclosed our UU PRA for the above site in accordance with UKWIR guidance, with the selection and justification for standard PE pipe for the site, subject to agreement with United Utilities.

We trust the enclosed meets requirements, if you have any queries then please do not hesitate to contact the undersigned.

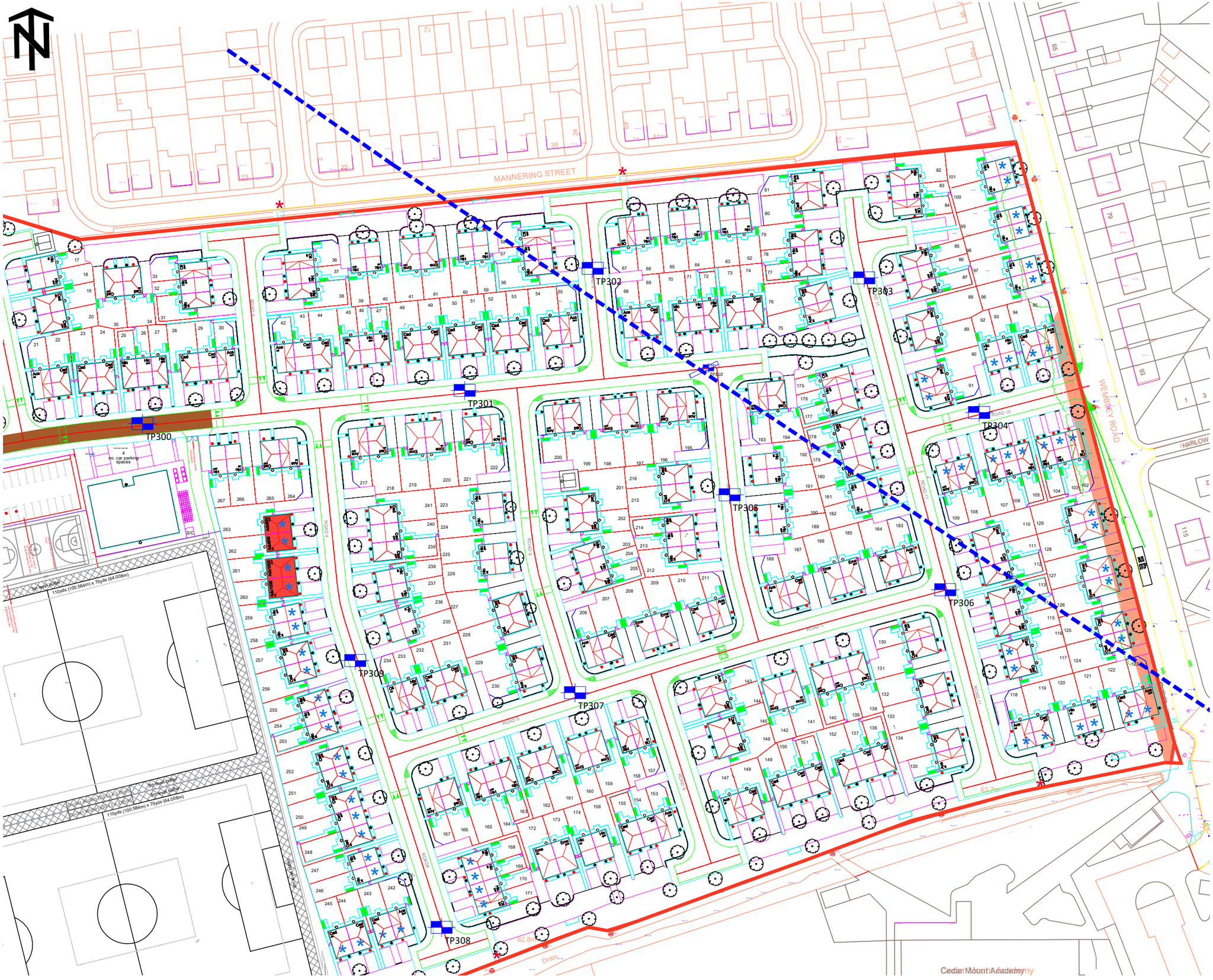
Yours sincerely

For Brownfield Solutions Limited

[redacted]

A J Stokoe
BSc (Hons) CSci MIEnvSc FGS
Associate
[redacted]

ENC – C5150_05 UU Trial Pit Location Plan February 2024
C5150 Exploratory Hole Logs
I2 Analytical Report Number: 24-006267
Completed UU PRA and PSRAS Form
See also – BSL Supporting information download links:
11494 Rev B Phase I Geo-Environmental Assessment Report .pdf
11591 Rev E Phase II Geo-Environmental Assessment Report November 2023.pdf
12138 Supplementary Geo-Environmental Letter Report June 2023.pdf



KEY	
	APPROXIMATE SITE BOUNDARY
TPXX	TRIAL PIT
	APPROXIMATE CULVERT
	SURVEYED TRENCH

NOTES

1. ALL DIMENSIONS TO BE CHECKED ON SITE BEFORE COMMENCING WORKS. ANY DISCREPANCIES ARE TO BE REPORTED TO THE ARCHITECT & ENGINEER FOR VERIFICATION. FIGURED DIMENSIONS ONLY ARE TO BE TAKEN FROM THIS DRAWING.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ENGINEERS REPORTS. THIS DRAWING IS COPYRIGHT OF BSL.
3. DRAWING NOT FOR CONSTRUCTION PURPOSES.

REV	DATE	DESCRIPTION	BY	CKD

BROWNFIELD SOLUTIONS LTD

CLIENT

KELLEN HOMES

PROJECT TITLE

MOUNT ROAD, GORTON

DRAWING TITLE

UU PRA TRIAL PIT LOCATION PLAN

DRAWING No.	REVISION	SCALE	DATE
C5150/05	-	NTS	28/02/24

DRAWN BY	CHECKED BY
MB	AJS

Trial Pit Log

No.
TP300
Sheet 1 of 1

PROJECT NO:	C5150	**CO-ORDS:**	388223E, 395069N
PROJECT NAME:	MOUNT ROAD, GORTON	**LEVEL:**	62.81m OD
CLIENT:	KELLEN HOMES & GREATER MANCHESTER YOUTH FEDERATION	**DATES:**	27/02/24

Hole Type	Scale	Logged	Checked
TP	1:25	MB	AJS

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description
	Depth (m)	Type	Results				
	0.20-0.70	B		0.20	62.61		MADE GROUND TOPSOIL: Grass over dark brown slightly gravelly clayey fine to coarse sand with many rootlets. Gravel is subangular to subrounded fine to coarse of mudstone.
				0.70	62.11		MADE GROUND: Dark brown gravelly sand. Sand is fine to coarse of mixed lithologies including ash. Gravel is subangular to subrounded fine to coarse of glass, pottery, coal and mudstone.
	0.90-1.10	ES					Firm brown mottled grey slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to medium of mudstone and coal.
				1.80	61.01		End of Trial Pit at 1.80m

1.0
2.0
3.0
4.0
5.0

Remarks

1. Clearance of services by BSL engineer using CAT and Genny.
2. No groundwater encountered.
3. Trial pit completed at 1.80m bgl.
4. Backfilled with arisings upon completion.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

