Report type:	Site Appraisal Report
Site:	Block C, First Street, Manchester
Client:	Downing Living (Manchester South) Limited Partnership Incorporated
Ref:	GRM/P10418/SAR.1
Date:	November 2023

BLOCK C, FIRST STREET, MANCHESTER

SITE APPRAISAL REPORT FOR DOWNING LIVING (MANCHESTER SOUTH LIMITED PARTNERSHIP INCORPORATED

Project Ref:
P10418

Date:
November 2023

Prepared for:
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This report has been prepared in accordance with GRM's Accredited Quality Procedures

If you have any queries regarding this report please contact the project manager in the first instance.

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When required in-house geological, geotechnical, environmental, structural and civil staff helped to produce this document.	

Issue	Description of Revision	Signature

Site Appraisal for
Block C, First Street, Manchester

SUMMARY OF RECOMMENDATIONS

Where further assessment is required it is indicated with a "Y" in the right hand column.		
Proposed Development	High-rise residential structure, with associated infrastructure and limited areas of soft landscaping.	
CONTAMINATION ASSESSMENT - REMEDIATION / WASTE DISPOSAL		
End Users	Minimum 450mm clean soil capping in soft landscaped areas following enabling works.	
Site Workers	No remediation required.	
Construction Materials	Appropriate concrete specification. Upgraded water supply pipes required (to be confirmed with utility provider).	Y
Groundwater	No specific remediation considered necessary.	
Surface Water	No specific remediation considered necessary.	
Waste Disposal	Preliminary Waste Classification: Non-Hazardous for majority of made ground, hazardous for soil around WS02. Inert for natural strata. Will need to be confirmed by receiving landfill.	Y
GEOTECHNICAL ASSESSMENT – FOUNDATIONS		
Ground Treatment Required	Site enabling works to remove hardstanding and buried obstructions.	
Main Bearing Strata	Chester Formation (sandstone).	
Nett Allowable Bearing Pressure	To be confirmed by a specialist for piles.	Y
Rockhead	Circa 14.0m begl.	
Tree Influence	Some at southern boundary.	Y
Volume Change Potential	Low in clay. Non-shrinkable in sand.	
Likely Foundation Types	Piled.	
Likely Foundation Depth Range	To be confirmed by piling contractor.	Y
Excavation Hazards	Sub-structures and obstructions in made ground. Potential instability issues for excavations.	Y
Floor Slab Types	To be specified by project's Structural Engineer.	Y
Gas Protection Requirements Radon and/or Landfill	No gas protection measures required. No radon protection required.	Y
GEOTECHNICAL ASSESSMENT - GENERAL		
Slope Stability Risk	Negligible.	
Buried Concrete Class	DS - 1; AC- 1.	
Further Assessment Targets	Following enabling works and stockpiling of materials, it is recommended that further testing is conducted for waste disposal characterisation. Consultation with a UXO Specialist to determine safe working practices.	Y
Other Comments	**Pile locations will need to be surveyed down to the maximum bomb penetration depth by a UXO Engineer. Intrusive works to be supervised by a UXO Engineer.**	Y

This summary is based on the full report that provides the detailed assessment of the ground risks affecting the development and how to manage them. It should not be used in isolation.

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1 INTRODUCTION

1.1 PREAMBLE

GRM Development Solutions Limited (GRM) has been appointed by Alan Johnston Partnership LLP (Client's Agent) on behalf of Downing Living (Manchester South) Limited Partnership Incorporated (Client) to undertake a Phase II Site Appraisal for the Block C phase of development at First Street, Manchester.

The wider development includes main structures referenced as Block A, B, C and D. Blocks A, B and D are currently under construction. The footprint of Block C currently utilised as a site compound and limited areas of parking.

Previous stages of ground investigation have been undertaken across the wider site area, which are detailed in the following reports:

- Geotechnical Engineering Ltd, 'Factual Report on Ground Investigation', dated 12/07/2016 (ref: 31847).
- Cundall Johnston and Partnerships LLP (Cundall), 'Geotechnical and Geoenvironmental Assessment', dated 30/06/2016 (ref: 1011906.RPT.GL.004).
- Cundall, 'Supplementary Ground Investigation Report', dated 12/10/2016 (ref: 1011906.RPT.GL.007).

The Geotechnical Engineering Report is a factual ground investigation report covering the entire site area, with the interpretive aspects presented in the Cundall Geotechnical and Geoenvironmental Assessment. The Cundall Supplementary Ground Investigation Report investigates the presence of buried obstructions beneath the footprints of Blocks A, B and D. The Cundal Ground Investigation reports reference a Capita Symonds 2012 report which we have not been provided with details of.

This document is intended to provide information that will assist decision making by identifying and recommending solutions to ground engineering and contamination issues. GRM Standard Limitations of Reporting are provided in Appendix A of this report.

The Client proposes to develop the site with a high-rise residential structure, with associated infrastructure and limited areas of soft landscaping. The development layout provided by the Client, on which this report is based is presented in Appendix B.

1.2 OBJECTIVES OF THE SITE APPRAISAL REPORT

This report has been prepared to take relevant information from the existing reports and specific to the Block C area, along with a recent stage ground investigation and chemical testing within the existing site compound area.

The principal aims of the Ground Investigation Report are as follows:

a) Obtain information, from existing reports and easily accessible sources, about the soil and groundwater conditions within the area of the site.

b) Determine the possible ground-related geotechnical and contamination hazards within the site boundaries that may affect the proposed development.

c) Provide preliminary development recommendations.

d) Provide advice on further works required for the cost-effective reduction of risks to the development and procedures likely to satisfy regulators.

Whilst every effort has been made to pre-empt the likely requirements of the Local Authority and the Environment Agency, they are likely to have specific requirements that will need to be discussed and addressed at a later date.

2 PHASE I DESK STUDY SUMMARY

The Desk Study Summary below has been prepared using information from the existing reports along with freely available environmental information.

Project Name.	Block C, First Stret, Manchester.
Project Reference.	P10418.
Site Location (address).	Land west of Newcastle Street, Manchester, M15 6JE.
National Grid Reference.	SJ 8381 9714
Site Area (Ha).	0.40.
Summary of Proposed Development.	Predominantly high-rise apartments with limited areas of soft landscaping.
Client Supplied Information.	Topographical Survey. Utility Survey. Existing ground investigation reports. Remediation Reports. Site Photographs.
Site Setting.	The site has previously comprised disused parcels of land west of Newcastle Street. At present the site comprises a compound and car parking associated with the wider construction site for Blocks A, B and D.
Site History.	The earliest map reviewed records terraced residential properties across the site, with post WW2 bomb damage evident from a significantly reduced amount of structures both on-site and in the local area. A 1968 fire insurance map indicates a small garage in the north of the Block C area, Chester Road in the centre of the site and remnants of residential properties in the south. Aerial photographs dated 2020 record the site to be derelict ground with asphalt surfacing.
Geology.	The BGS geological map records superficial deposits of Glaciofluvial Sheet Deposits (sand and gravel) underlain by Glacial Till (gravelly Clay), and Solid Geology of Chester Formation (sandstone). Made ground will be present from the previous development.
Hydrogeology.	Glaciofluvial Deposits – Secondary A Aquifer. Glacial Till – Secondary Undifferentiated Aquifer. Chester Formation – Principal Aquifer. The site is located in the northern extents of a Zone III total catchment groundwater source protection zone associated with an abstraction 1.20km south of the site.
Hydrology.	River Medlock located 250m north and is wholly culverted at the closest point to the site.
Flooding.	The Gov.uk internet base flood risk map for planning indicates the site is within ‘Flood Zone 1’ which has a low probability of flooding from rivers and the sea (less than 0.1% chance in any year).

Mining and Quarrying.	The site is not within a Coal Authority reporting area and there is no evidence of mineral extraction having occurred within the site boundary.
Potential Soil Contamination Sources.	Potential contaminated made ground associated with the previous development of the site. Stockpiled arising from the wider development have previous been stored within this area of the site, but has been exported from site to accommodate the site compound.
Potential Ground Gas Sources (including Radon).	The existing ground investigation classified the site as Characteristic Situation 1 (CS1) for which no gas protection measures are required. The site does not lie within a radon affected area.
Other Hazards	Unexploded Ordnance risk. Obstructions in made ground.

3 PHASE II GROUND INVESTIGATION

3.1 FIELDWORK

The ground investigation has been designed in accordance with the general comments outlined in Appendix A (iv).

2016 Ground Investigation

The 2016 Geotechnical Engineering Ltd ground investigation progressed four exploratory holes within the Block C area (one cable-percussive borehole (CP102) to a depth of 6.65m below existing ground level (begl), one cable-percussive borehole with rotary coring follow on (CP/RC102A) to a depth of 27.70m begl and two mechanically excavated trial pits (TP108 and TP109) to depth of between 3.40m and 4.20m begl).

Downhole magnetometer surveying recorded a metallic feature in CP102 at a depth greater than 6.65m begl. The borehole was terminated before rotary coring could comment and redrilled as CP/ RC102A further south.

Hand-dug asbestos observation pits were also progressed across the site on an approximate 9.0m grid.

2023 GRM Ground Investigation

The GRM ground investigation fieldwork was conducted on 18th October 2023. A total of four windowless sample boreholes (WS01 to WS04) were progressed, to depths ranging between 1.00m and 4.00m begl. The borehole were positioned in areas which could be accessed around the existing site cabins and car parking, whilst avoiding buried utilities. Buried obstructions were encountered in three of the four locations, a total of two holes managed to penetrate the made ground and buried obstructions following re-drilling.

The exploratory hole location plan and exploratory hole logs from both stages of investigation are presented in Appendix D and Appendix E respectively.

Both investigations were supervised by a UXO engineer conducting a downhole magnetometer survey.

3.2 PROVEN GROUND

The following is a summary of ground conditions encountered during both phases of fieldwork:

- Made Ground
- Glaciofluvial Deposits
- Glacial Till
- Chester Formation (Solid Strata)

3.2.1 Made Ground

Made ground was encountered across the entire site, from surface to depths ranging between 0.45m and 2.40m begl. The made ground was variable, but included the following materials:

- Surface layers of hardstanding of asphalt/tarmac or concrete.
- Localised relaid topsoil comprising brown clayey SAND with gravel of quartzite and brick.
- Medium dense brown sandy GRAVEL of sandstone and quartzite with localised brick fragments.
- Loose to medium dense brown clayey SAND with gravel of sandstone, quartzite, brick, concrete and rare fragments of tarmac and coal.
- Dark brown sandy organic SILT with gravel of sandstone, brick, ash, glass and ceramic.
- Medium dense whole bricks and brick fragments.
- Firm brown sandy CLAY with gravel of sandstone, quartzite and brick.

Standard Penetration Test (SPT) N-values in the granular made ground ranged between 2 and 28.

3.2.2 Glaciofluvial Deposits

Glaciofluvial Deposits were encountered in all exploratory holes which penetrated the made ground (WS02, WS04b, TP108, TP109, CP102 and CP/RC102A). The base of these deposits was only proven in CP102 and CP/RC102A at depths of between 4.95m and 5.45m begl. These deposits generally comprised:

- Loose to medium dense orangish brown slightly clayey fine and medium sand.
- Loose to medium dense orangish brown clayey fine to coarse SAND, with gravel of sandstone, quartzite and mudstone with a low sandstone cobble content.
- Medium dense orangish brown silty sandy GRAVEL of sandstone and siltstone.

Standard Penetration Test (SPT) in the granular strata recorded N-values ranging between 14 and 32 at 1.2m depth, 14 to 19 at 2.0m depth, 6 to 24 at 3.0m depth, 16 to 26 at 4.0m depth and a single value of 16 at 5.0m depth. The results of SPT testing generally suggest medium dense granular strata, with localised loose strata.

3.2.3 Glacial Till

Glacial Till was encountered in all exploratory holes which penetrated the Glaciofluvial Deposits (CP102 and CP/RC102A). The base of these deposits was only proven in CP/RC102A at a depth of 11.65m begl. These deposits generally comprised stiff to very stiff sandy CLAY with gravel of siltstone, quartzite, sandstone and rare coal.

Standard Penetration Test (SPT) in the cohesive strata recorded N-values generally ranging between 16 and 31, with localised SPT refusals (N>50) due to the presence of cobbles. Utilising the empirical relationship formulated by Stroud (1974) where undrained shear strength is related to SPT N-values and a factor based on plasticity, these strata are generally high strength and locally very high strength.

3.2.4 Chester Formation

Chester Formation strata were only encountered in CP/RC102A which full penetrated the superficial deposits at a depth of 11.65m begl and extended to a depth of at least 27.70m begl (base of borehole). These deposits generally comprised a more weathered horizon of very dense weakly cemented reddish brown medium SAND to a depth of 13.65m begl which were underlain by less weathered strata comprising extremely weak to medium strong reddish brown and orangish brown medium to coarse SANDSTONE.

3.3 CONTAMINATION OBSERVATIONS

Contamination observations during fieldwork were generally limited to the presence of tarmac and ash fragments within the made ground, and the presence of deleterious materials including glass, ceramic and metal fragments.

3.4 GROUNDWATER OBSERVATIONS

Groundwater ingress was not observed during the GRM 2023 investigation. However, the exploratory techniques used were rapid and may have masked small water seepages.

The 2016 ground investigation noted damp horizons at the base of made ground, with a groundwater strike at the base of Glacifluvial Deposits at approximately 5.0m begl, perched above the cohesive Glacial Till. A groundwater monitoring standpipe within CP/RC102A recorded groundwater at a depth of 3.95m begl.

There are considered to be two main groundwater bodies beneath the site. A shallow groundwater table at the base of the Glaciofluvial Deposits at approximately 31.5m AOD, and a second groundwater table within the within the solid strata (Chester Formation), the level of the deeper groundwater has not been fully established.

3.5 SUMMARY OF FIELDWORK OBSERVATIONS

The fieldwork has revealed/confirmed the following:

- Burid obstructions are present across the site – require removal during enabling works.
- UXO Risk – UXO supervision and surveying required during all intrusive works.
- Buried utilities – may require disconnection / diversion.
- Elevated concentrations of ground gas have not been recorded during the 2016 ground investigation. The previous site investigation has classified the wider site (including Block C) as Characteristic Situation 1 (CS1) for which no gas protection measures are required.

4 LABORATORY ANALYSES RATIONALE

4.1 CHEMICAL LABORATORY ANALYSIS

Chemical laboratory analyses were selected to provide the parameters necessary to make an initial assessment of potentially contaminated soils, for the budgetary design of the development. The choice of contamination testing was based on the Phase I assessment, identified past uses of the site, site observations.

The chemical analysis undertaken as part of the 2016 Geotechnical Engineering Ltd investigation comprised:

- Three samples (two of made ground and one of natural strata) were analysed for a general suite of contaminants (metals, inorganics and speciated PAH).
- Three samples (two of made ground and one of natural strata) were analysed for banded aliphatic and aromatic hydrocarbons (TPHCWG).

The chemical analysis undertaken as part of the 2023 GRM investigation comprised:

- Five samples of made ground were analysed for a general suite of contaminants (metals, inorganics and speciated PAH).
- Five samples of made ground were analysed for banded aliphatic and aromatic hydrocarbons (TPHCWG).
- Five samples of made ground have been screened for the presence of asbestos.
- Two samples of made ground have been submitted for a GRM Water pipe suite.

The chemical analysis results are presented in Appendix G.

Any recent samples not used for testing will be stored for a month after issue of this report and then disposed of, unless the client requests in writing that they be kept.

4.2 GEOTECHNICAL LABORATORY TESTING

Geotechnical soils testing has been undertaken as part of both the ground investigations. The analysis undertaken as part of the 2016 Geotechnical Engineering Ltd investigation comprised:

- Nineteen samples (one of made ground, four of Glaciofluvial Deposits, six of Glacial Till and eight of Chester Formation) were tested for Natural Moisture Content.
- Six samples (two of made ground, three of Glaciofluvial Deposits and one of Chester Formation) underwent pH and water soluble sulphate testing.
- Four samples of natural Glacial Till underwent Atterberg Limits (PI) classification.
- Four samples (one of made ground and three of Glaciofluvial Deposits) underwent Particle size distribution testing.

- Four Samples of Glacial Till underwent Unconsolidated Unconfined Triaxial Testing.
- Three samples (one of made ground and two of natural strata) underwent Dry Density/Moisture Content Relationship testing.
- Nine samples of Chester Formation were submitted for Point Load Index testing.
- Seven samples of Chester Formation were submitted for Unconfined Compressive Strength testing.