Trial Pit Log

No.
TP301
Sheet 1 of 1

PROJECT NO:	C5150	**CO-ORDS:**	388322E, 395079N
PROJECT NAME:	MOUNT ROAD, GORTON	**LEVEL:**	63.47m OD
CLIENT:	KELLEN HOMES & GREATER MANCHESTER YOUTH FEDERATION	**DATES:**	27/02/24

Hole Type	Scale	Logged	Checked
TP	1:25	MB	AJS

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description
	Depth (m)	Type	Results				
	0.20-1.30	B		0.20	63.27		MADE GROUND TOPSOIL: Grass over dark brown slightly gravelly clayey fine to coarse sand with many rootlets. Gravel is subangular to subrounded fine to coarse of mudstone.
▼							MADE GROUND: Dark brown gravelly sand. Sand is fine to coarse of mixed lithologies including ash. Gravel is subangular to subrounded fine to coarse of glass, pottery, mudstone, clinker and brick.
	1.40-1.60	ES		1.30	62.17		Firm brown mottled grey slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to medium of mudstone.
				1.75	61.72		End of Trial Pit at 1.75m

1.0
2.0
3.0
4.0
5.0

Remarks

1. Clearance of services by BSL engineer using CAT and Genny.
2. Small groundwater seepage encountered at 1.10m bgl.
3. Trial pit completed at 1.75m bgl.
4. Backfilled with arisings upon completion.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

Trial Pit Log

No.
TP302
Sheet 1 of 1

PROJECT NO:	C5150	**CO-ORDS:**	388361E, 395117N
PROJECT NAME:	MOUNT ROAD, GORTON	**LEVEL:**	63.63m OD
CLIENT:	KELLEN HOMES & GREATER MANCHESTER YOUTH FEDERATION	**DATES:**	27/02/24

Hole Type	Scale	Logged	Checked
TP	1:25	MB	AJS

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description
	Depth (m)	Type	Results				
	0.20-0.40	B		0.20	63.43		MADE GROUND TOPSOIL: Grass over dark brown slightly gravelly clayey fine to coarse sand with many rootlets. Gravel is subangular to subrounded fine to coarse of mudstone and glass.
				0.40	63.23		MADE GROUND: Dark brown gravelly sand. Sand is fine to coarse of mixed lithologies including ash. Gravel is subangular to subrounded fine to coarse of glass, pottery and brick.
	0.75-0.95	ES					Firm brown mottled grey slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to medium of mudstone.
				1.80	61.83		End of Trial Pit at 1.80m

1.0
2.0
3.0
4.0
5.0

Remarks

1. Clearance of services by BSL engineer using CAT and Genny.
2. No groundwater encountered.
3. Trial pit completed at 1.80m bgl.
4. Backfilled with arisings upon completion.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

Trial Pit Log

No.
TP303
Sheet 1 of 1

PROJECT NO:	C5150	**CO-ORDS:**	388444E, 395114N
PROJECT NAME:	MOUNT ROAD, GORTON	**LEVEL:**	64.23m OD
CLIENT:	KELLEN HOMES & GREATER MANCHESTER YOUTH FEDERATION	**DATES:**	27/02/24

Hole Type	Scale	Logged	Checked
TP	1:25	MB	AJS

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description
	Depth (m)	Type	Results				
	0.20-0.60	B		0.20	64.03		MADE GROUND TOPSOIL: Grass over dark brown slightly gravelly clayey fine to coarse sand with many rootlets. Gravel is subangular to subrounded fine to coarse of mudstone.
				0.60	63.63		MADE GROUND: Dark brown gravelly sand. Sand is fine to coarse of mixed lithologies including ash. Gravel is subangular to subrounded fine to coarse of glass, pottery, clinker and brick.
	0.80-1.00	ES					Firm brown mottled grey slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to medium of mudstone.
				1.80	62.43		End of Trial Pit at 1.80m

1.0
2.0
3.0
4.0
5.0

Remarks

1. Clearance of services by BSL engineer using CAT and Genny.
2. No groundwater encountered.
3. Trial pit completed at 1.80m bgl.
4. Backfilled with arisings upon completion.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

Trial Pit Log

No.
TP304
Sheet 1 of 1

PROJECT NO:	C5150	**CO-ORDS:**	388479E, 395072N
PROJECT NAME:	MOUNT ROAD, GORTON	**LEVEL:**	64.56m OD
CLIENT:	KELLEN HOMES & GREATER MANCHESTER YOUTH FEDERATION	**DATES:**	27/02/24

Hole Type	Scale	Logged	Checked
TP	1:25	MB	AJS

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description
	Depth (m)	Type	Results				
	0.20-0.90	B		0.20	64.36		MADE GROUND TOPSOIL: Grass over dark brown slightly gravelly clayey fine to coarse sand with many rootlets. Gravel is subangular to subrounded fine to coarse of mudstone.
							MADE GROUND: Dark brown gravelly sand. Sand is fine to coarse of mixed lithologies including ash. Gravel is subangular to subrounded fine to coarse of glass, pottery and clinker.
	0.90-2.00	B		0.90	63.66		Firm brown mottled grey slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to medium of mudstone.
	1.10-1.30	ES					
				2.00	62.56		End of Trial Pit at 2.00m

1.0
2.0
3.0
4.0
5.0

Remarks

1. Clearance of services by BSL engineer using CAT and Genny.
2. No groundwater encountered.
3. Trial pit completed at 2.00m bgl.
4. Backfilled with arisings upon completion.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

Trial Pit Log

		No.	TP305
			Sheet 1 of 1
PROJECT NO:	C5150	**CO-ORDS:**	388403E, 395047N
PROJECT NAME:	MOUNT ROAD, GORTON	**LEVEL:**	63.88m OD
CLIENT:	KELLEN HOMES & GREATER MANCHESTER YOUTH FEDERATION	**DATES:**	27/02/24

Hole Type	Scale	Logged	Checked
TP	1:25	MB	AJS

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description
	Depth (m)	Type	Results				
	0.20-1.60	B		0.20	63.68		MADE GROUND TOPSOIL: Grass over dark brown slightly gravelly clayey fine to coarse sand with many rootlets. Gravel is subangular to subrounded fine to coarse of mudstone.
	0.90-1.10	ES					MADE GROUND: Dark brown gravelly sand. Sand is fine to coarse of mixed lithologies including ash. Gravel is subangular to subrounded fine to coarse of glass, pottery, brick and clinker.
				1.60	62.28		Firm dark brown slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to medium of mudstone.
				2.00	61.88		End of Trial Pit at 2.00m

1.0
2.0
3.0
4.0
5.0

Remarks

1. Clearance of services by BSL engineer using CAT and Genny.
2. No groundwater encountered.
3. Trial pit completed at 2.00m bgl.
4. Backfilled with arisings upon completion.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

Trial Pit Log

No.
TP306
Sheet 1 of 1

PROJECT NO:	C5150	**CO-ORDS:**	388469E, 395018N
PROJECT NAME:	MOUNT ROAD, GORTON	**LEVEL:**	64.49m OD
CLIENT:	KELLEN HOMES & GREATER MANCHESTER YOUTH FEDERATION	**DATES:**	27/02/24

Hole Type	Scale	Logged	Checked
TP	1:25	MB	AJS

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description
	Depth (m)	Type	Results				
	0.20-1.80	B		0.20	64.29		MADE GROUND TOPSOIL: Grass over dark brown slightly gravelly clayey fine to coarse sand with many rootlets. Gravel is subangular to subrounded fine to coarse of mudstone and brick.
							MADE GROUND: Dark brown gravelly sand. Sand is fine to coarse of mixed lithologies including ash. Gravel is subangular to subrounded fine to coarse of glass, pottery, brick and clinker.
	1.50-1.70	ES					
				1.80	62.69		Firm dark brown slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to medium of mudstone.
				2.40	62.09		End of Trial Pit at 2.40m

1.0
2.0
3.0
4.0
5.0

Remarks

1. Clearance of services by BSL engineer using CAT and Genny.
2. No groundwater encountered.
3. Trial pit completed at 2.40m bgl.
4. Backfilled with arisings upon completion.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

Trial Pit Log

No.
TP307
Sheet 1 of 1

PROJECT NO:	C5150	**CO-ORDS:**	388356E, 394987N
PROJECT NAME:	MOUNT ROAD, GORTON	**LEVEL:**	63.00m OD
CLIENT:	KELLEN HOMES & GREATER MANCHESTER YOUTH FEDERATION	**DATES:**	27/02/24

Hole Type	Scale	Logged	Checked
TP	1:25	MB	AJS

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description
	Depth (m)	Type	Results				
	0.20-1.50	B		0.20	62.80		MADE GROUND TOPSOIL: Grass over dark brown slightly gravelly clayey fine to coarse sand with many rootlets. Gravel is subangular to subrounded fine to coarse of mudstone.
	0.80-1.00	ES					MADE GROUND: Dark brown gravelly sand. Sand is fine to coarse of mixed lithologies including ash. Gravel is subangular to subrounded fine to coarse of glass, pottery, brick and clinker.
▼				2.10	60.90		Firm dark brown slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to medium of mudstone.
				2.50	60.50		End of Trial Pit at 2.50m

1.0
2.0
3.0
4.0
5.0

Remarks

1. Clearance of services by BSL engineer using CAT and Genny.
2. Small groundwater seepage encountered at 2.00m bgl.
3. Trial pit completed at 2.50m bgl.
4. Backfilled with arisings upon completion.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

Trial Pit Log

No.
TP308
Sheet 1 of 1

PROJECT NO:	C5150	**CO-ORDS:**	388315E, 394915N
PROJECT NAME:	MOUNT ROAD, GORTON	**LEVEL:**	62.89m OD
CLIENT:	KELLEN HOMES & GREATER MANCHESTER YOUTH FEDERATION	**DATES:**	27/02/24

Hole Type	Scale	Logged	Checked
TP	1:25	MB	AJS

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description
	Depth (m)	Type	Results				
	0.20-1.20	B		0.20	62.69		MADE GROUND TOPSOIL: Grass over dark brown slightly gravelly clayey fine to coarse sand with many rootlets. Gravel is subangular to subrounded fine to coarse of mudstone.
							MADE GROUND: Dark brown gravelly sand. Sand is fine to coarse of mixed lithologies including ash. Gravel is subangular to subrounded fine to coarse of glass and pottery.
	1.20-1.75	B		1.20	61.69		Firm dark brown slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to medium of mudstone.
	1.50-1.70	ES					
				1.75	61.14		End of Trial Pit at 1.75m

1.0
2.0
3.0
4.0
5.0

Remarks

1. Clearance of services by BSL engineer using CAT and Genny.
2. No groundwater encountered.
3. Trial pit completed at 1.75m bgl.
4. Backfilled with arisings upon completion.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

Trial Pit Log

No.
TP309
Sheet 1 of 1

PROJECT NO:	C5150	**CO-ORDS:**	388288E, 394997N
PROJECT NAME:	MOUNT ROAD, GORTON	**LEVEL:**	62.72m OD
CLIENT:	KELLEN HOMES & GREATER MANCHESTER YOUTH FEDERATION	**DATES:**	27/02/24

Hole Type	Scale	Logged	Checked
TP	1:25	MB	AJS

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description
	Depth (m)	Type	Results				
	0.20-2.00	B		0.20	62.52		MADE GROUND TOPSOIL: Grass over dark brown slightly gravelly clayey fine to coarse sand with many rootlets. Gravel is subangular to subrounded fine to coarse of mudstone.
	1.10-1.30	ES					MADE GROUND: Dark brown gravelly sand. Sand is fine to coarse of mixed lithologies including ash. Gravel is subangular to subrounded fine to coarse of brick and pottery.
	2.40-2.60	B		2.40	60.32		Firm dark brown slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to medium of mudstone.
				2.60	60.12		End of Trial Pit at 2.60m

1.0
2.0
3.0
4.0
5.0

Remarks

1. Clearance of services by BSL engineer using CAT and Genny.
2. No groundwater encountered.
3. Trial pit completed at 2.60m bgl.
4. Backfilled with arisings upon completion.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

Trial Pit Log

		No.	TP310
			Sheet 1 of 1
PROJECT NO:	C5150	**CO-ORDS:**	388393E, 395086N
PROJECT NAME:	MOUNT ROAD, GORTON	**LEVEL:**	63.94m OD
CLIENT:	KELLEN HOMES & GREATER MANCHESTER YOUTH FEDERATION	**DATES:**	27/02/24

Hole Type	Scale	Logged	Checked
TP	1:25	MB	AJS

Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m OD)	Legend	Stratum Description
	Depth (m)	Type	Results				
				0.20	63.74		MADE GROUND TOPSOIL: Grass over dark brown slightly gravelly clayey fine to coarse sand with many rootlets. Gravel is subangular to subrounded fine to coarse of mudstone.
							MADE GROUND: Dark brown gravelly sand. Sand is fine to coarse of mixed lithologies including ash. Gravel is subangular to subrounded fine to coarse of brick and pottery.
				0.90	63.04		Firm dark brown slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to medium of mudstone.
				2.50	61.44		End of Trial Pit at 2.50m

1.0
2.0
3.0
4.0
5.0

Remarks

1. Clearance of services by BSL engineer using CAT and Genny.
2. No groundwater encountered.
3. Trial pit extended into a trench approximately 9.50m in length to locate historical culvert. No culvert encountered.
4. Backfilled with arisings upon completion.