The analysis undertaken as part of the 2023 GRM investigation comprised:

- Five samples of made ground were tested for Natural Moisture Content.
- Five samples of made ground underwent pH and water soluble sulphate testing.

Geotechnical tests were selected to provide the parameters necessary for the budgetary design of the development including foundations and infrastructure. The geotechnical test results are presented in Appendix I, and summarised in Section 10.2.

5 QUANTITATIVE RISK ASSESSMENT – HUMAN HEALTH (SOIL)

5.1 INTRODUCTION

The Client proposes to develop the site with a high-rise residential structure, with associated infrastructure and limited areas of soft landscaping.

The material on site identified as being the most likely to be contaminated is the made ground associated with previous development of the site.

Representative samples of all strata and those considered to be potentially contaminated by virtue of the desk study and/or based on site observations were collected for further examination and/or potential testing.

The rationale for the end use specific Tier 1 Acceptance Criteria (TAC) used by GRM is outlined in Appendix A (vi) and for this site the chemical analysis results are being compared against the TAC for residential end use without plant uptake. In order to adopt a conservative approach a Soil Organic Matter (SOM) content of 1% has been used to assess the made ground as this reflects the lowest SOM recorded in it.

To provide an initial assessment, the results have been assessed to determine whether benzo(a)pyrene could be used as a surrogate marker in the assessment of carcinogenic risks posed by genotoxic PAHs in soils. It is recommended that such assessments should be based upon toxicological benchmarks derived from the data for two coal tar mixtures presented by Culp et al. (1998). The graphs completed show that benzo(a)pyrene can been used as a surrogate marker for genotoxic PAHs, with the exception of naphthalene, for both the relaid topsoil and made ground soils. GRM's TACs use published C4SL values which are based on minimal risk levels and have been confirmed to be suitable for use in a planning context by the UK Government. Other commercially available values have been published and have been used where C4SLs are not available.

A copy of the thresholds used in this assessment is presented in Appendix J and the PAH Mixture Analysis Results are presented in Appendix K.

5.2 RISK TO END USERS

The chemical analysis results are presented in Appendix G.

Whilst the number of samples tested is considered sufficient to characterise the made ground, it is not considered appropriate to carry out statistical analysis on this data set. Therefore, the results have been compared directly against the TAC. The results of the asbestos screening has also been assessed separately.

5.2.1 Analysis of Soil Contamination Data

GRM General Suite – Made Ground

Most contaminant concentrations are below the relevant threshold (TAC) for residential end use without plant uptake. However, the following samples recorded concentrations in excess of the TAC:

- Lead – concentrations of 320mg/kg in WS02 at 0.50m and 510mg/kg in WS02 at 1.20m exceeds the TAC of 310mg/kg.
- Benzo (a) pyrene – concentrations of 9.4mg/kg in WS01 at 0.50m, 90mg/kg in WS02 at 0.5m and 130mg/kg in WS02 at 1.20m exceed the TAC of 5.3mg/kg.
- Naphthalene – concentration of 35mg/kg in WS02 at 0.50m and 13mg/kg in WS02 at 1.20m exceeds the TAC of 2.3mg/kg.

Petroleum Hydrocarbons – Made Gound

Samples of made ground were tested for speciated TPH so that the risk to end users could be assessed.

The following samples record concentrations of petroleum hydrocarbons in excess of the TAC for the following hydrocarbon bands:

- Aromatic C16-C21 (3,500mg/kg in WS02 at 0.5m and 3,600mg/kg in WS02 at 1.2m) exceed the TAC of 1,800mg/kg.
- Aromatic C21-C35 (5,100mg/kg in WS02 at 0.5m and 6,200mg/kg in WS02 at 1.2m) exceeds the TAC of 1,900mg/kg.

Asbestos – Made Ground

GRM 2023 Investigation
The screening for asbestos did not reveal the presence of such contamination in the samples of relaid topsoil and made ground analysed.

Geotechnical Engineering Ltd 2016 Investigation
Asbestos was identified across the wider site area as part of the 2016 investigation. An approximate 9.0m grid of hand-excavated asbestos inspection pits was progressed across the entire site, with samples submitted for laboratory analysis. None of the sampling points within the Block C area identified the presence of asbestos. A copy of the Asbestos Concentrations Plan is included in Appendix H.

5.2.2 Water Supply Pipes

A GRM water pipe suite analysis was conducted on two samples of made ground obtained from depths of 0.60m to 1.20m begl.

It is considered that, based on the UKWIR guidance, the concentrations of contaminants recorded to date (specifically the hydrocarbons and total VOC) are such that upgraded water pipes will be required for the site. It is recommended that the local water supply company for the site (United Utilities) be contacted to confirm their requirements with regard to pipe materials.

5.2.3 Summary of Risk to End Users

Remedial works with respect to localised metals, PAH and heavy end hydrocarbon contamination are considered to be necessary to protect end-users of the development.

5.3 RISK TO SITE WORKERS

Asbestos containing materials (ACMs) have been identified across the wider site area within the previous investigation. Whilst asbestos has not been identified in the grid of shallow samples undertaken across the Block C area, there remains a risk of ACMs being uncovered during the site enabling works. The potential presence of asbestos will need to be considered during the production of any site specific risk assessments for site workers, and suitable PPE will need to be used if any identified ACMs are to be disturbed or moved. Similarly, the risk to nearby residents or customers within the surrounding commercial developments will need to be considered during site activities.

The general comments outlined in Appendix A (vii) should be considered when site specific risk assessments are completed.

6 QUANTITATIVE RISK ASSESSMENT – HUMAN HEALTH (GROUND GAS)

Ground gas monitoring was undertaken as part of the 2016 ground investigation across the entire site area including all Blocks of development. No significantly elevated concentrations of ground gas were recorded within the site or across the wider site area. The existing ground investigation concludes that:

- *Based on the results of the maximum gas screening value calculation the site will characterise as Characteristic Situation 1 (CS1) where no specific ground gas protection measures are required in new buildings in accordance with CIRIAC665 /BS8485. However, precautions will be required for any site staff undertaking works in deep excavations / confined spaces where air circulation is limited due to the localised presence of depleted oxygen.*

- *No significantly elevated levels of carbon dioxide or methane were noted during monitoring, and gas flow levels were also low. A Characteristic Situation 1 (CS-1) for the site is considered appropriate and therefore no specific ground gas measures are required.*

No additional potential sources of ground gas have been identified in the 2023 GRM ground investigation, therefore, no further gas monitoring was undertaken.

7 QUANTITATIVE RISK ASSESSMENT - CONTROLLED WATERS

The methodology, rationale and guidance GRM have used to assess the risk to controlled waters is set out in Appendix A (viii).

The primary receptors for this site have been identified as the underlying Secondary A Aquifer (Glaciofluvial Deposits) and Principal Aquifer (Chester Formation). The primary pathways are infiltration and vertical migration to the groundwater. The River Medlock is not considered to be a viable surface water receptor given its distance from the site.

The made ground has been identified as a potential source of contamination for controlled waters and further assessment has been undertaken to determine the level of risk.

7.1 INTERPRETATION OF GROUNDWATER OBSERVATIONS AND MONITORING

There are considered to be two main groundwater bodies beneath the site. A shallow groundwater table at the base of the Glaciofluvial Deposits at approximately 31.5m AOD, and a second groundwater table within the within the solid strata (Chester Formation), the level of the deeper groundwater has not been fully established.

7.2 SUMMARY OF RISK TO CONTROLLED WATERS

Whilst elevated concentrations of heavy end petroleum hydrocarbons have been identified in the samples from WS02, they are not considered to be free product or mobile hydrocarbons. The identified contamination is not considered to be above what can be expected for an inner city brownfield setting.

The ground investigation information has proven a circa 6.0m thickness of cohesive Glacial Till above the Chester Formation strata beneath the site. The significant thickness of predominantly cohesive Glacial Till will restrict the pathway for migration of any potential leachable contamination from the made ground to the underlying Principal Aquifer (and associated Zone III groundwater source protection zone) located at depth beneath the site.

Development of the site will include removal of some of the made ground and its disposal off-site during enabling works to construct the working platforms and below ground engineering. Development of the site will result in large areas of impermeable surface and implement a surface water drainage system, which will both reduce infiltration of water.

Considering the above, the risk to the aquifer below the site is considered to be very low and no specific remediation in respect to controlled waters is considered to be required.

The risk to nearby surface waters is negligible given the distance between the site and River Medlock.

8 PHASE II CONCEPTUAL SITE MODEL

HUMAN HEALTH			
Source	**Pathway**	**Receptor**	**Remedial Solution**
Elevated levels metals, PAH and localised heavy end petroleum hydrocarbons within made ground.	Indoor and outdoor inhalation of soil/soil dust and asbestos fibres, ingestion of, and dermal contact with contaminated soil and soil dust, ingestion of vegetables that have taken up contamination and contaminated soil attached to vegetables.	End users.	Soil capping or removal of contaminated soils.
		Construction workers.	
Made Ground	Inhalation of ground gas.	End users.	Existing report concludes that no gas protection measures required.
Potential asbestos containing materials within made ground.	Inhalation.	Construction workers.	Use of suitable PPE and adoption of appropriate working protocols.
Elevated PAH, VOC and heavy end petroleum hydrocarbons within made ground.	Migration of contamination through leaks and joints, degradation of water pipe materials.	End Users.	Upgraded pipe materials in clean backfill required (specific requirements to be confirmed by water supply company).

CONTROLLED WATERS			
Elevated levels metals, PAH and localised heavy end petroleum hydrocarbons within made ground.	Leaching of contaminants and vertical migration to the groundwater restricted by the presence of cohesive Glacial Till.	Principal Aquifer and associated source protection zone.	Very low. No specific remediation considered to be necessary.

9 REMEDIATION

9.1 RECOMMENDED REMEDIAL MEASURES AND VALIDATION REQUIREMENTS

The risk assessment has indicated that there is a low risk to end users from lead, PAH and hydrocarbon contamination; however, the screening values used are considered to be highly conservative and this is likely to be significantly lower as the ground floor of the structure is generally communal areas and plant rooms. Despite this, the building will protect the end-users and for the landscaped areas there is a general absence of existing topsoil and subsoil, so soils for use as a growing medium will need to be imported. As such, further risk assessment is not proposed.

9.1.1 Protection of End Users

Soil Contamination

In summary, it is considered that the use of a minimum 450mm thick clean growth medium above a granular anti-dig layer or geotextile marker in all soft landscaped areas to break the source-pathway-receptor linkage would currently represent a suitable form of remediation. The thickness of the growth medium will need to be increased locally for specific plant or tree requirements.

There is no suitable topsoil at the site and so some will need to be imported for use as a clean growing medium in areas of soft landscaping. Any materials imported for use to construct the clean growth medium will require chemical validation to confirm that they are suitable for use. Samples of these materials will need to be analysed for a suite of contaminants including metals, inorganics, speciated PAHs and other contaminants such as, speciated hydrocarbons and asbestos depending on the source. The number of samples that require analysis will depend on the source of the materials. The recommended analysis rate is:

Material Type	No. of Samples	Testing
Virgin Quarries Material	2 per source	Metals suite
Crushed hardcore, stone, brick	Minimum 3 per source or 1 per 250 m^3 (whichever is greater)	Metals suite, PAH suite and asbestos
Greenfield / manufactured soils	Minimum 3 per source or 1 per 150m^3 (whichever is greater)	Metals suite, PAH suite and asbestos
Brownfield / screened soils	Minimum 6 per source or 1 per 150 m^3 (whichever is greater)	Metals suite, PAH suite and asbestos, plus additional analysis dependent on the source.

The thickness of the growth medium will need verifying by way of hand dug pits.

Should any material suspected of being significantly contaminated be encountered during the redevelopment of the site, GRM can be contacted to undertake additional investigation if necessary. The local Environmental Health Officer should be contacted and informed of any additional remedial work required.

Ground Gas

No significant source of ground gas has been identified and gas protection measures are not required for the proposed development.

9.1.2 Protection of Site Workers

Asbestos containing materials (ACMs) have been identified across the wider site area within the previous investigation. Whilst asbestos has not been identified in the grid of shallow samples undertaken across the Block C area, there remains a risk of ACMs being uncovered during the site enabling works. The presence of asbestos will need to be considered during the production of any site specific risk assessments for site workers, and suitable PPE will need to be used if any identified ACMs are to be disturbed or moved. Similarly, the risk to nearby residents or customers within the surrounding commercial developments will need to be considered during site activities.

The general comments outlined in Appendix A (vii) should be considered when site specific risk assessments are completed.

9.1.3 Protection of Members of the Public

Construction activities should consider the potential for dust mitigation and employ appropriate suppression measures.

9.1.4 Protection of Controlled Waters

The risk to controlled waters is very low and no specific remedial measures are required.

9.1.5 Protection of Water Pipes

It is considered that, based on the United Utilities Risk Assessment guidance, the concentrations of contaminants recorded to date (specifically the hydrocarbons and total VOC) are such that upgraded water pipes will be required for the site. It is recommended that the local water supply company for the site (United Utilities) be contacted to confirm their requirements with regard to pipe materials.

9.2 REMEDIAL STRATEGY

A Remediation Strategy specific to Block C has been prepared under separate cover (Report Ref: GRM/P10418/RMS.1 dated November 2023). Reference should be made to the document for full details and requirements.

9.3 DISPOSAL AND CLASSIFICATION

Based on the Waste Classification Report (Appendix L) it is considered that the majority of the made ground will not be classed as Hazardous Waste. However, it is considered that the made ground from around WS02 will be classed as hazardous waste due to the concentrations of TPH and PAH. The made ground from WS03 might be classed as hazardous waste due to a high (alkaline) pH, although it is likely this is due to the presence of concrete.

At this stage, we would recommend segregating the made ground around WS02 for disposal as Hazardous Waste, with the remainder of the made ground being suitable for disposal of as Non-Hazardous Waste. Early consultation with the relevant landfill sites over their particular acceptance criteria may produce cost savings. Reference should be made to the relevant notes presented in Appendix A (x).

The natural strata underlying the site is likely to be classified as Inert for disposal purposes, however, further testing will be required to confirm this. Natural soils may be suitable for re-use on-site as part of any growth medium (subject to chemical validation testing) and consideration should be given to retaining this material on-site.

Care should be taken to keep natural arisings separate from the made ground and free from construction materials, as natural soils mixed with made ground and construction materials may attract additional disposal costs.

It is recommended that any concrete or masonry buried obstructions are separate from the made ground and stockpile separately for processing.

Visible asbestos containing materials (ACMs) within soils will result in the soils being classified as Hazardous Waste. Visible ACMs should be removed, employing appropriate health and safety protocols and where possible should be undertaken prior to disposal.

It is recommended that any materials to be exported are stockpiled and tested to confirm disposal rates, as this may be more cost effective than using the results contained within this report.

Where site-won materials (i.e. made ground or contaminated natural soils) are to be re-used on site, or materials are to be imported, it is recommended that this should be carried out under a Materials Management Plan produced in accordance with the CL:AIRE Definition of Waste Code of Practice. This document should be approved by a CL:AIRE-registered Qualified Person prior to excavation of materials, and be maintained throughout the duration of the project. A Verification Report should be produced on completion of the project in order to confirm the control and recording of material movements around or between sites in accordance with current waste management legislation and guidance.

10 GEOTECHNICAL ASSESSMENT

10.1 INTRODUCTION

The Client proposes to develop the site with a high-rise residential structure, with associated infrastructure and limited areas of soft landscaping. Finished floor levels and the levels of any underground engineering works have not been provided.

The testing undertaken as part of the GRM investigation is mostly targeted at chemical analysis. Therefore, this section summarises the relevant information from the 2016 Geotechnical Engineering Ltd investigation, along with the limited GRM geotechnical information.

In addition to the site-specific comments below reference should be made to the general comments relating to the Geotechnical Assessment listed in Appendix A (xi to xvi).

10.2 GEOTECHNICAL TESTING

Geotechnical testing has been carried out both on site and in the laboratory (during the 2016 Geotechnical Engineering investigation); the results of this testing are provided on the logs in Appendix E and in Appendix I. These results are summarised in the tables below.

The existing ground investigation reports contain a larger dataset for the wider site area and reference should be made to those reports for further information.