ES = Environmental Sample
D = Disturbed Sample
B = Bulk Sample
LB = Large Bulk Sample
U = Undisturbed Sample
UT = Undisturbed Thin Wall Sample
SPT = Standard Penetration Test
PID = Photoionization Detector (ppm)
PPM = Part Per Million
HSV = Hand Shear Vane

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Analytical Report Number : 24-006267

Project / Site name:	Mount Road, Gorton	**Samples received on:**	29/02/2024
Your job number:	C5150	**Samples instructed on/ Analysis started on:**	29/02/2024
Your order number:	5015	**Analysis completed by:**	08/03/2024
Report Issue Number:	1	**Report issued on:**	08/03/2024
Samples Analysed:	10 soil samples		

Signed: [redacted]

Joanna Wawrzeczko
Senior Reporting Specialist
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

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The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 24-006267
Project / Site name: Mount Road, Gorton
Your Order No: 5015

Lab Sample Number				131598	131599	131600	131601	131602
Sample Reference				TP300	TP301	TP302	TP303	TP304
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.90-1.10	1.40-1.60	0.75-0.95	0.80-1.00	1.10-1.30
Date Sampled				27/02/2024	27/02/2024	27/02/2024	27/02/2024	27/02/2024
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	21	17	18	17	15
Total mass of sample received	kg	0.1	NONE	0.8	0.8	0.8	0.8	0.8
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.06	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.1	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.92	< 0.05	0.09
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.17	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	1.1	< 0.05	0.14
Pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.91	< 0.05	0.13
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.32	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.35	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05	0.24	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05	0.18	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.28	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.15	< 0.05	< 0.05
Dibenzo(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.18	< 0.05	< 0.05
Petroleum Hydrocarbons								
TPHCWG - Aliphatic >C5 - C6 HS_1D_AL	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
TPHCWG - Aliphatic >C6 - C8 HS_1D_AL	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
TPHCWG - Aliphatic >C8 - C10 HS_1D_AL	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
TPHCWG - Aliphatic >C10 - C12 EH_CU_1D_AL_#1_#2	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPHCWG - Aliphatic >C12 - C16 EH_CU_1D_AL_#1_#2	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPHCWG - Aliphatic >C16 - C21 EH_CU_1D_AL_#1_#2	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPHCWG - Aliphatic >C16 - C35 EH_CU_1D_AL_#1_#2	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPHCWG - Aliphatic >C21 - C35 EH_CU_1D_AL_#1_#2	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPHCWG - Aliphatic >C35 - C40 EH_CU_1D_AL_#1_#2	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10
TPHCWG - Aliphatic >C5 - C35 EH_CU+HS_1D_AL_#1_#2	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10
TPHCWG - Aliphatic >C5 - C40 EH_CU+HS_1D_AL_#1_#2	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10
TPHCWG - Aromatic >EC5 - EC7 HS_1D_AR	mg/kg	0.01	NONE	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.01	NONE	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
TPHCWG - Aromatic >EC10 - EC12 EH_CU_1D_AR_#1_#2	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPHCWG - Aromatic >EC12 - EC16 EH_CU_1D_AR_#1_#2	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPHCWG - Aromatic >EC16 - EC21 EH_CU_1D_AR_#1_#2	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPHCWG - Aromatic >EC21 - EC35 EH_CU_1D_AR_#1_#2	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPHCWG - Aromatic >EC35 - EC40 EH_CU_1D_AR_#1_#2	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10
TPHCWG - Aromatic >EC5 - EC35 EH_CU+HS_1D_AR_#1_#2	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10
TPHCWG - Aromatic >EC5 - EC40 EH_CU+HS_1D_AR_#1_#2	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH (>C5 - C10) HS_1D_TOTAL	mg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH (>C16 - C40) EH_CU_1D_TOTAL_#1_#2	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH Total >C5 - C40 EH_CU+HS_1D_TOTAL_#1_#2	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10

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Analytical Report Number: 24-006267
Project / Site name: Mount Road, Gorton
Your Order No: 5015

Lab Sample Number				131598	131599	131600	131601	131602
Sample Reference				TP300	TP301	TP302	TP303	TP304
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.90-1.10	1.40-1.60	0.75-0.95	0.80-1.00	1.10-1.30
Date Sampled				27/02/2024	27/02/2024	27/02/2024	27/02/2024	27/02/2024
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
p & m-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
o-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	mg/kg	0.005	NONE	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Benzene	mg/kg	0.005	MCERTS	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Toluene	mg/kg	0.005	MCERTS	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Ethylbenzene	mg/kg	0.005	MCERTS	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
p & m-xylene	mg/kg	0.005	MCERTS	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
o-Xylene	mg/kg	0.005	MCERTS	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
SVOCs								
Aniline	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenol	mg/kg	0.2	ISO 17025	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
2-Chlorophenol	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2^	< 0.2^	< 0.2^	< 0.2^	< 0.2^
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2-Methylphenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Hexachloroethane	mg/kg	0.05	ISO 17025	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nitrobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
4-Methylphenol	mg/kg	0.2	NONE	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Isophorone	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
2-Nitrophenol	mg/kg	0.3	NONE	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
4-Chloroaniline	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Hexachlorobutadiene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2,4,6-Trichlorophenol	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2,4,5-Trichlorophenol	mg/kg	0.2	NONE	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
2-Methylnaphthalene	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2-Chloronaphthalene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Dimethylphthalate	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2,6-Dinitrotoluene	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2,4-Dinitrotoluene	mg/kg	0.2	NONE	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Dibenzofuran	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
4-Chlorophenyl phenyl ether	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Diethyl phthalate	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
4-Nitroaniline	mg/kg	0.2	NONE	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Azobenzene	mg/kg	0.3	NONE	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 24-006267
Project / Site name: Mount Road, Gorton
Your Order No: 5015

Lab Sample Number				131598	131599	131600	131601	131602
Sample Reference				TP300	TP301	TP302	TP303	TP304
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.90-1.10	1.40-1.60	0.75-0.95	0.80-1.00	1.10-1.30
Date Sampled				27/02/2024	27/02/2024	27/02/2024	27/02/2024	27/02/2024
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Hexachlorobenzene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Carbazole	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Dibutyl phthalate	mg/kg	0.2	NONE	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Anthraquinone	mg/kg	0.3	NONE	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Butyl benzyl phthalate	mg/kg	0.3	NONE	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 24-006267
Project / Site name: Mount Road, Gorton
Your Order No: 5015