Insitu Testing

Test Parameter	**Range of Results**			
	Made Ground	*Glaciofluvial Deposits*	*Glacial Till*	*Chester Formation*
SPT 'N' values	2 to 28	14 to 32 (locally 6)	16 to 30 (locally >50)	>50

Laboratory Testing - Glaciofluvial Deposits

Test Parameter	**Range of Results**
Natural Moisture Content	5.1 to 12%
Optimum Moisture Content	14%

Laboratory Testing - Glacial Till

Test Parameter	**Range of Results**
Natural Moisture Content	11.9 to 17.0%
Plasticity Index	13 to 17%
Quick Undrained Triaxial	94 to 109 kPa
Bulk Density	2.21 to 2.22 Mg/m^3

Laboratory Testing - Chester Formation

Test Parameter	Range of Results
Natural Moisture Content	6.7 to 12.9%
Point Load Index is(50)	0.08 to 0.42
Unconfined Compressive Strength	6.2 to 15.7 MPa

10.3 ENGINEERING GROUND TREATMENT / EXISTING STRUCTURES AND BURIED SUBSTRUCTURES

There are existing structures on the site including site cabins, storage containers and areas of car parking.

Buried obstructions have been encountered across the entire site, including brick and concrete structures within the Block C area and buried basements across the wider site.

Site enabling works are required to remove existing hardstanding and buried obstructions and so as not to present an issue to the proposed construction works (including the progression of piled foundations). Hardstanding should be broken out and the made ground soils turned over to identify any remnant substructures and obstructions.

Should any unrecorded or significantly contaminated material be encountered during enabling works, GRM should be contacted to undertake additional investigation and chemical analysis if deemed necessary to determine suitable remedial measures.

It is recommended that any buried concrete or masonry obstructions are separated from the made ground and stockpiled separately for processing. We would recommend segregating the made ground around WS02 and stockpiling it separately for further testing to confirm disposal rates.

Following enabling works to remove buried structures, the formation should be prepared and installation of a working platform will be required for the proposed piling plant.

10.4 EXCAVATION CONDITIONS

Excavation of the shallow natural soils encountered during the ground investigation should be easily achieved using conventional hydraulic excavation techniques. A breaker or similar plant will be required where hard standing and buried obstructions are encountered.

From the ground investigation undertaken, it is likely that excavations within the made ground and granular soils will experience instability issues. Materials such as granular soils and made ground are liable to collapse without warning. This situation is likely to be exacerbated by water ingress.

It is considered unlikely that dewatering will be required for shallow short-term excavations. The observed groundwater conditions suggest that only simple dewatering techniques (e.g. sump pumping) will be needed to control water ingress from shallow excavations. The use of full dewatering systems (e.g. well pointing) may be necessary to dewater deeper excavations. Care should be taken to ensure that dewatering does not lead to settlement of soils below existing structures or services on or off-site.

10.5 UNEXPLODED ORDNANCE

The site is affected by WW2 bomb damage and UXO supervision and surveying is necessary for all intrusive works. GRM are not aware of a UXO Report for the site and it is recommended that one is produced for the site to provide detailed specialist advice.

CP/RC102 drilled as part of the 2016 investigation and located beneath Block C had to be terminated at a depth of 6.65m begl due to the presence of a metallic object at depth.

10.6 FOUNDATIONS

The high rise structure will have high loads and exhibit lateral forces, and as such CFA or bored piled foundations will be required. The bearing strata for the piles will be the rock quality strata of the Keresley Member.

A piling specialist will need to be approached to provide pile dimensions and safe pile capacities. The rotary borehole logs and results of rock testing should be provided to them for detailed design.

A testing regime and objectives of the works will need agreeing with regulatory and warranting bodies prior to works. The pile design will need to be justified to the warranting bodies and the justification should be included within the piling contract.

Due to the presence of obstructions allowance should be made for excavation and re-compaction in 20% of pile locations.

Pile locations will need to be surveyed down to the maximum bomb penetration depth by a UXO Engineer.

10.7 FLOOR SLABS

It is understood that floor slabs have been specified by the structural engineer based on the performance requirements of the building.

10.8 BURIED CONCRETE

Based on the recorded water-soluble sulphate and pH levels in the soils below the Block C area of the site and assuming mobile groundwater conditions, in accordance with requirements of BRE Special Digest 1 (2005), 'Concrete in Aggressive Ground', the Design Sulphate Class for buried concrete at the site should be assumed as DS-1 and the ACEC Class as AC-1.

For unreinforced trench-fill foundations with a width of greater than 450mm, the classifications above equate to a concrete designated as GEN1 in BS8500 and RC35 for reinforced foundations.

The concrete used for piles and ring beams will have to be designed by a specialist taking into account the individual foundation requirements.

The results of the water soluble sulphate and pH testing of are presented in Appendix G and I.

11 FURTHER INVESTIGATION

Further investigation, to determine more accurately the effect of some of the identified hazards on the development, is recommended. This includes the following:

- Following enabling works and stockpiling of materials, it is recommended that further testing is conducted for waste disposal characterisation.
- Consultation with a UXO Specialist to determine safe working practices.

A copy of this report should be submitted to the Planning Department of the Local Authority/Local Authority EHO for review, if planning conditions exist for this site.

12 CONCLUSIONS

Assuming compliance with all the recommendations contained within this report the site is suitable for the proposed development.

Based on the evidence currently available the site is assessed as being of low risk for geotechnical hazards and low risk for contamination hazards.

APPENDIX A

GENERAL APPRAISAL COMMENTS

i INFORMATION SOURCES

Where available the following sources have been used for the identification and assessment of potential ground hazards:

- Relevant British Standards
- British Geological Survey (BGS) Geology Map Scale 1:10,000 for local area
- British Geological Survey (BGS) Geology Map Scale 1:50,000/1:63,320
- BGS Memoir
- BGS Borehole Records: https://mapapps2.bgs.ac.uk/geoindex/home.html
- BGS online viewer: https://geologyviewer.bgs.ac.uk
- Magic Groundwater Vulnerability Maps
- Historical Ordnance Survey (OS) Maps
- Environmental Data Report
- Environment Agency Website: http://www.environment-agency.gov.uk/
- Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites, UKWIR, 2010.
- Coal Authority Records / Coal Mining Report
- DEFRA/Environment Agency Contaminated Land publications and DoE Industry Profiles
- BRE Guide BR211 (2023), 'Radon: Guidance on protective measures for new buildings (including supplementary advice for extensions, conversions and refurbishment projects)'
- UK HSA Radon Maps: https://www.ukradon.org/information/ukmaps
- CIRIA C665 'Assessing risks posed by hazardous ground gases to buildings'
- BS8485:2015 +A1: 2019, 'Code of Practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings'
- Other technical references used throughout this document are detailed in the text.

ii CONTAMINANTS OF CONCERN

The DoE Industry Profiles are normally used to assess likely contaminants from past land use and potential nearby industrial sources. For land uses where no profile is available, likely contaminants of concern are selected by GRM based on past experience of similar sites, a general screening suite of contaminants covered by CLEA and common contaminants from the Industry Profiles.

- Arsenic
- Cadmium
- Chromium
- Lead
- Mercury
- Selenium
- Copper
- Nickel
- Zinc
- Phenols
- cyanide (total)
- pH
- Water soluble sulphate
- PAH (polycyclic aromatic hydrocarbons)

Asbestos and PCBs are listed in the vast majority of profiles. PCBs are listed as the profiles expect electricity substations and switch boxes on all industrial sites. There is the potential for asbestos containing material to be mixed up with made ground, following any demolition works.

iii CONCEPTUAL MODEL METHODOLOGY

The consideration of contamination is based upon the principles of risk assessment, using the 'source-pathway-receptor' model in order to establish the presence, or potential presence, of a pollutant linkage.

To create a risk, contamination must have the potential to cause harm to susceptible targets or receptors such as humans, the water environment or the built environment. The potential for harm to occur requires three conditions to be satisfied to form a pollutant linkage:

- The presence of substances that may cause harm (SOURCE).
- The presence of a target which may be harmed (RECEPTOR).
- The existence of a plausible migration route between the source and the receptor (PATHWAY).

In the absence of a plausible pollutant linkage there is no risk. Where a potential linkage is identified in order for it not to pose a risk to the identified receptor it must be broken.

iv INTRUSIVE INVESTIGATION SAMPLING METHODOLOGY

The ground investigation (including fieldwork, sampling, monitoring and laboratory analyses) has been designed to identify and assess potential ground related problems and to allow cost effective solutions to be advised. It has been planned on the basis of the desk study, site inspection and the proposed development layout (where available). All fieldwork and soil descriptions were carried out in general accordance with relevant British Standards.

The exploratory holes have been positioned and advanced to depths to determine the general ground/groundwater/gas conditions below the site. A general grid pattern has been adopted, where possible, to provide sufficient information based on the current proposed layout scheme. Some holes have been targeted at particular hazards identified in the Phase I assessment. The resultant exploratory hole density is considered to be commensurate with the complexity of the site conditions and detail of information required for this phase of the investigation.

v GROUND GAS RISK ASSESSMENT METHODOLOGY

Gas monitoring programmes undertaken by GRM are designed to broadly comply with the recommendations outlined in CIRIA Report C665 'Assessing risks posed by hazardous ground gas to buildings' (2007) and BS8576 'Guidance on Investigations for ground gas – Permanent gases and Volatile Organic Compounds (VOCs) (2013).

To assess the risks posed by ground gases such as radon, carbon dioxide and methane, the relevant current guidance has been used. For radon the site has been assessed following the guidelines in 'Radon: guidance on protective measures for new dwellings (including supplementary advice for extensions, conversions and refurbishment projects) (BR211: 2023)'. For methane and carbon dioxide the primary guidance document used to determine if protection measures are required is *BS8485:2015 Code of practice for the design of protective measures from methane and carbon dioxide ground gases for new buildings*. This uses hazardous gas flow rates (Q_{hg}), which are gas concentrations multiplied by borehole flow rates, to derive a Gas Flow Rate (GSV) for the site. The gas regime is then determined based on the GSV and other limiting factors such as gas concentrations.

Where flow is not recorded during the monitoring a default flow rate of 0.1l/hr will be used in the assessment to produce a positive result.

vi HUMAN HEALTH RISK ASSESSMENT METHODOLOGY

Guidance contained in the Environment Agency's CLEA Reports has been used to assess the risks posed to human health.

For residential developments that include domestic gardens the default Tier 1 Assessment Criteria (TAC) for 'residential land with plant uptake' are used, i.e. a female with a start age class of one and an end age class of six. All pathways are considered including the consumption of home-grown vegetables.

For residential developments that do not include domestic gardens the default Tier 1 Assessment Criteria (TAC) for 'residential land without plant uptake' are used, i.e. a female with a start age class of one and an end age class of six. All pathways are considered except the consumption of home-grown vegetables. For commercial/industrial developments the default Tier 1 Assessment Criteria (TAC) for 'commercial/industrial' are used, i.e. a female with a start age class of sixteen and an end age class of eighteen. All pathways are considered except the consumption of home-grown vegetables.

The TAC used by GRM include Category 4 Screening Levels (C4SLs) published by DEFRA, values calculated by GRM using the CLEA v1.071 risk assessment, and values and Suitable for Use Levels (S4UL) developed by LQM/CIEH. The TAC used in the assessment are selected based on the lowest site specific SOM values returned as part of the chemical analysis.

Where soil chemical analysis results are found to exceed the TAC, Site-Specific Risk Assessments may be undertaken using the CLEA v1.071 risk assessment software using the age classes and pathways described above.

vii RISK TO SITE WORKERS – GENERAL COMMENTS

The risks to site workers are similar to those posed to site end users, although likely to be less severe due to the site workers' shorter exposure to the identified contamination. However, site workers (particularly groundworkers) are more likely to come into direct contact with contaminated soils due to the nature of their work. On this basis ground and construction workers should be provided with basic Personal Protective Equipment based on the site's general health and safety risk assessment, but including as a minimum safety footwear, gloves and overalls.

A site specific risk assessment should be carried out for all hazards identified within the ground investigation in accordance with current health and safety legislation. This assessment should identify any measures required to further reduce risks i.e. providing further Personal Protective Equipment, welfare facilities and if necessary preventing access to certain areas.

Demolition and dismantling of existing structures on the site must be carried out to a safe and acceptable standard, in accordance with current UK guidance and best practice. Whilst not ground related, asbestos and hazardous substances surveys should be conducted prior to any demolition.

Any unusual colours, odours and suspicious ground should be reported immediately to site management and then GRM.

Whilst this appraisal has considered the long-term effects of contamination, GRM can also help during the formulation of Health and Safety documentation, if required.

viii CONTROLLED WATERS RISK ASSESSMENT METHODOLOGY

Where the desk study and fieldwork do not reveal a potential source of contamination no leachate or groundwater testing will be performed. Where a potential source is identified the testing will comprise leachate testing on the material considered most likely to pose a risk, groundwater testing will be undertaken if water is present at shallow depth.

The UK Drinking Water Standards (UKDWS) or Environmental Quality Standards (EQS) are usually adopted for comparison with the leachate/groundwater test results. When the most sensitive receptor is considered to be the aquifer (groundwater) UKDWS will be adopted as the Initial Tier 1 screening values.

Where the most sensitive receptor is a surface water feature the EQS values will be used as Initial Tier I Screening values.

ix CONSTRUCTION MATERIALS RISK ASSESSMENT METHODOLOGY

The 'screening levels' adopted for the assessment of risk to construction materials are taken from the following documents:

- UK Water Industry Research (UKWIR) Contamination thresholds for sub-surface water pipes, for the protection of buried pipes.
- Building Research Establishment (BRE) Special Digest SD1 (2005), 'Concrete in Aggressive Ground', for the protection of buried concrete.

x WASTE DISPOSAL, SITE WASTE MANAGEMENT PLANS AND MATERIAL MANAGEMENT PLANS

Under current Waste Management Regulations, waste soil materials produced from the site will require characterisation to enable it to be disposed of correctly.

The chemical analysis results included in this report should be provided to the relevant landfill operators to establish the characterisation of the waste, confirm its suitability for landfill disposal and provide estimated costings. If material is classified as hazardous, then the site will need to be registered with the Environment Agency prior to the movement of the waste. Depending on the receiving landfill's current permit, further chemical analysis, incorporating Waste Acceptance Criteria (WAC) leachate analysis, may be required.

All materials removed from the site will be classified as 'waste' and therefore must be removed by a suitably licensed carrier of waste. This applies whether or not the waste is contaminated. All waste removed to landfill will attract Landfill Tax.

The developer/builder is likely to be classed as the waste producer and therefore, has a duty of care to ensure that all waste is disposed of appropriately. This includes ensuring the waste carrier is licensed and disposes of the waste to a suitably licensed landfill site. They are also required to keep a paper trail from 'cradle to grave' including copies of the waste disposal tickets.

Efficient materials management on site is recommended as it can lead to significant cost savings when compared to the traditional side casting or single stockpile of arisings. GRM can assist in the production of Material Management Plans under the CL:AIRE Definition of Waste: Code of Practice. The DoWCoP enables:

- The direct transfer and re-use of clean naturally occurring soil materials between sites, and
- The re-use of both contaminated and uncontaminated materials on their site of origin and between sites within defined Cluster projects.

GRM can also undertake the role of Qualified Person and submit the DoW CoP project Declaration.

Likewise making the site as volume neutral as possible will reduce the costs of development. Whilst not a statutory requirement, Site Waste Management Plans allow better waste management practices, help to reduce the amount of waste produced and identify best environmental disposal options. Implementing a Site Waste Management Plan (SWMP) can reduce costs (increasing business profits) and maximise resource efficiency.

xi GEOTECHNICAL ASSESSMENT GENERAL COMMENTS

Where finished floor levels of proposed structures have not been provided by the Client, then for the purposes of initial assessment, GRM will assume that finished levels will not vary appreciably from the existing ground levels. If the depths of any underground engineering works (i.e. sewers, pumping stations etc.) are unknown they will not be taken in to account in the assessment and it will be assumed that any such works will not compromise foundation or ground stability.

Should the development proposals or finished levels be different from these assumptions then the comments/recommendations in the Geotechnical Assessment may require revising.

It should be noted that the results of window sampling and/or cable percussive boreholes may not give a true indication of a soils actual engineering properties (i.e. stability, mass structure etc). GRM consider that that prior to development trial pitting should be undertaken to confirm the recommendations in the Geotechnical Assessment.

xii GEOTECHNICAL ASSESSMENT – ENGINEERING GROUND TREATMENT

Near surface soils have the potential to be disturbed by weathering and site traffic. Precautions should always be taken to avoid this, as excessive disturbance may leads to more onerous floor slab designs, road cap thickness and increased amounts of off-site disposal etc.

Near surface soils may need treatment or reinforcing to allow safe movement of construction plant and labour. An assessment by the contractor should be undertaken once the type of machinery/plant needed to complete the development is known.

xiii GEOTECHNICAL ASSESSMENT – EXCAVATIONS

Excavation instability (over-break) can result in damage to existing services or structures (e.g. foundations, roads or boundary walls/fences) both on and off-site, as well as increased foundation concrete costs. In order to minimise this, all excavations deeper than 1.2m deep (or any excavation within 1.5m of any existing structure or service) should be supported. Full support should be provided to the full depth of all near vertically sided excavations in made ground, soft and very soft clays and granular soils. A reduction to intermediate support should be acceptable within firm and stiffer natural clays.

Wherever possible, man entry into excavations should be prevented; however, where this is not possible, entry to, and time spent in, excavations should be kept to a minimum.

The build program should be tailored to reflect the impact that deep excavations through potentially unstable strata can have on adjacent properties, so that they are not undermined.

All excavations on site should be in accordance with HSE guidelines and stability should be practically maintained at all times. Reference should be made to HSE construction information sheet No. 8 (Revision 1) ‘Safety in Excavations’.

Care should be taken to ensure that falls from excavation faces do not adversely affect the integrity of foundation concrete.

If contaminated water enters excavations it should be removed and transported to an appropriate treatment facility by a suitably licensed carrier before construction begins.

xiv GEOTECHNICAL ASSESSMENT – SUBSTRUCTURES

Where practicable, existing buried construction should be fully removed; however, if this is not practicable all new foundations should be carried down to fully penetrate it and it should be broken well away from all new structures.

There may be existing structures and/or infrastructure in close proximity to the proposed development. New build foundations may be constructed next to pavements with existing underground services beneath them, or excavations may be required near existing footings associated with adjacent properties. These potential hazards need to be taken into consideration when designing foundations and the groundworker needs to be made aware of their potential impact during the redevelopment works. Foundations close to existing underground services or buildings may require alternative foundation techniques (such as piling) to protect the integrity of these structures.

The contractor for the works should carry them out in such a fashion so as to not cause excessive overbreak, concrete usage or undermine existing buildings/roads/ services that are to be retained.

xv GEOTECHNICAL ASSESSMENT – SOAKAWAYS

Soakaway testing in trial pits by GRM is broadly carried out in accordance with BRE DG 365 (2016). The testing comprises the excavation of a test pit to a suitable depth, and the placement of water into the pit. The level of water present is then monitored over time. For borehole installations, the permeability testing (falling head/rising head) is undertaken in accordance with BS5930.

If it is decided to proceed with the use of soakaway drainage, then the following general points should be noted:

- Soakaways should not be placed so that water can be discharged through potentially contaminated made ground.
- The Environment Agency may require soakaways to be sealed systems such that only roof run off falls to soakaway.
- Interceptors are likely to be required for soakaways for highway drainage. The adopting authority for the highways should be consulted at the earliest opportunity regarding the use of soakaways for highways drainage.
- Consideration of site levels and slopes should be taken into account during the design.
- The construction of all soakaways should be in accordance with the current building regulations.
- Soakaways should not be placed within 5m of a proposed building.
- Placement of soakaways needs to be considered so as to avoid ponding of water down slope.
- The base of a soakaway should not be below the highest recorded water level.
- The Environment Agency prefer 1m of dry soil to be present between the base of a soakaway and the water table to provide attenuation for contamination.

xvi GEOTECHNICAL ASSESSMENT – FOUNDATIONS

If soft or hard spots are encountered during foundation excavation then they should be replaced with suitably compacted material or the footings deepened to suitable strata, to avoid differential settlement.

If strata of differing bearing character (e.g. sand and clay) are encountered at foundation levels within the excavations for a single plot then the excavation depths should be altered as appropriate to ensure the foundations rest on a single stratum, or strata that will not induce differential settlement. Where this is impractical then GRM should be contacted to assess a reinforced concrete detail or an alternative foundation solution (e.g. piles or vibro-replacement).

NOTES ON LIMITATIONS

General

GRM Development Solutions Limited has prepared this report solely for the use of the Client and those parties with whom a warranty agreement had been executed, or with whom an assignment had been agreed. Should any third party wish to use or rely upon the contents of the report, written approval must be sought from GRM Development Solutions Limited; a charge may be levied against such approval.

GRM Development Solutions Limited accepts no responsibility or liability for:

a) the consequences of this document being used for any purpose or project other than for which it was commissioned, and

b) the consequences of this document being used by any third party with whom an agreement has not been executed.

Phase I Environmental Audits/ Desk Studies

The work undertaken to provide the basis of this report comprised a study of available documented information from a variety of sources (including the Client), together with (where appropriate) a brief walk over inspection of the site and meetings and discussions with relevant authorities and other interested parties. The opinions given in this report have been dictated by the finite data on which they are based and are relevant only to the purpose for which the report was commissioned. The information reviewed should not be considered exhaustive and has been accepted in good faith as providing true and representative data pertaining to site conditions. Should additional information become available which may affect the opinions expressed in this report, GRM Development Solutions Limited reserves the right to review such information and as considered necessary and appropriate to modify the opinions accordingly. It should be noted that any risks identified in a Phase 1 report are perceived risks based on the information reviewed; actual risks can only be assessed following a physical investigation of the site.

Phase II Environmental Audits (Contamination Investigations)

The investigation of the site has been carried out to provide sufficient information concerning the type and degree of contamination, ground and groundwater conditions to allow a reasonable risk assessment to be made. The objectives of the investigation have been limited to establishing the risks associated with potential human targets, building materials, and controlled waters.

The amount of exploratory work and chemical testing undertaken has necessarily been restricted by the short timescale available, and the locations of exploratory holes have been restricted to the areas unoccupied by the building(s) on the site and by buried services. A more comprehensive investigation may be required if the site is to be redeveloped as, in addition to risk assessment, a number of important engineering and environmental issues need to be resolved.

For these reasons if costs have been included in relation to site remediation these must be considered as provisional only and must, in any event, be confirmed by a commercial adviser.

The exploratory holes undertaken, which investigate only a small volume of the ground in relation to the size of the site, can only provide a general indication of site conditions. Whilst exploratory testing is intended to gain an accurate representation of the site, the very nature of sampling and testing is such that it cannot ensure that all localised conditions are detected

The risk assessment and opinions provided take in to consideration, inter alia, currently available guidance relating to acceptable contamination concentrations; no liability can be accepted for the retrospective effects of any future changes or amendments to these values.

Phase II Geo-environmental Investigations (Combined Geotechnical and Contamination Investigations)

The investigation of the site has been carried out to provide sufficient information concerning the type and degree of contamination, geotechnical characteristics, and ground and groundwater conditions to provide a reasonable assessment of the environment risks together with engineering and development implications. If costs have been included in relation to site development a commercial adviser must confirm these.

The exploratory holes undertaken, which investigate only a small volume of the ground in relation to the size of the site, can only provide a general indication of site conditions. The opinions provided and recommendations given in this report are based on the ground conditions apparent at the site for each of the exploratory holes. There may be exceptional ground conditions elsewhere on the site which have not been disclosed by this investigation and which have therefore not been taken into account in this report.

The comments made on groundwater conditions are based on observations made at the time the site work was conducted. It should be noted that groundwater levels will vary owing to seasonal, tidal and weather related effects.

The scope of the investigation was selected on the basis of the specific development proposed by the Client and may be inappropriate to another form of development or scheme.

The risk assessment and opinions provided take in to consideration, inter alia, currently available guidance relating to acceptable contamination concentrations; no liability can be accepted for the retrospective effects of any future changes or amendments to these values.

APPENDIX B

GF PUBLIC REALM

SOFTWORKS - Note legend is site wide

INGROUND TREE PLANTING IN HARD
GIRTH: 25-30cm
HEIGHT: 5 - 5.5m
STEM: Rootball
ROOT: 2.5m Clear Stem

INGROUND TREE PLANTING IN SOFT
GIRTH: 25-30cm
HEIGHT: 5 - 5.5m
STEM: Rootball
ROOT: 2.5m Clear Stem

RETAINED EXISTING TREE
Existing tree to be retained.

PERENNIAL PLANTING 1 (S1)
DETAILS: Mix of evergreen shrubs, ground cover and herbaceous perennials.
SIZE: 3-10L
ROOT: Containerised

RAIN GARDEN: PERENNIAL PLANTING 2 (S2)
DETAILS: Mix of evergreen shrubs, ground cover and perennials.
SIZE: 3-10L
ROOT: Containerised

AMENITY GRASS (G1)
PRODUCT: LT8 Festival Plus Turf
SUPPLIER: Lindum or equal & approved

SEASONAL BULBS (B1)
PRODUCT: Seasonal bulb mix.
SUPPLIER: Lindum or equal & approved

1. This drawing is to be read in conjunction with all other drawings and specifications.
2. Do not scale off this drawing. Written dimensions to be taken only.
3. Any discrepancies found between this drawing and other drawings and specifications in the construction documents must be referred to the Landscape Architect prior to work commencing.
4. This drawing must not be copied in whole or in part without prior written consent of Optimised Environments Ltd.

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Topographical Survey: Please reference surveyor's survey.

CDM INFORMATION

1. To be completed

KEY PLAN

Issue	Revision	Initial	Date

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PART OF SLR

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Client
Downing

Project
First Street: Block C
Manchester

Drawing Title
LANDSCAPE PLAN
SOFTWORKS

Scale Bar 2m 4m 6m 8m 10m
North

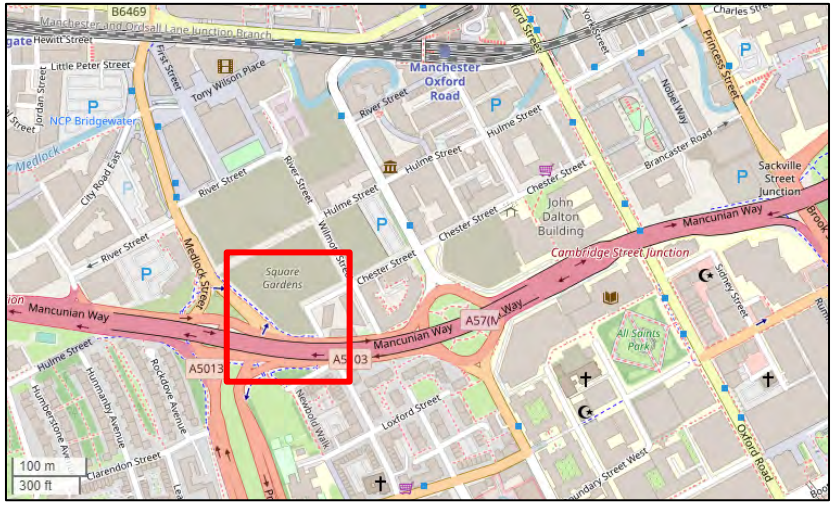
Scale: **1:200@A1** Date: **13.10.23**
By: **GH** Status: **INFORMATION**
Checked: **AW** Approved: **AW**

DRAFT

Drawing Number: **M90183_Layout** Rev **01**

Computer File: R:\Projects\2019\M90183.08_FSBlockC\CAD\AUTOCAD\SHEETS

APPENDIX C



DO NOT SCALE

NOTES:

Postcode:

M1 5GF

GRM Development Solutions Ltd
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CLIENT:
Downing Living (Manchester South)

PROJECT:
Block C, First Street, Manchester

TITLE:
Site Location Plan

SCALE@SIZE :	ISSUE:
NTS	FINAL
DESIGN/DRAWN by :	DATE:
PROJECT No: P10418	DRAWING No: 001

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APPENDIX D

NOTES:	CLIENT: THE ALAN JOHNSOTN PARTNERSHIP	PROJECT No: P10418	DATE: October 2023	DESIGN/DRAWN: RU / CBC
	PROJECT: BLOCK C - FIRST STREET	DRAWING NUMBER: 001	ISSUE: Final	
	TITLE: PROPOSED EXPLORATORY HOLE LOCATION PLAN	© GRM Development Solutions Ltd © Crown Copyright. AL 100014100		

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APPENDIX E

GRM Development Solutions Ltd
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Windowless Sample Borehole

Borehole No WS01
Sheet 1 of 1

Site Name: Block C First Street Manchester

Ground Level (mAOD)

Client: Alan Johnston Partnership Ltd

GRM Project Ref: P10418

Coordinates E N

Installation/ Backfill	Water Strike	Samples/Tests: Depth	Samples/Tests: Type	Samples/Tests: SPT Result	Depth (m)	Level (m)	Legend	Stratum Description
					0.10			Asphalt hardstanding. MADE GROUND
		0.50 0.50	D ES		0.40			Medium dense, yellowish brown sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded of sandstone and quartzite. MADE GROUND
		1.00	C	4 (4,4/4 for 75mm)	1.00			Medium dense, dark brown and reddish brown, sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of quartzite and brick. MADE GROUND End of Borehole at 1.000m

1 2 3 4 5

Crew: Dynamic Sampling Uk Ltd. **Logger:** RP **Weather:** Overcast.

Equipment: Permier Compact 110 Series

Reason for termination of borehole: Terminated due to obstruction.

Groundwater Remarks:
No groundwater encountered.

General Remarks:
Hand dug pit to 0.9m begl.

Hole Started: 18/10/2023 **Hole Complete:** 18/10/2023 **Version:** FINAL **Scale:** 1:31

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Windowless Sample Borehole

Borehole No WS02
Sheet 1 of 1

Site Name: Block C First Street Manchester

Ground Level (mAOD)

Client: Alan Johnston Partnership Ltd

GRM Project Ref: P10418

Coordinates E N

Installation/ Backfill	Water Strike	Samples/Tests Depth	Type	SPT Result	Depth (m)	Level (m)	Legend	Stratum Description
					0.20			Grass over brown, slightly clayey gravelly SAND. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of quartzite and brick. Contains abundant rootlets. RELAID TOPOSIL
		0.50	D					Loose, dark brown, slightly clayey gravelly SAND. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of quartzite and brick. MADE GROUND
		0.50	ES					
		1.20	D	N=2 (1,1/1,1,0,0)				
		1.20	ES		1.30			Medium dense, grey, sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse, angular to subangular of concrete and brick fragments. MADE GROUND
		1.20	C		1.50			
		1.80	C	N=28 (1,6/7,7,7,7)				Medium dense, red, sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse, angular of brick. MADE GROUND
		2.20	D					
		2.50	D		2.40			Loose becoming medium dense, yellowish brown mottled brown, gravelly SAND. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of sandstone and quartzite. GLACIOFLUVIAL DEPOSITS
		2.80	C	N=6 (1,1/1,1,2,2)				
		3.50	D					
		3.80	C	N=22 (3,5/5,6,5,6)				
					4.00			End of Borehole at 4.000m

1 2 3 4 5

Crew: Dynamic Sampling Uk Ltd. **Logger:** RP **Weather:** Overcast.

Equipment: Permier Compact 110 Series

Reason for termination of borehole: Achieved required depth.

Groundwater Remarks:
No groundwater encountered.

General Remarks:
Hand dug pit to 1.2m begl.

Hole Started: 18/10/2023 **Hole Complete:** 18/10/2023 **Version:** FINAL **Scale:** 1:31

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Windowless Sample Borehole

Borehole No WS03

Sheet 1 of 1

Site Name: Block C First Street Manchester

Ground Level (mAOD)

Client: Alan Johnston Partnership Ltd

GRM Project Ref: P10418

Coordinates E N

Installation/ Backfill	Water Strike	Samples/Tests: Depth	Samples/Tests: Type	Samples/Tests: SPT Result	Depth (m)	Level (m)	Legend	Stratum Description
		0.70 0.70	D ES		1.10			Medium dense, dark brown, slightly clayey, sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse, angular to subrounded of brick, concrete, quartzite and sandstone. MADE GROUND *Concrete slab encountered at 1.1m begl.* End of Borehole at 1.100m

1
2
3
4
5

Crew: Dynamic Sampling Uk Ltd. **Logger:** RP **Weather:** Overcast.

Equipment: Permier Compact 110 Series

Reason for termination of borehole: Terminated due to obstruction.

Groundwater Remarks:
No groundwater encountered.

General Remarks:
Hand dug pit to 1.15m begl.

Hole Started: 18/10/2023 **Hole Complete:** 18/10/2023 **Version:** FINAL **Scale:** 1:31

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Windowless Sample Borehole

Borehole No WS04a
Sheet 1 of 1

Site Name: Block C First Street Manchester

Ground Level (mAOD)

Client: Alan Johnston Partnership Ltd

GRM Project Ref: P10418

Coordinates E N

Installation/ Backfill	Water Strike	Samples/Tests: Depth	Samples/Tests: Type	Samples/Tests: SPT Result	Depth (m)	Level (m)	Legend	Stratum Description
		0.40 0.40	D ES		0.50			Loose, dark brown, sandy GRAVEL. Sand is fine to coarse. Gravel is fine to coarse, subangular to subrounded of quartzite, concrete, sandstone, metal fragments. MADE GROUND *Concrete slab at 0.5m begl* End of Borehole at 0.500m

1
2
3
4
5

Crew: Dynamic Sampling Uk Ltd. **Logger:** RP **Weather:** Overcast.