Lab Sample Number				131603	131604	131605	131606	131607
Sample Reference				TP305	TP306	TP307	TP308	TP309
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.90-1.10	1.50-1.70	0.80-1.00	1.50-1.70	1.10-1.30
Date Sampled				27/02/2024	27/02/2024	27/02/2024	27/02/2024	27/02/2024
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	20	19	24	18	20
Total mass of sample received	kg	0.1	NONE	0.8	0.8	0.8	0.8	0.8
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	0.54	0.31	0.91	< 0.05	1.4
Acenaphthylene	mg/kg	0.05	MCERTS	0.18	< 0.05	0.06	< 0.05	0.08
Acenaphthene	mg/kg	0.05	MCERTS	0.73	0.72	0.81	< 0.05	2.4
Fluorene	mg/kg	0.05	MCERTS	0.43	0.38	0.45	< 0.05	1.3
Phenanthrene	mg/kg	0.05	MCERTS	5.3	5.4	5.3	< 0.05	18
Anthracene	mg/kg	0.05	MCERTS	1.2	1.1	1.1	< 0.05	4.4
Fluoranthene	mg/kg	0.05	MCERTS	9.6	6.7	6.9	0.07	23
Pyrene	mg/kg	0.05	MCERTS	9.8	5.9	6.2	0.06	20
Benzo(a)anthracene	mg/kg	0.05	MCERTS	5.6	3.1	3.6	< 0.05	10
Chrysene	mg/kg	0.05	MCERTS	5.6	3.5	3.8	< 0.05	11
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	6.6	3.6	4.2	< 0.05	11
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	3.6	1.4	1.6	< 0.05	5.1
Benzo(a)pyrene	mg/kg	0.05	MCERTS	6.4	3	3.6	< 0.05	9.9
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	3.4	1.8	2.1	< 0.05	5
Dibenzo(a,h)anthracene	mg/kg	0.05	MCERTS	0.7	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	4.3	2.1	2.4	< 0.05	5.6
Petroleum Hydrocarbons								
TPHCWG - Aliphatic >C5 - C6 HS_1D_AL	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
TPHCWG - Aliphatic >C6 - C8 HS_1D_AL	mg/kg	0.02	NONE	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
TPHCWG - Aliphatic >C8 - C10 HS_1D_AL	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
TPHCWG - Aliphatic >C10 - C12 EH_CU_1D_AL_#1_#2	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPHCWG - Aliphatic >C12 - C16 EH_CU_1D_AL_#1_#2	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	2
TPHCWG - Aliphatic >C16 - C21 EH_CU_1D_AL_#1_#2	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPHCWG - Aliphatic >C16 - C35 EH_CU_1D_AL_#1_#2	mg/kg	10	MCERTS	< 10	< 10	10	< 10	27
TPHCWG - Aliphatic >C21 - C35 EH_CU_1D_AL_#1_#2	mg/kg	8	MCERTS	< 8.0	< 8.0	10	< 8.0	27
TPHCWG - Aliphatic >C35 - C40 EH_CU_1D_AL_#1_#2	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10
TPHCWG - Aliphatic >C5 - C35 EH_CU+HS_1D_AL_#1_#2	mg/kg	10	NONE	< 10	< 10	10	< 10	29
TPHCWG - Aliphatic >C5 - C40 EH_CU+HS_1D_AL_#1_#2	mg/kg	10	NONE	< 10	< 10	10	< 10	29
TPHCWG - Aromatic >EC5 - EC7 HS_1D_AR	mg/kg	0.01	NONE	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.01	NONE	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.05	NONE	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
TPHCWG - Aromatic >EC10 - EC12 EH_CU_1D_AR_#1_#2	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPHCWG - Aromatic >EC12 - EC16 EH_CU_1D_AR_#1_#2	mg/kg	2	MCERTS	< 2.0	2.3	< 2.0	< 2.0	8.9
TPHCWG - Aromatic >EC16 - EC21 EH_CU_1D_AR_#1_#2	mg/kg	10	MCERTS	21	< 10	14	< 10	59
TPHCWG - Aromatic >EC21 - EC35 EH_CU_1D_AR_#1_#2	mg/kg	10	MCERTS	79	24	35	< 10	100
TPHCWG - Aromatic >EC35 - EC40 EH_CU_1D_AR_#1_#2	mg/kg	10	NONE	11	< 10	< 10	< 10	< 10
TPHCWG - Aromatic >EC5 - EC35 EH_CU+HS_1D_AR_#1_#2	mg/kg	10	NONE	100	26	48	< 10	170
TPHCWG - Aromatic >EC5 - EC40 EH_CU+HS_1D_AR_#1_#2	mg/kg	10	NONE	110	26	48	< 10	170
TPH (>C5 - C10) HS_1D_TOTAL	mg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH (>C16 - C40) EH_CU_1D_TOTAL_#1_#2	mg/kg	10	NONE	110	39	67	< 10	200
TPH Total >C5 - C40 EH_CU+HS_1D_TOTAL_#1_#2	mg/kg	10	NONE	110	26	59	< 10	200

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Analytical Report Number: 24-006267
Project / Site name: Mount Road, Gorton
Your Order No: 5015

Lab Sample Number				131603	131604	131605	131606	131607
Sample Reference				TP305	TP306	TP307	TP308	TP309
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.90-1.10	1.50-1.70	0.80-1.00	1.50-1.70	1.10-1.30
Date Sampled				27/02/2024	27/02/2024	27/02/2024	27/02/2024	27/02/2024
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
p & m-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
o-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	mg/kg	0.005	NONE	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Benzene	mg/kg	0.005	MCERTS	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Toluene	mg/kg	0.005	MCERTS	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Ethylbenzene	mg/kg	0.005	MCERTS	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
p & m-xylene	mg/kg	0.005	MCERTS	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
o-Xylene	mg/kg	0.005	MCERTS	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
SVOCs								
Aniline	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenol	mg/kg	0.2	ISO 17025	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
2-Chlorophenol	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2^	< 0.2	< 0.2	< 0.2	< 0.2
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2-Methylphenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Hexachloroethane	mg/kg	0.05	ISO 17025	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nitrobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
4-Methylphenol	mg/kg	0.2	NONE	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Isophorone	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
2-Nitrophenol	mg/kg	0.3	NONE	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
4-Chloroaniline	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Hexachlorobutadiene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2,4,6-Trichlorophenol	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2,4,5-Trichlorophenol	mg/kg	0.2	NONE	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
2-Methylnaphthalene	mg/kg	0.1	NONE	0.4	0.3	0.9	< 0.1	1.2
2-Chloronaphthalene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Dimethylphthalate	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2,6-Dinitrotoluene	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
2,4-Dinitrotoluene	mg/kg	0.2	NONE	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Dibenzofuran	mg/kg	0.2	MCERTS	0.3	0.3	0.4	< 0.2	1.3
4-Chlorophenyl phenyl ether	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Diethyl phthalate	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
4-Nitroaniline	mg/kg	0.2	NONE	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Azobenzene	mg/kg	0.3	NONE	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2

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Analytical Report Number: 24-006267
Project / Site name: Mount Road, Gorton
Your Order No: 5015

Lab Sample Number				131603	131604	131605	131606	131607
Sample Reference				TP305	TP306	TP307	TP308	TP309
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.90-1.10	1.50-1.70	0.80-1.00	1.50-1.70	1.10-1.30
Date Sampled				27/02/2024	27/02/2024	27/02/2024	27/02/2024	27/02/2024
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Hexachlorobenzene	mg/kg	0.2	MCERTS	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Carbazole	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	1.2
Dibutyl phthalate	mg/kg	0.2	NONE	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Anthraquinone	mg/kg	0.3	NONE	0.4	0.3	< 0.3	< 0.3	1.3
Butyl benzyl phthalate	mg/kg	0.3	NONE	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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Analytical Report Number : 24-006267
Project / Site name: Mount Road, Gorton

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
131598	TP300	None Supplied	0.90-1.10	Brown clay
131599	TP301	None Supplied	1.40-1.60	Brown clay
131600	TP302	None Supplied	0.75-0.95	Brown clay
131601	TP303	None Supplied	0.80-1.00	Brown clay
131602	TP304	None Supplied	1.10-1.30	Brown clay
131603	TP305	None Supplied	0.90-1.10	Brown gravely sand
131604	TP306	None Supplied	1.50-1.70	Brown gravely sand with rubble
131605	TP307	None Supplied	0.80-1.00	Brown gravely sand with rubble
131606	TP308	None Supplied	1.50-1.70	Brown clay
131607	TP309	None Supplied	1.10-1.30	Brown gravely sand with rubble