Equipment: Permier Compact 110 Series

Reason for termination of borehole: Terminated due to obstruction.

Groundwater Remarks:
No groundwater encountered.

General Remarks:
Hand dug pit to 0.5m begl.

Hole Started: 18/10/2023 **Hole Complete:** 18/10/2023 **Version:** FINAL **Scale:** 1:31

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Windowless Sample Borehole

Borehole No WS04b
Sheet 1 of 1

Site Name: Block C First Street Manchester

Ground Level (mAOD)

Client: Alan Johnston Partnership Ltd

GRM Project Ref: P10418

Coordinates E N

Installation/ Backfill	Water Strike	Samples/Tests Depth	Type	SPT Result	Depth (m)	Level (m)	Legend	Stratum Description
					0.15			Grey concrete with 5mm rebar. MADE GROUND
		0.60	D					Medium dense, orangish brown, slightly gravelly SAND. Sand is fine to coarse. Gravel is fine to coarse subrounded of quartzite and rare coal. MADE GROUND
		0.60	ES					
		1.20	D	N=15 (1,3/3,4,4,4)				
		1.20	C					
					1.50			Medium dense, orangish brown, very gravelly SAND. Sand is fine to coarse. Gravel is fine to coarse, subrounded of quartzite. GLACIOFLUVIAL DEPOSITS
		1.70	D					
		2.00	C	N=15 (2,3/4,3,4,4)	2.00			End of Borehole at 2.000m

1 2 3 4 5

Crew: Dynamic Sampling Uk Ltd. **Logger:** RP **Weather:** Overcast.

Equipment: Permier Compact 110 Series

Reason for termination of borehole: Achieved required depth.

Groundwater Remarks:
No groundwater encountered.

General Remarks:
Hand dug pit to 1.2m begl.

Hole Started: 18/10/2023 **Hole Complete:** 18/10/2023 **Version:** FINAL **Scale:** 1:31

Geotechnical Engineering Limited

TRIAL PIT LOG

TP108

CLIENT	ASK PROPERTY DEVELOPMENTS LTD					Sheet	1 of 1
SITE	PLOTS 6, 7 & 8 FIRST STREET, MANCHESTER					Scale	1 : 25
Start Date	18 April 2016	Easting	383776				
End Date	18 April 2016	Northing	397150	Ground level	34.65mOD	Depth	3.40 m

water record	sample/test no/type	result	depth (m)	description	depth (m)	level (m)	legend
				MADE GROUND comprising black TARMACADAM.	0.08	34.57	
				Light brown very sandy angular and subangular fine to coarse brick GRAVEL. (MADE GROUND)	0.15	34.50	
	1B		0.30- 0.50	Dark brown clayey sandy angular to subrounded fine to coarse brick, coal, concrete and rare siltstone GRAVEL with rare ceramic fragments (up to 30mm). High subangular brick cobble content. (MADE GROUND)			
	1ES		0.30- 0.50		0.75	33.90	
				Brownish orange sandy locally very sandy rounded and well rounded medium and coarse sandstone, siltstone and rare crystalline GRAVEL.			
	2B		1.00- 1.20				
	2ES		1.00- 1.20				
1.50m: Damp							
	3B		2.00- 2.20				
				2.50 - 2.70m: Soft brown slightly sandy clay.			
	4B		3.00- 3.20				
Damp				Trial pit completed at 3.40m.	3.40	31.25	

Notes

Trial pit excavated by JCB 3CX ECO mechanical excavator and breaker.
Groundwater not encountered, however pit observed to be damp at 1.50m.
Trial pit sides became unstable at 3.40m.
Trial pit dimensions 0.80x2.00x3.40m.
On completion, the trial pit was backfilled with materials arising.
Trail pit ceased at 3.40m due to excessive spalling on eastern edge of trial pit.

Sketch of Foundation - Not to scale. All dimensions in metres.

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EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

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TRIAL PIT LOG

TP109

CLIENT	ASK PROPERTY DEVELOPMENTS LTD					Sheet	1 of 2
SITE	PLOTS 6, 7 & 8 FIRST STREET, MANCHESTER					Scale	1 : 25
Start Date	20 April 2016	Easting	383824				
End Date	20 April 2016	Northing	397116	Ground level	35.10mOD	Depth	4.20 m

water record	sample/test no/type	result	depth (m)	description	depth (m)	level (m)	legend
	1B 1ES		0.10- 0.30 0.10- 0.30	Grass over dark brown slightly gravelly sandy organic SILT with rare glass fragments (up to 50mm) and white ceramic (up to 40mm) and rare pockets (up to 50mm) of firm dark brown clay. Gravel is subangular to well rounded coarse brick and sandstone. Frequent roots (up to 25mm diam) and rootlets. (MADE GROUND) 0.00 - 0.20m: Frequent branches (up to 150mm diam) 0.40 - 0.50m: Two red subangular brick cobbles. 0.50 - 0.90m: Locally black, ash. 0.55 - 0.60m: Frequent angular and subangular fine to coarse coal gravel. 0.60 - 0.70m: Red brick structure running in an approximate north to south orientation. 0.60 - 1.60m: Rare roots (up to 15mm diam) and rootlets. 0.90 - 1.20m: Frequent ceramic drainage pipe fragments (up to 300mm diam).			
	2B 2ES		0.70- 0.90 0.70- 0.90				
1.20m: Damp				1.10 - 1.20m: Brown ceramic pipe (110mm diam) infilled with light grey strongly cemented concrete.	1.20	33.90	
	3B 3ES		1.40- 1.60 1.40- 1.60	Orangish brown clayey sandy rounded and well rounded medium and coarse sandstone and siltstone GRAVEL.	1.80	33.30	
	4B		2.20- 2.40	Orangish brown silty sandy rounded and well rounded medium and coarse sandstone and siltstone GRAVEL. 2.50 - 2.60m: Soft light brown sandy clay.			
	5B		2.90- 3.10				
	6B		3.20- 3.40	3.15 - 3.50m: Firm locally soft reddish brown and brown clay. 3.65 - 3.75m: Soft reddish brown clay.			

Notes

Trial pit excavated by JCB 3CX ECO mechanical excavator.
Groundwater not encountered, however pit was observed to be damp from 1.20m.
Trial pit sides remained stable and vertical.
Trial pit dimensions 0.70x2.60x4.20m.
On completion, the trial pit was backfilled with materials arising.

Sketch of Foundation - Not to scale. All dimensions in metres.

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

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BOREHOLE LOG

CP/RC102

CLIENT ASK PROPERTY DEVELOPMENTS LTD

SITE PLOTS 6, 7 & 8 FIRST STREET, MANCHESTER

Sheet 1 of 1

Start Date 18 April 2016 Easting 383808 Scale 1 : 50

End Date 18 April 2016 Northing 397142 Ground level 34.40mOD Depth 6.65 m

progress date/time water depth	sample no & type	depth (m) from	depth (m) to	casing depth (m)	test type & value	samp. /core range	instru -ment	description	depth (m)	reduced level (m)	legend
18/04/16 1020hrs	1B	0.00						Grass over greyish brown gravelly fine and medium SAND. Gravel is subangular to subrounded fine to coarse sandstone and brick. Frequent rootlets. (MADE GROUND)	0.15	34.25	
	1ES	0.00							0.45	33.95	
	2B	0.30						Stiff brownish orange slightly sandy slightly gravelly CLAY. Gravel is subrounded and rounded fine to coarse sandstone, quartz and rare brick. (MADE GROUND)			
	2ES	0.30									
	3B	0.60									
	3ES	0.60									
	4B	1.00									
	4ES	1.00		Nil	S 14			Dark orangish brown clayey very gravelly fine to coarse SAND with a low rounded sandstone cobble content. Gravel is subrounded and rounded fine to coarse sandstone and mudstone.			
	5D	1.20	1.65					0.45 - 1.00m: Rare rootlets.			
	6L	1.20	2.20					1.20 - 1.65m: Medium dense.	1.80	32.60	
								1.50 - 1.60m: Rare gravel.			
	7D	2.20	2.65	1.20	S 14			1.70 - 1.80m: Medium and coarse sand.			
	8L	2.20	3.20					Medium dense orangish brown locally slightly clayey fine and medium SAND.			
								2.10 - 2.20m: Gravelly. Gravel is subrounded and rounded fine and medium sandstone.			
								2.50 - 2.60m: Fine and medium sand.			
								2.60 - 2.70m: Silty.			
	UT	3.20	3.50	1.20					3.30	31.10	
	9L	3.20	4.20					Medium dense brown gravelly medium and coarse SAND. Gravel is subangular to rounded fine to coarse sandstone and mudstone.			
	10D	4.20	4.65	1.20	S 26			4.00 - 4.20m: Orangish brown.			
	11L	4.20	5.20						4.80	29.60	
								Yellowish brown very gravelly coarse SAND. Gravel is subrounded and rounded fine and medium sandstone.	4.95	29.45	
	12D	5.20	5.65	1.20	S 28						
	13L	5.20	6.20					Stiff brown slightly gravelly CLAY. Gravel is subrounded and rounded fine and medium sandstone and quartz.			
	14D	6.20	6.65	6.20	S 17			6.00 - 6.20m: Rare pockets (up to 5mm) of red fine sand.			
18/04/16 1645hrs 0.00m									6.65	27.75	
								Borehole completed at 6.65m.			
									{8.00}		

EQUIPMENT: Geotechnical Pioneer rig.

METHOD: Hand dug inspection pit 0.00-1.20m. Dynamic sampled (113mm) 1.50-6.20m.

CASING: 140mm diam to 6.20m.

BACKFILL: On completion, hole backfilled with bentonite pellets 6.65-0.10m and arisings 0.10-0.00m.

REMARKS: Downhole magnetometry for UXO risk mitigation carried out 0.00-6.65m. Borehole terminated at 6.65m due to the presence of a metallic object.

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

water strike (m)	casing (m)	rose to (m)	time to rise (min)	remarks
4.97	1.20	4.97	20	Struck between 4.20 and 5.20m.

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Geotechnical Engineering Limited

BOREHOLE LOG

CP/RC102A

CLIENT ASK PROPERTY DEVELOPMENTS LTD

SITE PLOTS 6, 7 & 8 FIRST STREET, MANCHESTER — Sheet 1 of 3

Start Date 19 April 2016 — Easting 383813 — Scale 1 : 50

End Date 20 April 2016 — Northing 397133 — Ground level 34.65mOD — Depth 27.70 m

progress date/time water depth	sample no & type	depth (m) from	depth (m) to	casing depth (m)	test type & value	samp. /core range	I_f	instru -ment	description	depth (m)	reduced level (m)	legend
19/04/16 0800hrs	1B	0.00							MADE GROUND comprising dark grey strongly cemented CONCRETE.	0.15	34.50	
	1ES	0.00								0.30	34.35	
	2B	0.30							Brown slightly clayey locally clayey gravelly fine to coarse SAND. Gravel is subangular and subrounded fine to coarse crystalline, brick and sandstone. (MADE GROUND)	0.50	34.15	
	2ES	0.30										
	3B	0.60								1.00	33.65	
	3ES	0.60							Firm brownish orange slightly gravelly CLAY. Gravel is subrounded and rounded fine to coarse sandstone and rare brick. (MADE GROUND)			
	4B	1.00										
	4ES	1.00							Orangish red slightly gravelly fine and medium SAND with rare pockets (up to 10mm) of dark brown clay. Gravel is subrounded and rounded fine and medium sandstone.	2.10	32.55	
	5D	1.20	1.65	Nil	S 32							
	6L	1.20	2.20						Dense orangish brown and brown clayey gravelly fine to coarse SAND with rare pockets (up to 10mm) of orange sand. Gravel is subrounded to well rounded fine to coarse crystalline and siltstone and rare sandstone. 1.90 - 2.10m: Absence of clay.	2.50	32.15	
	5ES	1.80										
	6ES	2.10										
	7D	2.20	2.65	1.20	S 19							
	8L	2.20	3.20									
	7ES	3.10							Medium dense orangish brown gravelly fine and medium SAND. Gravel is rounded and well rounded medium and coarse crystalline and siltstone.	3.25	31.40	
	9D	3.20	3.65	1.20	S 24							
	10L	3.20	4.20						Dark brown slightly gravelly locally gravelly silty fine SAND with rare pockets (up to15mm) of orange sand. 3.00 - 3.05m: Orange medium sand.			
	11D	4.20	4.65	1.20	S 16				Medium dense brownish orange locally orange clayey very sandy subrounded to well rounded fine to coarse sandstone, siltstone, crystalline and rare quartz GRAVEL. 3.25 - 3.55m: Clayey. 3.90 - 4.80m: Locally grey, silty.	4.80	29.85	
	12L	4.20	5.20									
		5.20	5.65	1.20	S 16				Medium dense yellowish brown slightly gravelly medium and coarse SAND. Gravel is well rounded fine to coarse sandstone and siltstone. 5.15 - 5.20m: Dark orangish brown. 5.35 - 5.45m: Orangish brown.	5.45	29.20	
	13L	5.20	6.20									
									Stiff brown slightly sandy CLAY with rare subrounded to well rounded medium and coarse siltstone, sandstone and rare coal gravel.			
	UT	6.20	6.65	6.20								
	14L	6.20	7.20									
	15Ls	6.95	7.20									
	16D	7.20	7.65	6.20	S 24							
	17L	7.20	8.20									
									Continued Next Page	{8.00}		

EQUIPMENT: Geotechnical Pioneer rig.

METHOD: Hand dug inspection pit 0.00-1.20m. Dynamic sampled (113mm) 1.20-11.15m. Rotary cored (116mm) 11.15-27.70m using a polymer flush.

CASING: 140mm to 12.70m.

BACKFILL: On completion, a slotted standpipe (50mm) was installed to 5.50m, granular response zone 5.60-1.00m, bentonite seal 27.70-5.60m and 1.00-0.50m, concrete and stopcock cover 0.50-0.00m.

REMARKS: Downhole magnetometry for UXO risk mitigation carried out 0.00-11.15m. No anomalies encountered. Dynamic sampling carried out to recover dropped core 11.15-12.70m; recovered 0.30m.

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

water strike (m)	casing (m)	rose to (m)	time to rise (min)	remarks
5.02	1.20	5.02	20	Struck between 5.20 and 6.20m.

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BOREHOLE LOG

CP/RC102A

CLIENT ASK PROPERTY DEVELOPMENTS LTD

SITE PLOTS 6, 7 & 8 FIRST STREET, MANCHESTER — Sheet 2 of 3

Start Date 19 April 2016 — Easting 383813 — Scale 1 : 50

End Date 20 April 2016 — Northing 397133 — Ground level 34.65mOD — Depth 27.70 m

progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range	I_f	instru -ment	description	depth (m)	reduced level (m)	legend
	18D	8.20 - 8.61	8.20	S*58					8.20	26.45	
	19L	8.20 - 9.20						Very stiff locally stiff brown slightly sandy slightly gravelly CLAY. Gravel is subangular to well rounded fine and medium rarely coarse black coal, siltstone and rare quartz.			
	20D	9.20 - 9.65	8.20	S 31							
	21L	9.20 - 10.20	9.20					9.70 - 10.20m: Absence of gravel.			
	22Ls	9.90 - 10.20									
	23D	10.20 - 10.63	10.20	S*54							
	24L	10.20 - 11.15									
	25D	11.15 - 11.30	11.15	S*214							
	26C	11.15 - 12.70			97			11.15 - 11.30m: Greenish blue subrounded crystalline cobble. 11.45 - 12.70m: Limited recovery.	11.65	23.00	
19/04/16 1745hrs 5.10m		12.70 - 12.87	12.70	S*167				Very dense locally weakly cemented reddish brown medium SAND.			
20/04/16 0735hrs 5.39m	27C	12.70 - 14.20			68 15 8						
						NI 40 130		13.50 - 13.65m: Brownish red and orange gravelly fine and medium sand. Gravel is subrounded medium and coarse mudstone.	13.65	21.00	
		14.20 - 14.34	12.70	C*188				Extremely weak dark reddish brown medium and rarely coarse SANDSTONE. Fractures are subhorizontal to 15° closely spaced planar and undulating rough infilled up to 20mm with reddish brown medium sand.			
	28C	14.20 - 15.70			100 47 23				14.70	19.95	
						30 150 260		Medium strong locally weak brownish red locally orangish brown medium SANDSTONE. Fractures are subhorizontal to 25° closely and locally medium spaced planar and undulating rough locally infilled (up to 5mm) with light grey silty clay. 15.05 - 15.45m: Extremely weak highly fractured brownish red medium sandstone with frequent inclusions of subrounded and rounded medium and coarse mudstone. Fractures are randomly orientated extremely closely space planar rough locally infilled up to 15mm with grey clay.			
	29C	15.70 - 17.20	12.70		100 93 75			16.50 - 16.55m: Fracture is 30° undulating rough infilled with a veneer of orange sand locally stained black. 16.90 - 16.93m: Fracture is 30° undulating smooth infilled with a veneer of brownish red clay.			
	30C	17.20 - 18.70	12.70		100 83 71			17.80 - 17.85m: Fracture is 30° undulating rough clean.			
								Continued Next Page	{18.00}		

water strike (m) casing (m) rose to (m) time to rise (m) remarks

AGS

CONTRACT **31847**

CHECKED **CT**

Geotechnical Engineering Ltd, Tel. 01452 527743 31847.GPJ TRIALJH.GPJ GEOTECH2.GLB 13/07/2016 16:05:05 DA CT

Geotechnical Engineering Limited

BOREHOLE LOG

CP/RC102A

CLIENT ASK PROPERTY DEVELOPMENTS LTD

SITE PLOTS 6, 7 & 8 FIRST STREET, MANCHESTER — Sheet 3 of 3

Start Date 19 April 2016 — Easting 383813 — Scale 1 : 50

End Date 20 April 2016 — Northing 397133 — Ground level 34.65mOD — Depth 27.70 m

progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range	I_f	instru -ment	description	depth (m)	reduced level (m)	legend
								17.95 - 18.15m: Extremely weak brownish red medium and coarse sandstone locally infilled (up to 30mm) with frequent subrounded and rounded medium and coarse crystalline gravel with locally frequent coal specks (up to 2mm).			
	31C	18.70 - 20.20	12.70		100 87 67			18.41 - 18.43m: Fracture is subhorizontal infilled 20mm with subrounded sandstone gravel and a veneer of grey silty clay. 19.15 - 19.40m: Extremely weak brownish red medium sandstone with frequent rounded medium and coarse mudstone inclusions. Fracture are subhorizontal extremely closely spaced planar rough infilled with a veneer of orange sand.			
	32C	20.20 - 21.70	12.70		95 67 23			20.35 - 20.70m: Extremely weak highly fractured brownish red medium and coarse sandstone. Fractures are randomly orientated planar rough extremely closely spaced infilled up to 10mm with light grey silty clay. 20.95 - 21.05m: Extremely weak brownish red medium sandstone. Fractures are subhorizontal extremely closely spaced infilled up to 20mm with reddish brown medium sand.			
	33C	21.70 - 23.20	12.70		100 93 69			21.65 - 21.67m: Fracture is subhorizontal planar rough infilled 20mm with reddish brown sand.			
						50 220 450		Medium strong locally very weak and weak brownish red medium SANDSTONE. Fractures are subhorizontal medium spaced planar and undulating rough locally infilled with a veneer or brownish red sand.	22.50	12.15	
	34C	23.20 - 24.70	12.70		100 89 87			23.40 - 23.60m: Extremely weak.			
	35Cs	23.75 - 24.20						23.75 - 23.80m: Non intact.			
	36C	24.70 - 26.20	12.70		100 80 71			24.85 - 24.90m: Non intact. 25.35 - 25.40m: Extremely weak.			
	37C	26.20 - 27.70	12.70		97 82 69			26.00 - 26.07m: Extremely weak reddish brown mudstone.			
20/04/16 1415hrs 3.86m	38Cs	27.10 - 27.45						27.00 - 27.05m: Extremely weak with frequent inclusion of subrounded and rounded medium and coarse mudstone. 27.45 - 27.50m: Extremely weak.	27.70	6.95	
								Borehole completed at 27.70m.	{28.00}		

water strike (m) casing (m) rose to (m) time to rise (m) remarks

AGS

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APPENDIX F

Geotechnical Engineering Limited

GAS AND GROUNDWATER LEVELS

CLIENT: ASK PROPERTY DEVELOPMENTS LTD

SITE: PLOTS 6, 7 & 8 FIRST STREET, MANCHESTER

Borehole /trial pit no.	pipe	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
CP/RC102A		22/04/16 00:00:00												3.65	
CP/RC102A		29/04/16 00:00:00												4.75	
CP/RC102A		05/05/16 11:10:00	1016	0.41								0.0	14		Purged.
CP/RC102A		05/05/16 11:11:00										0.0			
CP/RC102A		05/05/16 11:12:00										0.0			
CP/RC102A		05/05/16 11:13:00										0.0			
CP/RC102A		05/05/16 11:14:00										0.0			
CP/RC102A		05/05/16 11:15:00			0.9	0.1	13.1	1.0	0	355					
CP/RC102A		05/05/16 11:16:00			1.1	0.1	11.4	1.0	0	436					
CP/RC102A		05/05/16 11:17:00			1.2	0.1	10.7	1.0	0	471					
CP/RC102A		05/05/16 11:18:00			1.2	0.1	10.6	1.0	0	480					
CP/RC102A		05/05/16 11:19:00			1.2	0.1	10.6	1.0	0	484					
CP/RC102A		05/05/16 11:20:00			1.2	0.1	10.6	1.0	0	490					
CP/RC102A		05/05/16 11:21:00			1.2	0.1	10.5	1.0	0	494					
CP/RC102A		05/05/16 11:22:00			1.2	0.1	10.5	1.0	0	496					
CP/RC102A		05/05/16 11:23:00			1.2	0.1	10.6	1.0	0	495					
CP/RC102A		05/05/16 11:24:00			1.2	0.1	10.6	1.0	0	491					
CP/RC102A		05/05/16 11:25:00												4.92	

remarks
# denotes result exceeding capacity of gas monitoring equipment
Equipment used - Gas Data GFM 435 Gas Analyser

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Geotechnical Engineering Limited

GAS AND GROUNDWATER LEVELS

CLIENT: ASK PROPERTY DEVELOPMENTS LTD

SITE: PLOTS 6, 7 & 8 FIRST STREET, MANCHESTER

Borehole /trial pit no.	pipe	date and time	barometric pressure (mb)	pressure differentiation (mm H_2O)	carbon dioxide (%)	methane (%)	oxygen (%)	LEL (%)	hydrogen sulphide (ppm)	carbon monoxide (ppm)	VOC (ppm)	gas flow (ltr/hr)	temperature (°C)	water level (m - bgl)	remarks
CP/RC102A		18/05/16 12:00:00	999	-0.03								0.0	13		Insufficient water to obtain sample.
CP/RC102A		18/05/16 12:01:00										0.0			Technician SF
CP/RC102A		18/05/16 12:02:00										0.0			
CP/RC102A		18/05/16 12:03:00										0.0			
CP/RC102A		18/05/16 12:04:00										0.0			
CP/RC102A		18/05/16 12:05:00			2.8	0.0	12.7	0.0	0	17					
CP/RC102A		18/05/16 12:06:00			2.8	0.0	12.7	0.0	0	18					
CP/RC102A		18/05/16 12:07:00			2.8	0.1	12.7	1.0	0	18					
CP/RC102A		18/05/16 12:08:00			2.8	0.1	12.7	1.0	0	18					
CP/RC102A		18/05/16 12:09:00			2.8	0.1	12.7	1.0	0	19					
CP/RC102A		18/05/16 12:10:00			2.8	0.1	12.7	1.0	0	19					
CP/RC102A		18/05/16 12:11:00			2.8	0.1	12.7	1.0	0	19					
CP/RC102A		18/05/16 12:12:00			2.8	0.1	12.7	1.0	0	19					
CP/RC102A		18/05/16 12:13:00			2.8	0.1	12.7	1.0	0	19					
CP/RC102A		18/05/16 12:14:00			2.8	0.1	12.7	1.0	0	19					
CP/RC102A		18/05/16 12:15:00												5.12	

remarks
# denotes result exceeding capacity of gas monitoring equipment
Equipment used - Gas Data GFM 435 Gas Analyser

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APPENDIX G

7 - 11 Harding Street
Leicester
LE1 4DH

GRM Development Solutions
Laurus House
First Avenue
Centrum 100
Burton Upon Trent
DE14 2WH

Analytical Test Report: L23/06378/GRM - 23-38533-1

Your Project Reference:	**P10418 Blockm C First Street Manchester**		
Your Order Number:	P10418	Samples Received / Instructed:	20/10/2023 / 20/10/2023
Report Issue Number:	1	Sample Tested:	20/10 to 31/10/2023
Samples Analysed:	5 soil samples	Report issued:	01/11/2023

Signed

James Gane
Analytical Services Manager
CTS Group

Notes:

General

Please refer to Methodologies page for details pertaining to the analytical methods undertaken.

Samples will be retained for 14 days after issue of this report with the exception of the asbestos test portion which is held for 6 months unless otherwise requested.

Moisture Content was determined in accordance with CTS method statement MS - CL - Sample Prep, oven dried at <30˚C.

Moisture Content is reported as a percentage of the dry mass of soil, this calculation is in accordance with BS1377, Part 2, 1990, Clause 3.2

Stone Content was determined in accordance with CTS method statement MS - CL - Sample Prep and refers to the percentage of stones retained on a 10mm BS test sieve.

Where specification limits are included these are for guidance only. Where a measured value has been highlighted this is not implying acceptance or failure and certainty of measurement values have not been taken into account.

Uncertainty of measurement values are available on request.

Samples were supplied by customer, results apply to the samples as received.

Asbestos

Please note: Where futher analaysis is required samples identified as containing asbestos are screened and tested on an as recevied basis. No correction is made for moisture content and these results are not covered by our accrediation

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

Deviating Samples

On receipt samples are compared against our sample holding and handling protocols, where any deviations have been noted these are reported on our deviating sample page (if present)

Accreditation Key

UKAS = UKAS Accreditation, MCERTS = MCERTS Accreditation, u = Unaccredited

MCERTS Accreditation only covers the SAND, CLAY and LOAM matrices

Date of Issue: 30.10.2023

Issued by: J. Gane

Issue No: 4

Rev No: 5

7 - 11 Harding Street
Leicester
LE1 4DH

L23/06378/GRM - 23-38533-1

Project Reference - P10418 Blockm C First Street Manchester

Analytical Test Results - Solid

Lab Reference			322156	322157	322158	322159	322160
Client Sample ID			-	-	-	-	-
Client Sample Location			WS01	WS02	WS02	WS03	WS04b
Client Sample Type			ES D	ES D	ES D	ES D	ES D
Client Sample Number			-	-	-	-	-
Depth - Top (m)			0.50	0.50	1.20	0.70	0.60
Depth - Bottom (m)			0.50	0.50	1.20	0.70	0.60
Date of Sampling			18/10/2023	18/10/2023	18/10/2023	18/10/2023	18/10/2023
Time of Sampling			-	-	-	-	-
Sample Matrix			Clay	Sand	Sand	Sand	Sand
Determinant	**Units**	**Accreditation**					
Arsenic	(mg/kg)	MCERTS	14	34	28	11	< 10
Cadmium	(mg/kg)	MCERTS	1.0	1.9	3.0	1.0	1.0
Chromium (Total)	(mg/kg)	UKAS	10	18	9.5	8.7	5.5
Copper	(mg/kg)	MCERTS	77	130	180	42	22
Lead	(mg/kg)	MCERTS	140	320	510	120	14
Mercury	(mg/kg)	UKAS	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Nickel	(mg/kg)	MCERTS	17	27	30	16	16
Selenium	(mg/kg)	u	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
Zinc	(mg/kg)	MCERTS	93	250	420	95	60
Total Phenols	(mg/kg)	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cyanide (Total)	(mg/kg)	MCERTS	< 1.0	2.4	< 1.0	< 1.0	< 1.0
Chromium (Hexavalent)	(mg/kg)	u	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
pH	pH Units	MCERTS	8.4	7.7	8.0	11.8	8.4
Sulphate (Water soluble as SO_4)	(mg/l)	u	39	19	65	370	18
Acenaphthene	(mg/kg)	MCERTS	3.3	90	59	0.95	< 0.02
Acenaphthylene	(mg/kg)	UKAS	0.44	3.4	6.7	< 0.20	< 0.02
Anthracene	(mg/kg)	UKAS	5.4	89	88	2.2	< 0.02
Benzo (a) anthracene	(mg/kg)	MCERTS	12	130	170	4.0	< 0.02
Benzo (a) pyrene	(mg/kg)	MCERTS	9.4	90	130	3.0	< 0.02
Benzo (b) fluoranthene	(mg/kg)	MCERTS	14	140	190	4.6	< 0.02
Benzo (g, h, i) perylene	(mg/kg)	MCERTS	6.4	56	79	2.1	< 0.02
Benzo (k) fluoranthene	(mg/kg)	MCERTS	5.3	50	71	1.6	< 0.02
Chrysene	(mg/kg)	MCERTS	11	110	160	3.8	< 0.02
Dibenzo (a,h) anthracene	(mg/kg)	MCERTS	0.99	8.5	12	0.32	< 0.02
Fluoranthene	(mg/kg)	MCERTS	25	290	380	8.2	< 0.02
Fluorene	(mg/kg)	MCERTS	2.3	58	40	0.95	< 0.02
Indeno (1, 2, 3,-cd) pyrene	(mg/kg)	MCERTS	6.6	61	92	2.1	< 0.02
Naphthalene	(mg/kg)	MCERTS	0.36	35	13	1.7	< 0.02
Phenanthrene	(mg/kg)	MCERTS	18	300	300	8.1	< 0.02
Pyrene	(mg/kg)	MCERTS	22	240	330	7.8	< 0.02
Total PAH (Sum of USEPA 16)	(mg/kg)	UKAS	140	1800	2100	51	< 0.32
SOM (via TOC)	(%)	UKAS	3.1	14	15	2.8	< 1.7
Asbestos	-	UKAS	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected

CTS Group
7 - 11 Harding Street
Leicester
LE1 4DH

L23/06378/GRM - 23-38533-1

Project Reference - P10418 Blockm C First Street Manchester

Analytical Test Results - VPH / EPH

Lab Reference			322156	322157	322158	322159	322160
Client Sample ID			-	-	-	-	-
Client Sample Location			WS01	WS02	WS02	WS03	WS04b
Client Sample Type			ES D	ES D	ES D	ES D	ES D
Client Sample Number			-	-	-	-	-
Depth - Top (m)			0.50	0.50	1.20	0.70	0.60
Depth - Bottom (m)			0.50	0.50	1.20	0.70	0.60
Date of Sampling			18/10/2023	18/10/2023	18/10/2023	18/10/2023	18/10/2023
Time of Sampling			-	-	-	-	-
Sample Matrix			Clay	Sand	Sand	Sand	Sand
Determinant	**Units**	**Accreditation**					
Aliphatic >C_5 to C_6 [HS_MS_1D_AL]	(mg/kg)	MCERTS	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Aliphatic >C_6 to C_8 [HS_MS_1D_AL]	(mg/kg)	MCERTS	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06
Aliphatic >C_8 to C_{10} [HS_MS_1D_AL]	(mg/kg)	MCERTS	< 0.06	< 0.06	0.15	< 0.06	< 0.06
Aliphatic >C_{10} to C_{12} [EH_CU_1D_AL]	(mg/kg)	u	< 10	< 100	< 100	< 10	< 10
Aliphatic >C_{12} to C_{16} [EH_CU_1D_AL]	(mg/kg)	u	< 10	190	210	14	< 10
Aliphatic >C_{16} to C_{21} [EH_CU_1D_AL]	(mg/kg)	u	11	200	240	21	< 10
Aliphatic >C_{21} to C_{35} [EH_CU_1D_AL]	(mg/kg)	u	40	490	450	60	< 20
Aromatic >C_5 to C_7 [HS_MS_1D_AR]	(mg/kg)	MCERTS	< 0.01	0.02	0.03	< 0.01	< 0.01
Aromatic >C_7 to C_8 [HS_MS_1D_AR]	(mg/kg)	MCERTS	< 0.01	0.02	0.03	0.02	< 0.01
Aromatic >C_8 to C_{10} [HS_MS_1D_AR]	(mg/kg)	MCERTS	< 0.06	0.66	0.23	< 0.06	< 0.06
Aromatic >C_{10} to C_{12} [EH_CU_1D_AR]	(mg/kg)	u	< 10	150	< 100	< 10	< 10
Aromatic >C_{12} to C_{16} [EH_CU_1D_AR]	(mg/kg)	u	24	1100	1100	< 10	< 10
Aromatic >C_{16} to C_{21} [EH_CU_1D_AR]	(mg/kg)	u	120	3500	3600	23	< 10
Aromatic >C_{21} to C_{35} [EH_CU_1D_AR]	(mg/kg)	u	270	5100	6200	88	< 20
Total >C_5 to C_{40} [EH_CU+HS_1D_Total]	(mg/kg)	u	570	11000	13000	280	< 50

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Leicester
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L23/06378/GRM - 23-38533-1

Project Reference - P10418 Blockm C First Street Manchester

Sample Descriptions

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Description	Moisture Content (%)	Stone Content (%)	Passing 2mm test sieve (%)
322156	-	WS01	ES D	-	Made Ground- brown very gravelly sandy clay with frequent brick fragments slag	6.3	61	38
322157	-	WS02	ES D	-	Made Ground- dark grey slightly gravelly silty sand with occasional brick fragments rootlets organic matter	20	< 0.1	90
322158	-	WS02	ES D	-	Made Ground- dark grey gravelly silty sand with frequent brick fragments slag rootlets	8.6	< 0.1	32
322159	-	WS03	ES D	-	Made Ground- greyish brown gravelly silty sand with occasional brick fragments rootlets slag	8.1	50	60
322160	-	WS04b	ES D	-	Made Ground- orangish brown gravelly sand with rare slag	6.4	31	54

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L23/06378/GRM - 23-38533-1

Project Reference - P10418 Blockm C First Street Manchester

Sample Comments

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Comments
322156	-	WS01	ES D	-	VPH/BTEX - Sample taken from container with headspace.
322157	-	WS02	ES D	-	VPH/BTEX - Sample taken from container with headspace.
322158	-	WS02	ES D	-	VPH/BTEX - Sample taken from container with headspace. VOC - Sample taken from container with headspace.
322159	-	WS03	ES D	-	
322160	-	WS04b	ES D	-	VPH/BTEX - Sample taken from container with headspace.