Analytical Report Number : 24-006267
Project / Site name: Mount Road, Gorton

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight	In-house method based on British Standard Methods and MCERTS requirements.	L019B	D	NONE
Speciated EPA-16 PAHs and/or Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds (including PAH) in soil by extraction in dichloromethane and hexane followed by GC-MS	In-house method based on USEPA 8270	L064B	D	MCERTS
BTEX and/or Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS	In-house method based on USEPA 8260	L073B	W	MCERTS
Total petroleum hydrocarbons with carbon banding by GC-FID/GC-MS HS in soil	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS with carbon banding aliphatic and aromatic	In-house method	L076B/L088	D/W	MCERTS
Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS	In-house method	L076B/L088	D/W	NONE

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL' or 'B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

^ - Data reported unaccredited due to quality control parameter failure associated with this result; The result should be considered as being deviating and may be compromised

Supplementary guidance for the selection of water pipes in land potentially affected by contamination

Introduction

In January 2011, UK Water Industry Research (UKWIR) published "Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites" (Ref 10/WM/03/21; the 'UKWIR Guidance'). Its aim is to ensure that the correct materials are selected for water pipes and components to be used below ground in brownfield sites to protect the quality of drinking water whilst taking into account the service life of the water distribution system. It supersedes the Water Regulations Advisory Scheme (WRAS) Information and Guidance Note 9-04-03 "Laying Pipes in Contaminated Land" which has been withdrawn.

The UKWIR Guidance is for use by developers, self-lay organisations, water companies and consultants when planning, designing and constructing water mains and/or services in brownfield sites. It defines brownfield sites as "land or premises that have previously been used or developed. They may also be vacant or derelict. However, they are not necessarily contaminated." The UKWIR Guidance states that it does not apply to greenfield sites; however, we consider this supplementary guidance and the relevant sections of the UKWIR guidance as being equally suitable for application to those greenfield sites considered to be potentially affected by contamination. Where greenfield sites are not affected by contamination a preliminary risk assessment (see below) will suffice.

The UKWIR Guidance also states that there should be no departure from its provisions "*except where formally approved by the Water Company, such departure being technically justifiable or representing advances in knowledge or product development*".

We have adopted the UKWIR Guidance in principle and produced this company specific supplementary guidance (the 'UUW Guidance') which includes the Risk Assessment for Water Pipes (the 'RA').

This guidance does not cover operative safety, health exposure modelling or accidental pipe damage.

Risk Assessment for Water Pipes in Land Potentially Affected by Contamination

Any application for new water supplies to a development (construction of new properties, or renovation or conversion of existing buildings) in land potentially affected by contamination shall include a completed RA.

As a minimum a desk study (preliminary risk assessment) shall be provided with the RA in accordance with the framework in Environment Agency publication "Model Procedures for the Management of Land Contamination" (ref: CLR11) that sets out whether the land through which the pipes are to be laid may be affected by contamination. The application of the source, pathway, receptor concept will be an integral part of any pipeline risk assessment. For each potential source (the contamination) and each potential receptor (the water pipe), consideration shall be given to whether a potential pathway between source and receptor exists, or may exist in the future, linking the two. There are normally only three pathways by which contamination may come into contact with water pipes. These are direct contact with the soil or backfill, an excessive vapour phase or a contaminated groundwater regime. If none of these conditions exist on site (adopting the source, pathway, receptor concept) then it is likely that extended and/or targeted soil testing will not be required and a simple risk assessment will suffice. For those sites where land may be affected by contamination appropriate testing shall be undertaken on the materials within which the pipes are to be laid, whether that be existing ground materials, remediated materials or imported capping materials. The testing requirements are as described in the following section.

The signatories of the Water Supply Application Form and the RA must ensure that all assessments of land condition have been carried out in accordance with applicable current standards and guidelines by or under the direction of a suitably qualified competent person.

We require the competent person to be a) a chartered member of an appropriate professional body (such as the Institution of Civil Engineers, the Geological Society of London or the Royal Institution of Chartered Surveyors) with relevant experience of investigating contaminated sites or b) a Specialist in Land Condition (SiLC) with appropriate geo-environmental experience.

Testing Requirements

The soil, rock and if appropriate groundwater tests that are required on all sites where the potential for organic contamination has been identified in the desk study and where water pipes are proposed to be laid must be accredited by United Kingdom Accreditation Service (UKAS) as a minimum and where commercially available the Environment Agency's Monitoring Certification Service (MCERTS). These accredited tests should be undertaken for:

Banded hydrocarbons EC5-EC10, EC10-EC16, EC16-EC40 (Total aliphatic and aromatic hydrocarbons for each banding may be summed). Aliphatic/aromatic fractionation and subsequent banding may be required should a more detailed site specific risk assessment be undertaken. The bandings have been amended to take into account readily available laboratory tests. The equivalent carbon number (EC) is used to assess petroleum hydrocarbon mixtures rather than the actual number of carbon atoms in the molecule in line with guidance issued by the Environment Agency (2005).

Volatile organic compounds (VOCs) (method by head space or purge & trap GCMS) with tentative identification of compounds greater than 20µg/kg. The method used should be capable of detecting a wide range of compounds listed in US EPA Method 8260C or similar. The method should include analysis of naphthalene.

BTEX (Benzene, toluene, ethyl benzene and xylenes) plus MTBE (Methyl-tertiary butyl ether) (by head space GCMS)

Semi-Volatile Organic Compounds (SVOCs) (method by GCMS) with tentative identification of compounds greater than 20µg/kg The method used should be capable of detecting the compounds listed in US EPA Method 8270D or similar. The total concentration of SVOCs excludes polycyclic aromatic hydrocarbons, ethers, nitrobenzene, ketones, aldehydes, phenols, cresols and chlorinated phenols. Phenols, cresols and chlorinated phenols which are detected by the SVOC analysis are given their own assessment criteria.

We do not consider Table G1 and Table 3.1 of the UKWIR Guidance to be a definitive guide for assessing total concentrations. Table 1 in the RA below replaces Table 3.1 of the UKWIR Guidance.

Where previous site uses include the use, storage, treatment, disposal or manufacture of any of the following, appropriate testing for these substances will be required:

Ethers, nitrobenzene, ketones, aldehydes and amines. Note that the presence of amines on any site at the proposed pipe depth +/- 1.0m precludes the use of polyethylene. The methods of analysis and method of calculation of total concentrations of these compounds will need to be agreed with UUW.

To comply with the testing requirements, the suites of tests that are required on all brownfield sites where wrapped steel, wrapped ductile iron or copper pipes are to be laid as minimum must include:

pH, Conductivity and redox potential

Sufficiency of Testing

Water pipes are normally laid at between 0.75 and 1.35m from finished ground level to crown of pipe. Samples taken and tested must represent both a) the soil in which the water pipes are to be laid and b) the soil down to at least 500mm below the underside of the proposed pipe. Where the proposed depth of the pipes is unknown at the time of application, soil samples representative of the ground condition between surface level and 1.5m below finished ground level shall be taken as a minimum. Where appropriate (see UKWIR Guidance) groundwater sampling and groundwater monitoring will also be

necessary. Photo-ionisation detection (PID) monitoring along the proposed route of the pipeline may be employed, though this does not provide a definitive guide to the suitability of water pipe materials.

Where required a sufficient number of test results should be obtained from the material in which the pipes are to be laid. CLAIRE/CIEH 2008 “Guidance on comparing soil contamination data with a critical concentration” may be used, where appropriate, to justify the number of soil samples tested; however, this statistical model should not be used on heterogeneous materials or used to average test results from different types of materials.

Further guidance on representative sampling is contained within BS10175:2011 Code of Practice for the Investigation of Potentially Contaminated Sites, the Department of the Environment’s Contaminated Land Research Report “Sampling strategies for contaminated land” prepared by The Centre for Research into the Built Environment, Nottingham Trent University (Ref: CLR 4; 1994) and the Environment Agency’s “Secondary Model Procedure for the Development of Appropriate Soil Sampling Strategies for Land Contamination” (ref: R&D Technical Report P5-066/TR; 2000).

Where remediation has been carried out on the site, the test results obtained from validation samples will be used in the assessment. Where a horizontal capping system has been or will be employed using materials spread across a site, sufficient samples will need to be taken to characterise the capping material used and the results presented to UUW. However, the sufficiency of sampling on the horizontal capping system, in which the pipeline will be placed, may be assessed on the basis of the source, quantity and type of materials used.

Detection Limits

Only positive concentrations, ie those above the limit of detection should be used in summation of VOC and SVOC (or other test groups of compounds ie phenols, cresols and chlorinated phenols). Laboratory methods shall provide a minimum limit of detection of 10µg/kg for each individual VOC or SVOC (or other test groups of compounds) quantitatively detected in accordance with the methods described above. For tentatively identified compounds (TICs), only those compounds with a concentration of 20µg/kg or greater shall be used in the summation of VOC and SVOC (or other test groups of compounds).

Protective Measures

Where polyethylene, ductile iron, steel or copper pipes are to be laid on a brownfield site or other land potentially affected by contamination (whether or not it has been remediated) and where the concentrations exceed the generic guideline values set out in Table 1 of the RA, the developer shall provide either:

a) a robust risk assessment to show how any contaminants will not significantly impact on proposed water supplies or buried assets over the lifetime of the assets; or

b) more suitable pipe materials; or

c) an engineering solution to protect the pipe work backed up by an adequate assessment of the risk.

Liquid free phase product (e.g. oil or free solvent layers) shall not remain in the ground or groundwater in the vicinity of water pipes, whether barrier pipe or any other pipe materials are used.

When designing pipe routes on land potentially affected by contamination, new preferential contamination pathways along the route of new water pipes shall not be created. Particular measures may be required to prevent the possible migration of contamination through pipe bedding and into controlled waters.

References

BS10175:2011 “Investigation of Potentially Contaminated Sites Code of Practice”

CLAIRE/CIEH “Guidance on comparing soil contamination data with a critical concentration” 2008

Department of the Environment Contaminated Land Research Report “Sampling strategies for contaminated land” prepared by The Centre for Research into the Built Environment, Nottingham Trent University (Ref: CLR 4) 1994

Environment Agency “Secondary Model Procedure for the Development of Appropriate Soil Sampling Strategies for Land Contamination” (ref: R&D Technical Report P5-066/TR) 2000

Environment Agency “Model Procedures for the Management of Land Contamination” (ref: CLR11), 2004

Environment Agency P5-080/TR3 “The UK Approach for Evaluating Human Health Risks from Petroleum Hydrocarbons in Soils”, 2005

UK Water Industry Research (UKWIR) "Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites" (Ref 10/WM/03/21)” January 2011

Water Regulations Advisory Scheme (WRAS) Information and Guidance Note 9-04-03 “Laying Pipes in Contaminated Land” 2002

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United Utilities Water PLC , Haweswater House, Lingley Mere Business Park, Lingley Green Avenue, Warrington WA5 3LP.
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Risk Assessment for Water Pipes (RA)

The risk assessment for water pipes will help you choose appropriate materials for your development. We are happy to deal with a risk assessment for water pipes in advance of any formal application for a new water supply.

If you need any help completing the form please call us on 0845 026 4296.

When completing this form electronically, the larger text boxes will expand in height if required.

Section 1: Development Details	
Development Name *(if it has one)*	
Development Address	MOUNT ROAD, GORTON, M18 7SU
OS Grid Reference *(mid point)*	388289, 295020
Developers Name	KELLEN HOMES
UUW reference number *(for UU use only)*	

Please provide details below of the current and historical use of the site and adjacent sites.

If your supporting information has details of the current and historical site use, please reference below the relevant sections of your report.

Brownfield Solutions Ltd have previously undertaken a Phase 1 Geo-Environmental Report for the site: Ref LC/C5150/11494 Rev B dated November 2023.

The desk study identifies the site has remained as sports fields/ football pitches since 1992, with several pavillion buildings being present in the northwest and west of the site. Currently there are no buildings present on site.

Previously to the sports field, the site was undeveloped fields with two ponds located on the north boundary (one off site) which are no longer present from 1890. No other significant contaminative uses have been identified on site from the desk study.

The site is set within a mixed commercial and residential area.

Section 2: Preliminary Risk Assessment	
Has your desk study and site walkover identified any land potentially affected by contamination?	☒ Yes ☐ No

If the site is potentially affected by contamination but you have not completed any intrusive site investigation please provide details below of the rationale behind the intended pipe selection.

If your supporting information has details of the rationale behind the intended pipe selection, please reference below the relevant sections of your report.

NA - Intrusive investigations have been carried out.

Section 3: Intrusive Site Investigation	
Have you completed any intrusive site investigation?	☒ Yes ☐ No
Date(s) when the site investigation(s) undertaken	October 2022, May 2023, March 2024
At what level has groundwater been encountered?	0.52-4.01m metres below ground level or ☐ Not encountered

Table 1 (Pipeline Selection Risk Assessment Summary (PSRAS)) below classifies testing required where the preliminary risk assessment has identified land potentially affected by contamination. Please provide details below of any test groups which have not been tested and the rationale for not testing.

If your supporting information has details of the rationale behind not testing any particular test groups, please reference below the relevant sections of your report.

See Brownfield Solutions Ltd Phase II Geo-Environmental Assessment Report: Ref MS/C5150/11591 Rev E dated November 2023, which contains details of intrusive investigation and chemical testing results.

Supplementary Geo-Environmental Site Investigation carried out in May 2023 can be found in Report Ref MB/C5150/12138. Note that groundwater depths listed above are limited/isolated and perched waters; during the ground investigation itself, limited to no groundwater was encountered.

For the purpose of this pipeline risk assessment, 10 No. additional samples were collected at pipeline depths for testing in March 2024.

VOC's, amines, ethers, ketones, aldehydes, cresols and cholrinated phenols were not tested for as no risk was identified in the desk study assessment.