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L23/06378/GRM - 23-38533-1

Project Reference - P10418 Blockm C First Street Manchester

Analysis Methodologies

Test Code	Test Name / Reference	Sample condition for analysis	Sample Preperation	Test Details
ANIONSS	MS - CL - Anions by Aquakem (2:1Extract)	Oven dried	Passing 2mm test sieve	Determination of Anions (inc Sulphate, chloride etc.) in soils by Aquakem. Analysis is based on a 2:1 water to soil extraction ratio
EPHS	MS - CL - EPH in Soil	As received	Passing 10mm test sieve	Determination of Extractable Petroleum Hydrocarbons in soils via GC-MS
PAHASRDS	MS - CL - PAH (As Received)	As received	Passing 10mm test sieve	Determination of Polyaromatic hydrocarbons in soil via GC-MS
CWGS	MS - CL - VPH & MS - CL - EPH	As received	Passing 10mm test sieve	Determination of TPH CWG (Volatile Petroleum Hydrocarbons and Extractable Petroleum Hydrocarbons) in soils via Headspace-GC-MS and GC-MS respectively
TOCS	MS - CL - TOC Eltra	Air Dried	Passing 10mm test sieve	Determination of Total Organic Carbon in soils
VPHS	MS - CL - VPH	As received	Passing 10mm test sieve	Determination of VPH in soils via Headspace-GC-MS
SKALARCNS	MS - CL - Cyanide by Skalar	As received	Passing 10mm test sieve	Determination of cyanide (total / free / complex) in soil using a Skalar segmented flow analyser
SKALARHCS	MS - CL - Hexavalent Chromium by Skalar	As received	Passing 10mm test sieve	Determination of hexavalent chromium in soil using Skalar segmented flow analyser
ICPMETS	MS - CL - ICP Metals	Air dried	Passing 10mm test sieve	Determination of metals in soils via ICP
PHS	MS - CL - pH in Soils	As received	Passing 10mm test sieve	Determination of pH in soils using a pH probe (using a 1:3 soil to water extraction)
SKALARPHS	MS - CL - Phenols by Skalar	As received	Passing 10mm test sieve	Determination of total phenols in soil using Skalar segmented flow analyser
ASB	MS - AS - Asbestos	-	-	Fibre identification is in accordance with in house documented methods which are based on the procedure documented in the HSE Document HSG 248 "Asbestos: The analysts guide for sampling, analysis and clearance procedures"
SAMPLEPREP	MS - CL - Sample Preparation	-	-	Preparation of samples (including determination of moisture content) to allow for subsequent analysis

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L23/06378/GRM - 23-38533-1

Project Reference - P10418 Blockm C First Street Manchester

Sample Deviations

Deviations are listed below against each sample and associated test method, where deviation(s) are noted it means data may not be representative of the sample at the time of sampling and it is possible that results provided may be compromised.

Observations on receipt

A - No date of sampling provided
C - Received in inappropriate container
H - Contains headspace
T - Temperature on receipt exceeds storage temperature
R - Sample(s) received with less than 96 hours for testing to commence/complete, any result formally classed as deviating will be marked with an X against the applicable test (i.e. RX)

Observations whilst in laboratory

X - Exceeds sampling to extraction or analysis timescales

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Test	Deviations
322158	-	WS02	ES D	-	MS - CL - VPH	X
322159	-	WS03	ES D	-	MS - CL - VPH	X
322160	-	WS04b	ES D	-	MS - CL - VPH	X

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L23/06378/GRM - 23-38533-1

Project Reference - P10418 Blockm C First Street Manchester

HWOL TPH Acronym Index

Acronym	Description
HS	Headspace Analysis
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent
CU	Clean-up e.g. by florisil, silica gel
1D	GC - Single coil gas chromatography
Total	Aliphatics and Aromatics
AL	Aliphatics Only
AR	Aromatics Only
2D	GC-GC - Double Coil Gas Chromatography
#1	EH_Total but with humics mathmatically subtracted
#2	EH_Total but with fatty acids mathmatically subtracted
_	Operator - underscore to separate acronyms (except for +)
+	Operator to indicate cumlative e.g. EH+HS_Total or EH_CU+HS_Total
MS	Mass Spectrometry

7-11 Harding Street
Leicester
LE1 4DH

GRM Development Solutions
Laurus House
First Avenue
Centrum 100
Burton Upon Trent
DE14 2WH

Analytical Test Report: L23/06378/GRM - 23-38533

Your Project Reference:	**P10418 Blockm C First Street Manchester**		
Your Order Number:	P10418	Samples Received / Instructed:	20/10/2023 / 20/10/2023
Report Issue Number:	1	Sample Tested:	20/10 to 31/10/2023
Samples Analysed:	2 soil samples	Report issued:	01/11/2023

Signed

James Gane
Analytical Services Manager
CTS Group

Notes:

General

Please refer to Methodologies page for details pertaining to the analytical methods undertaken.

Samples will be retained for 14 days after issue of this report with the exception of the asbestos test portion which is held for 6 months unless otherwise requested.

Moisture Content was determined in accordance with NC method statement MS - CL - Sample Prep, oven dried at <30˚C.

Moisture Content is reported as a percentage of the dry mass of soil, this calculation is in accordance with BS1377, Part 2, 1990, Clause 3.2

Stone Content was determined in accordance with NC method statement MS - CL - Sample Prep and refers to the percentage of stones retained on a 10mm BS test sieve.

Where specification limits are included these are for guidance only. Where a measured value has been highlighted this is not implying acceptance or failure and certainty of measurement values have not been taken into account.

Uncertainty of measurement values are available on request.

Samples were supplied by customer, results apply to the samples as received.

Asbestos

Please note: Where futher analaysis is required samples identified as containing asbestos are screened and tested on an as recevied basis. No correction is made for moisture content and these results are not covered by our accrediation

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

Deviating Samples

On receipt samples are compared against our sample holding and handling protocols, where any deviations have been noted these are reported on our deviating sample page (if present)

Accreditation Key

UKAS = UKAS Accreditation, MCERTS = MCERTS Accreditation, u = Unaccredited

MCERTS Accreditation only covers the SAND, CLAY and LOAM matrices

Date of Issue: 18.08.2022

Issued by: J. Gane

Issue No: 1

Rev No: 0

7-11 Harding Street
Leicester
LE1 4DH

L23/06378/GRM - 23-38533
Project Reference - P10418 Blockm C First Street
Manchester
Analytical Test Results - Soil

NC Reference			322158	322160
Client Sample ID			-	-
Client Sample Location			WS02	WS04b
Client Sample Type			ES D	ES D
Client Sample Number			-	-
Depth - Top (m)			1.20	0.60
Depth - Bottom (m)			1.20	0.60
Date of Sampling			18/10/2023	18/10/2023
Time of Sampling			-	-
Sample Matrix			Sand	Sand
Determinant	**Units**	**Accreditation**		
Total VOC	(mg/kg)	u	2.2	< 0.050
Total BTEX & MTBE	(mg/kg)	u	< 1	< 0.010
Total SVOC (excluding PAHs and those substances marked with an *)	(mg/kg)	u	< 50.00	< 0.50
Total Phenols*	(mg/kg)	u	< 50.00	< 0.50
Total Cresols*	(mg/kg)	u	< 20.00	< 0.20
Chlorinated Phenols*	(mg/kg)	u	< 50.00	< 0.50
Total				
>C_5 to C_{10}	(mg/kg)	u	0.45	< 0.20
>C_{10} to C_{16}	(mg/kg)	u	970	< 5
>C_{16} to C_{40}	(mg/kg)	u	9600	< 15
Aliphatics				
>C_5 to C_{10}	(mg/kg)	u	< 2.0	< 2.0
>C_{10} to C_{16}	(mg/kg)	u	210	< 10
>C_{16} to C_{40}	(mg/kg)	u	690	< 15
Aromatics				
>C_5 to C_{10}	(mg/kg)	u	< 2.0	< 2.0
>C_{10} to C_{16}	(mg/kg)	u	1100	< 10
>C_{16} to C_{40}	(mg/kg)	u	11000	< 15
Others				
Total Ethers*	(mg/kg)	u	47	< 0.20
Total Nitrobenzene*	(mg/kg)	u	< 30.00	< 0.30
Total Ketones*	(mg/kg)	u	< 20.00	< 0.20
Total Aldenhydes*	(mg/kg)	u	< 20.00	< 0.20
Total Amines*	(mg/kg)	u	< 30.00	< 0.30
Conductivity	(µs/cm)	u	107	55
Redox	(mV)	u	-32	-25
pH	(pH Units)	MCERTS	8.0	8.4

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L23/06378/GRM - 23-38533

Project Reference - P10418 Blockm C First Street Manchester

Sample Descriptions

NC Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Description	Moisture Content (%)	Stone Content (%)	Passing 2mm test sieve (%)
322156	-	WS01	ES D	-	Made Ground- brown very gravelly sandy clay with frequent brick fragments slag	6.3	61	38
322157	-	WS02	ES D	-	Made Ground- dark grey slightly gravelly silty sand with occasional brick fragments rootlets organic matter	20	< 0.1	90
322158	-	WS02	ES D	-	Made Ground- dark grey gravelly silty sand with frequent brick fragments slag rootlets	8.6	< 0.1	32
322159	-	WS03	ES D	-	Made Ground- greyish brown gravelly silty sand with occasional brick fragments rootlets slag	8.1	50	60
322160	-	WS04b	ES D	-	Made Ground- orangish brown gravelly sand with rare slag	6.4	31	54

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L23/06378/GRM - 23-38533

Project Reference - P10418 Blockm C First Street Manchester

Sample Comments

NC Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Comments
322158	-	WS02	ES D	-	VPH/BTEX - Sample taken from container with headspace. VOC - Sample taken from container with headspace.
322160	-	WS04b	ES D	-	VPH/BTEX - Sample taken from container with headspace.

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Leicester
LE1 4DH

L23/06378/GRM - 23-38533

Project Reference - P10418 Blockm C First Street Manchester

Analysis Methodologies

Test Code	Test Name / Reference	Sample condition for analysis	Sample Preperation	Test Details
WPIPES	Water Pipe Suite Calculated Dets			
EPHS	MS - CL - EPH in Soil	As received	Passing 10mm test sieve	Determination of Extractable Petroleum Hydrocarbons in soils via GC-MS
CONDS	MS - CL - pH & Conductivity	As received	Passing 10mm test sieve	Determination of conductivity in soils by probe measurement
SAMPLEPREP	MS - CL - Sample Preparation	-	-	Preparation of samples (including determination of moisture content) to allow for subsequent analysis

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L23/06378/GRM - 23-38533

Project Reference - P10418 Blockm C First Street Manchester

Sample Deviations

Deviations are listed below against each sample and associated test method, where deviation(s) are noted it means data may not be representative of the sample at the time of sampling and it is possible that results provided may be compromised.

Observations on receipt

A - No date of sampling provided
C - Received in inappropriate container
H - Contains headspace
T - Temperature on receipt exceeds storage temperature
R - Date of sampling to receipt insufficient to allow analysis to be completed without deviation, Please note this is only a deviation if 'X' is also recorded against the sample

Observations whist in laboratory

X - Exceeds sampling to extraction or analysis timescales

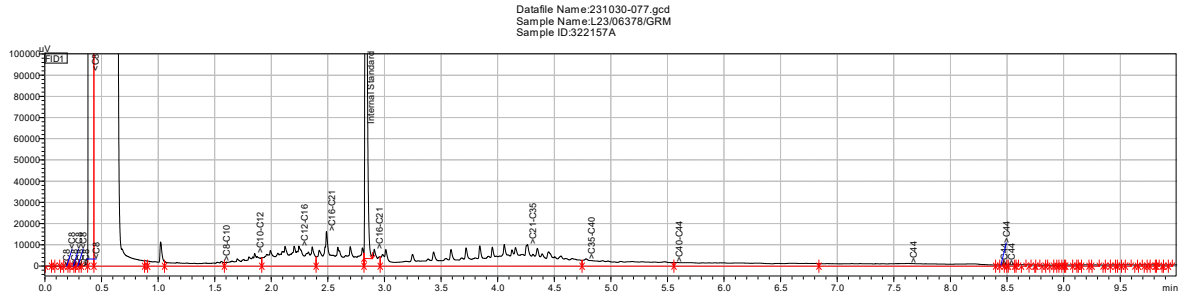
NC Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Test	Deviations
322158	-	WS02	ES D	-	MS - CL - VPH	X
322159	-	WS03	ES D	-	MS - CL - VPH	X
322160	-	WS04b	ES D	-	MS - CL - VPH	X

TPH Analysis - Chromatograms

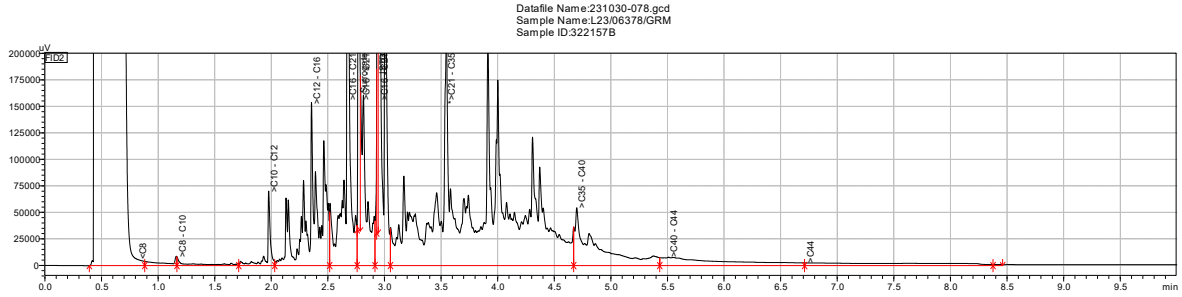
Job Number: L23/06378/GRM Project Reference: P10418 Blockm C First Street Manchester

Sample: 322157 Client Ref: WS02

Aliphatic



Aromatic



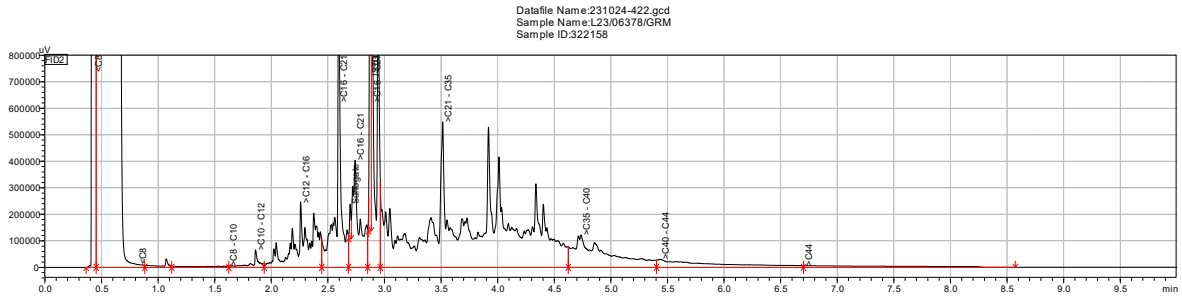
Contamination predominantly present in C_{10} – C_{38} with prominent PAH peaks, consistent with coal tar contamination.