If the intrusive site investigation has identified concentrations above the PE threshold (see PSRAS) and your intended pipe selection is PE please provide details below of the rationale behind the intended pipe selection.

If your supporting information has details of the rationale behind the intended pipe selection, please reference below the relevant sections of your report.

The intended pipe selection for the site is PE, the results have found that one location across the site is marginally exceeding concentrations in SVOCs for the intended pipe selection.

The excedence has been found at TP309 1.10-1.30m bgl, in which no visual or olfactory contamination was noted during the site investigation, such as free phase impaction. On balance the vast majority of the soils on site appear to be suitable and results are generaly consistent with those from previous investigations.

During the development of the site and the installation of utilities, a clean corridior of chemically suitable soils also be laid to mitigate the risk, with all materials, substances and products in contact with potable water detailed as per the UU Standard Specification S01 ‘General Requirements' and materials used for bedding shall conform to WIS 4-08-02“Specification for bedding and side fill materials for buried pipelines” and material for backfill material shall be in accordance with the NRSWA 1919 the Specification for the Reinstatement of Opening in Highways (3rd Edition). This will significantly reduce the risk to potable pipes, with negligable infiltration/leachate generation around the pipes at the identified locality too.

Section 4: Site Remediation	
Please provide details below of any site remediation (which may include a change in site levels) already completed. *If your supporting information has details of the site remediation already completed, please reference below the relevant sections of your report.*	
No remediation completed to date - no significant remedial measures required other than a clean cover system for protection of long term human health.	
Has the PSRAS (Table 1) been completed using appropriate data after remediation?	☐ Yes ☐ No ☒ N/A

Please provide details below of any proposed site remediation and an analysis of whether this will affect your intended pipe selection. *If your supporting information has details of any proposed site remediation and whether this will affect your intended pipe selection, please reference below the relevant sections of your report.*
N/A - remediation as such will not impact pipe selection, but table completed based on existing information.

Section 5: Final Use of Site	
Please provide details below of any chemicals (including fuel) to be stored on site and any other future contamination risks which may affect your intended pipe selection. *If your supporting information has details of potential contamination risks which may affect your intended pipe selection, please reference below the relevant sections of your report.*	
None - low risk residential end use, no future storage of any significant quantities/volumes of chemicals that may impact upon pipe selection.	
What water pipe materials are intended to be used on site?	☒ PE ☐ PE Barrier Pipe Type A ☐ PE Barrier Pipe Type B Other (please specify):

Section 6: Additional Information
Please use the section below to provide any additional details to support your intended pipe selection. *If your supporting information has additional information to support your intended pipe selection, please reference below the relevant sections of your report.*
LC/C5150/11494 Rev B Phase I Geo-Environmental Assessment Report (November 2023) MS/C5150/11591 Rev E Phase II Geo-Environmental Assessment Report (November 2023) MB/C5150/12138 Supplementary Geo-Environmental Site Investigation (June 2023) C5150_05 UU Trial Pit Location Plan February 2024 C5150 Exploratory Hole Logs I2 Analytical Report Number : 24-006267

Section 7: Risk Assessor	
Name and relevant qualifications of person directing the risk assessment for water pipes	M Buckley BSc (Hons) AMIEnvSc Checked by A Stokoe BSc (Hons) CSci MIEnvSc FGS
Name and address of risk assessor's company	Brownfield Solutions Ltd. William Smith House, 173 - 183 Witton Street, Northwich, Cheshire, CW9 5LP
Date risk assessment performed	13/03/2024

Section 8: Declaration			
I confirm I have completed this form and provided supporting information in accordance with 'UKWIR Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites' and UUW's Supplementary Guidance. I also confirm that if any further site investigation is needed and carried out, I will be required to submit an additional Risk Assessment for Water Pipes with the relevant supporting information. I understand that failure to supply any of the required information may delay my application being processed.			
Name	13/03/2024	Company	Brownfield Solutions Ltd

Phone Number	01606 334844	Date	13/03/2024

Please e-mail the completed form and supporting information to water.connections@uuplc.co.uk. Alternatively you can fax a paper version to 01925 678926 or post to us at United Utilities Water, Metering and Connections, Ullswater House, Lingley Mere, Warrington, WA5 3LP.



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Table 1 - Pipe Selection Risk Assessment Summary (PSRAS)	
1) *Testing must be undertaken on the materials within which the pipes are to be laid, whether that be existing ground materials, remediated materials or imported capping materials. Please use the appropriate testing data to complete Table 1 below.* 2) *If more than one pipe selection is being made, for example, for pipes in different areas of a large site, a completed PSRAS is required for each selection.*	
What materials have been tested to populate Table 1 below?	☒ Existing ground materials ☐ Remediated materials ☐ Imported capping materials

All concentrations in mg/kg								
Test Group	**Testing Required?**	**PE threshold**	**Metal Pipes/ Barrier Pipe**	**Laboratory Detection Limit**	**Testing UKAS accredited Y/N**	**Maximum concentration at proposed pipeline depth** See Note [2]	**Maximum site concentration** See Note [3]	**Locations and depths where concentrations exceed proposed pipeline threshold**
Total VOCs	Where Preliminary Risk Assessment (PRA) has identified land potentially affected by contamination	0.5	Pass	NA	NA	NA	NA	NA
Total BTEX & MTBE		0.1	Pass	<0.005	Y	0.030	0.030	NA
Total SVOCs (excluding PAHs and those substances marked with an *)		2	Pass	<0.3 Max for ind. compounds	Y	3.8	3.8	TP309 at 1.10m - 1.30m, no free product, marginal exceedance at one location only
EC5-EC10 aliphatic and aromatic hydrocarbons		2	Pass	<0.16	Y	<0.16	<0.16	NA
EC10-EC16 aliphatic and aromatic hydrocarbons		10	Pass	<3	Y	8.9	8.9	NA
EC16-EC40 aliphatic and aromatic hydrocarbons		500	Pass	10	Y	353	353	NA
Phenols* (from SVOC analysis)		2	Pass	0.2	Y	<0.2	<0.2	NA
Cresols and chlorinated phenols* (from SVOC analysis)		2	Pass	NA	NA	NA	NA	NA
Ethers*	Only where identified	0.5	Pass	NA	NA	NA	NA	NA
Nitrobenzene*		0.5	Pass	0.3	Y	<0.3	<0.3	NA
Ketones*		0.5	Pass	NA	NA	NA	NA	NA
Aldehydes*		0.5	Pass	NA	NA	NA	NA	NA
Amines		Fail	Pass	NA	NA	NA	NA	NA
Corrosive	Conductivity, Redox and pH	Pass	See Note [1]	NA	Y	6.1-8.50	6.1	NA- PE selected

Note [1] Threshold: For wrapped steel, corrosive if pH<7 and conductivity > 400µS/cm. For wrapped ductile iron corrosive if pH<5, Eh not neutral and conductivity > 400µS/cm. For copper, corrosive if pH<5 or >8 and Eh positive.

Note [2] Water pipes are normally laid at 0.75-1.35m below finished ground level.

Note [3] Also state if liquid free product is present in soil or groundwater.

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