TPH Analysis - Chromatograms

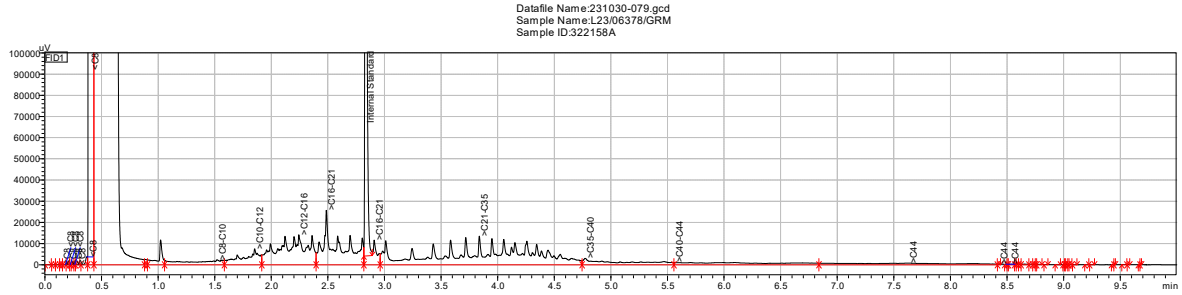
Job Number: L23/06378/GRM Project Reference: P10418 Blockm C First Street Manchester

Sample: 322158 Client Ref: WS02

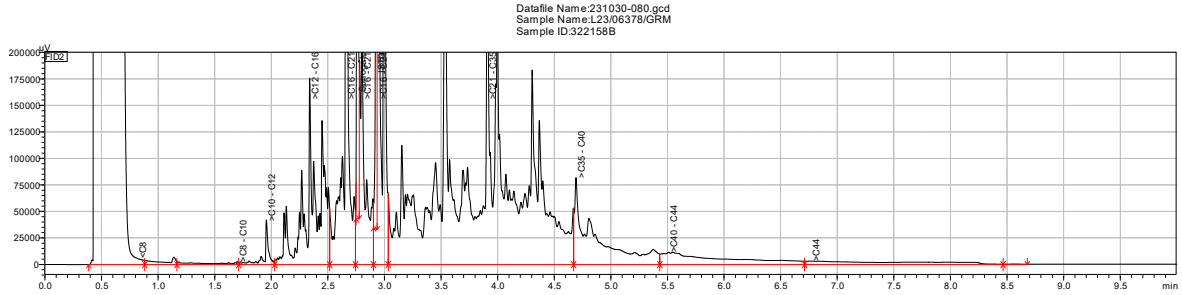
TPH



Aliphatic



Aromatic



Contamination present in C_{10} – C_{38} with prominent PAH peaks, consistent with coal tar contamination.

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Analytical Report Number : 16-16087

Replaces Analytical Report Number : 16-16087, issue no. 1

Project / Site name:	Plots 6,7 & 8, First Street, Manchester	**Samples received on:**	20/04/2016
Your job number:	31847	**Samples instructed on:**	22/04/2016
Your order number:		**Analysis completed by:**	03/06/2016
Report Issue Number:	2	**Report issued on:**	03/06/2016
Samples Analysed:	7 leachate samples - 9 soil samples		

Signed:

Rexona Rahman
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Signed:

Emma Winter
Assistant Reporting Manager
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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Analytical Report Number: 16-16087

Project / Site name: Plots 6,7 & 8, First Street, Manchester

Lab Sample Number				565061	565062	565063	565064	565065
Sample Reference				CP/RC102	CP/RC102A	CP/RC101B	CP/RC101B	CP/RC115
Sample Number				2	2	3	5	4
Depth (m)				0.30	0.60	0.60	1.50-1.60	1.00
Date Sampled				18/04/2016	19/04/2016	15/04/2016	15/04/2016	15/04/2016
Time Taken				1050	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	%	N/A	NONE	17	16	9.7	17	10
Total mass of sample received	kg	0.001	NONE	2.0	1.9	1.7	1.7	1.9
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	-	-	-	Not-detected	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-	-	-
General Inorganics								
pH	pH Units	N/A	MCERTS	7.4	8.1	8.6	8.3	11.0
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Total Sulphate as SO_4	mg/kg	50	MCERTS	320	340	940	460	5500
Water Soluble Sulphate (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.050	0.024	0.084	0.038	0.24
Sulphide	mg/kg	1	MCERTS	< 1.0	< 1.0	7.4	< 1.0	11
Organic Matter	%	0.1	MCERTS	0.6	1.0	1.5	1.5	0.6
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	0.19	< 0.10	< 0.10
Fluorene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	0.13	< 0.10	< 0.10
Phenanthrene	mg/kg	0.1	MCERTS	< 0.10	0.27	1.6	< 0.10	0.39
Anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	0.38	< 0.10	< 0.10
Fluoranthene	mg/kg	0.1	MCERTS	< 0.10	0.42	2.9	< 0.10	0.74
Pyrene	mg/kg	0.1	MCERTS	< 0.10	0.46	2.7	< 0.10	0.84
Benzo(a)anthracene	mg/kg	0.1	MCERTS	< 0.10	0.23	1.5	< 0.10	0.43
Chrysene	mg/kg	0.05	MCERTS	< 0.05	0.19	1.3	< 0.05	0.45
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	0.22	1.7	< 0.10	0.58
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	0.14	0.76	< 0.10	0.24
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	0.23	1.4	< 0.10	0.55
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	0.70	< 0.10	0.24
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.95	< 0.05	0.32
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.60	2.16	16.1	< 1.60	4.78
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	8.1	7.0	18	19	7.2
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	0.3
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (III)	mg/kg	1	NONE	27	19	29	22	28
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	27	19	29	22	28
Copper (aqua regia extractable)	mg/kg	1	MCERTS	25	21	160	48	47
Lead (aqua regia extractable)	mg/kg	1	MCERTS	16	32	530	120	160
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	0.4	0.7	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	27	15	24	23	17
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	75	60	230	69	250

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Analytical Report Number: 16-16087

Project / Site name: Plots 6,7 & 8, First Street, Manchester

Lab Sample Number				565070	565071	565072	565073	565074
Sample Reference				CP/RC102	CP/RC102A	CP/RC101B	CP/RC115	CP/RC115
Sample Number				2	2	3	4	7
Depth (m)				0.30	0.60	0.60	1.00	2.70
Date Sampled				18/04/2016	19/04/2016	15/04/2016	15/04/2016	18/04/2016
Time Taken				1050	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
General Inorganics								
pH	pH Units	N/A	ISO 17025	7.6	6.8	9.1	8.9	8.6
Total Cyanide	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10	< 10
Sulphate as SO_4	µg/l	100	ISO 17025	2700	8300	13300	42300	8650
Sulphide	µg/l	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Phenols								
Total Phenols (monohydric)	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10	< 10
Speciated PAHs								
Naphthalene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthylene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluorene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Phenanthrene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Anthracene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluoranthene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Pyrene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)anthracene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Total PAH								
Total EPA-16 PAHs	µg/l	0.2	NONE	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Heavy Metals / Metalloids								
Arsenic (dissolved)	µg/l	1.1	ISO 17025	< 1.1	7.5	< 1.1	1.3	9.6
Cadmium (dissolved)	µg/l	0.08	ISO 17025	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Chromium (dissolved)	µg/l	0.4	ISO 17025	< 0.4	3.5	< 0.4	15	2.2
Copper (dissolved)	µg/l	0.7	ISO 17025	2.0	6.6	1.0	6.2	2.0
Lead (dissolved)	µg/l	1	ISO 17025	< 1.0	12	< 1.0	7.8	2.1
Mercury (dissolved)	µg/l	0.5	ISO 17025	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Nickel (dissolved)	µg/l	0.3	ISO 17025	< 0.3	< 0.3	< 0.3	0.3	< 0.3
Selenium (dissolved)	µg/l	4	ISO 17025	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Zinc (dissolved)	µg/l	0.4	ISO 17025	2.2	5.0	7.5	29	4.4
Petroleum Hydrocarbons								
Petroleum Range Organics (C6 - C10)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
Diesel Range Organics (C10 - C25)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
Oil Range Organics (C25 - C40)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10

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Analytical Report Number : 16-16775

Project / Site name:	Plots 6,7,8, First Street, Manchester	**Samples received on:**	25/04/2016
Your job number:	31847	**Samples instructed on:**	03/05/2016
Your order number:		**Analysis completed by:**	10/05/2016
Report Issue Number:	1	**Report issued on:**	10/05/2016
Samples Analysed:	3 leachate samples - 7 soil samples		

Signed:

Rexona Rahman
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Signed:

Emma Winter
Assistant Reporting Manager
For & on behalf of i2 Analytical Ltd.

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

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

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Analytical Report Number: 16-16775

Project / Site name: Plots 6,7,8, First Street, Manchester

Lab Sample Number				568716	568717	568718	568719	568720
Sample Reference				TP103	TP109	TP111	TP114	CP/RC116
Sample Number				3	1	1	1	None Supplied
Depth (m)				3.10-3.30	0.10-0.30	0.30-0.50	0.50-0.70	0.00
Date Sampled				19/04/2016	20/04/2016	19/04/2016	20/04/2016	19/04/2016
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	-	-
Moisture Content	%	N/A	NONE	13	15	16	-	-
Total mass of sample received	kg	0.001	NONE	0.82	1.2	1.3	-	-
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	Chrysotile	-	Chrysotile & Amosite
Asbestos in Soil	Type	N/A	ISO 17025	-	-	Detected	Not-detected	Detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	< 0.001	-	< 0.001
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	< 0.001	-	< 0.001
General Inorganics								
pH	pH Units	N/A	MCERTS	-	6.5	8.2	-	-
Free Cyanide	mg/kg	1	MCERTS	-	< 1	< 1	-	-
Total Sulphate as SO_4	mg/kg	50	MCERTS	-	460	2200	-	-
Water Soluble Sulphate (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	-	0.023	0.57	-	-
Sulphide	mg/kg	1	MCERTS	-	< 1.0	1.4	-	-
Organic Matter	%	0.1	MCERTS	-	3.5	1.9	-	-
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	-	0.17	0.36	-	-
Acenaphthylene	mg/kg	0.1	MCERTS	-	< 0.10	0.19	-	-
Acenaphthene	mg/kg	0.1	MCERTS	-	< 0.10	0.27	-	-
Fluorene	mg/kg	0.1	MCERTS	-	< 0.10	0.20	-	-
Phenanthrene	mg/kg	0.1	MCERTS	-	1.1	2.2	-	-
Anthracene	mg/kg	0.1	MCERTS	-	0.17	0.38	-	-
Fluoranthene	mg/kg	0.1	MCERTS	-	2.2	4.4	-	-
Pyrene	mg/kg	0.1	MCERTS	-	2.1	5.1	-	-
Benzo(a)anthracene	mg/kg	0.1	MCERTS	-	1.1	3.6	-	-
Chrysene	mg/kg	0.05	MCERTS	-	1.1	2.6	-	-
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	-	0.91	2.7	-	-
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	-	0.50	1.1	-	-
Benzo(a)pyrene	mg/kg	0.1	MCERTS	-	0.68	2.0	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	-	0.33	0.85	-	-
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	-	< 0.10	0.20	-	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	0.52	1.2	-	-
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	-	10.8	27.2	-	-

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

Analytical Report Number: 16-16775

Project / Site name: Plots 6,7,8, First Street, Manchester

Lab Sample Number				568716	568717	568718	568719	568720
Sample Reference				TP103	TP109	TP111	TP114	CP/RC116
Sample Number				3	1	1	1	None Supplied
Depth (m)				3.10-3.30	0.10-0.30	0.30-0.50	0.50-0.70	0.00
Date Sampled				19/04/2016	20/04/2016	19/04/2016	20/04/2016	19/04/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	-	25	37	-	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	-	-
Chromium (hexavalent)	mg/kg	4	MCERTS	-	< 4.0	< 4.0	-	-
Chromium (III)	mg/kg	1	NONE	-	19	29	-	-
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	-	19	29	-	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	-	71	140	-	-
Lead (aqua regia extractable)	mg/kg	1	MCERTS	-	150	540	-	-
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	-	0.8	3.6	-	-
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	-	21	35	-	-
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	-	< 1.0	< 1.0	-	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	-	99	390	-	-
Monoaromatics								
Benzene	ug/kg	1	MCERTS	< 1.0	-	-	-	-
Toluene	µg/kg	1	MCERTS	< 1.0	-	-	-	-
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	-	-	-	-
p & m-xylene	µg/kg	1	MCERTS	< 1.0	-	-	-	-
o-xylene	µg/kg	1	MCERTS	< 1.0	-	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	-	-	-	-
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	< 0.1	-	-	-	-
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	-	-	-	-
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	-	-	-	-
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	-	-	-	-
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	-	-	-	-
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	-	-	-	-
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	-	-	-	-
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	-	-	-	-
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1	-	-	-	-
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	-	-	-	-
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	-	-	-	-
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	-	-	-	-
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	3.3	-	-	-	-
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	14	-	-	-	-
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	17	-	-	-	-
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	35	-	-	-	-

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

APPENDIX H

1011906 | A3

DO NOT SCALE FROM THIS DRAWING

Notes

Legend

- Not Detected
- Detected but < 0.001% Mass by Volume
- > 0.001% Mass by Volume

1. CP/RC101A Chrysotile at 0.6m 0.002%
2. AOP8BE5 Chrysotile at 0.5m 0.002%
3. AOP8BE5 Crocidolite at 0.5m 0.001%
4. AOP8AF7 Crocidolite at 1.0m 1.48%
5. AOP8BB5 Chrysotile at 0.7m 0.002%
6. AOP8BE5 Chrysotile at 0.5m 0.015%

Issue	Date	Description	By	Chkd	Verfd

Project
First Street: Plot 8

Client
Ask Property Developments Ltd

Architect
RTKL

Title
Asbestos Concentrations Recorded in Laboratory Testing of Samples

Drawing No.	Drawing Status
1011906.DWG.GL.015	Final
Job No. 1011906	Scale 1:1,500 (in A3)

Originator	Checked	Verified	Issue.
SD	DM	KDM	-

CUNDALL
4th Floor Partnership House
Regent Farm Road , Gosforth
Newcastle-upon-Tyne
NE3 3AF
Telephone +44 (0)191 213 1515
Website: www.cundall.com

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Jun 29, 2016 - 7:19pm plotted by c.dyason

APPENDIX I

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 31847/C - Plots 6,7, & 8 First Street, Manchester

Client: Geotechnical Engineering Ltd			**Chemtest Job No.:**		16-10830	16-10830	16-10830	16-10830
Quotation No.:			**Chemtest Sample ID.:**		291913	291914	291915	291916
Order No.: 31847/C			Client Sample Ref.:		CP/RC101B	CP/RC101B	CP/RC102	CP/RC102
			Client Sample ID.:		2D	21D	7D	10D
			Sample Type:		SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		1.00	10.2	2.20	4.20
			Date Sampled:		09-May-2016	09-May-2016	09-May-2016	09-May-2016
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
Moisture	N	2030	%	0.020	7.0	9.0	11	7.7
pH (2.5:1)	N	2010		N/A	8.5	8.9	8.3	8.5
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	< 0.010	0.021	< 0.010	< 0.010

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 31847/F - Plots 6,7, & 8 First Street, Manchester

Client: Geotechnical Engineering Ltd			**Chemtest Job No.:**		16-10828	16-10828
Quotation No.:			**Chemtest Sample ID.:**		291911	291912
Order No.: 31847/F			Client Sample Ref.:		CP/RC102A	CP/RC102A
			Client Sample ID.:		11D	27C
			Sample Type:		SOIL	SOIL
			Top Depth (m):		4.20	12.7
			Date Sampled:		09-May-2016	09-May-2016
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Moisture	N	2030	%	0.020	5.1	6.3
pH (2.5:1)	N	2010		N/A	8.2	8.7
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	0.017	< 0.010

Geotechnical Engineering Limited

DRY DENSITY/MOISTURE CONTENT RELATIONSHIP

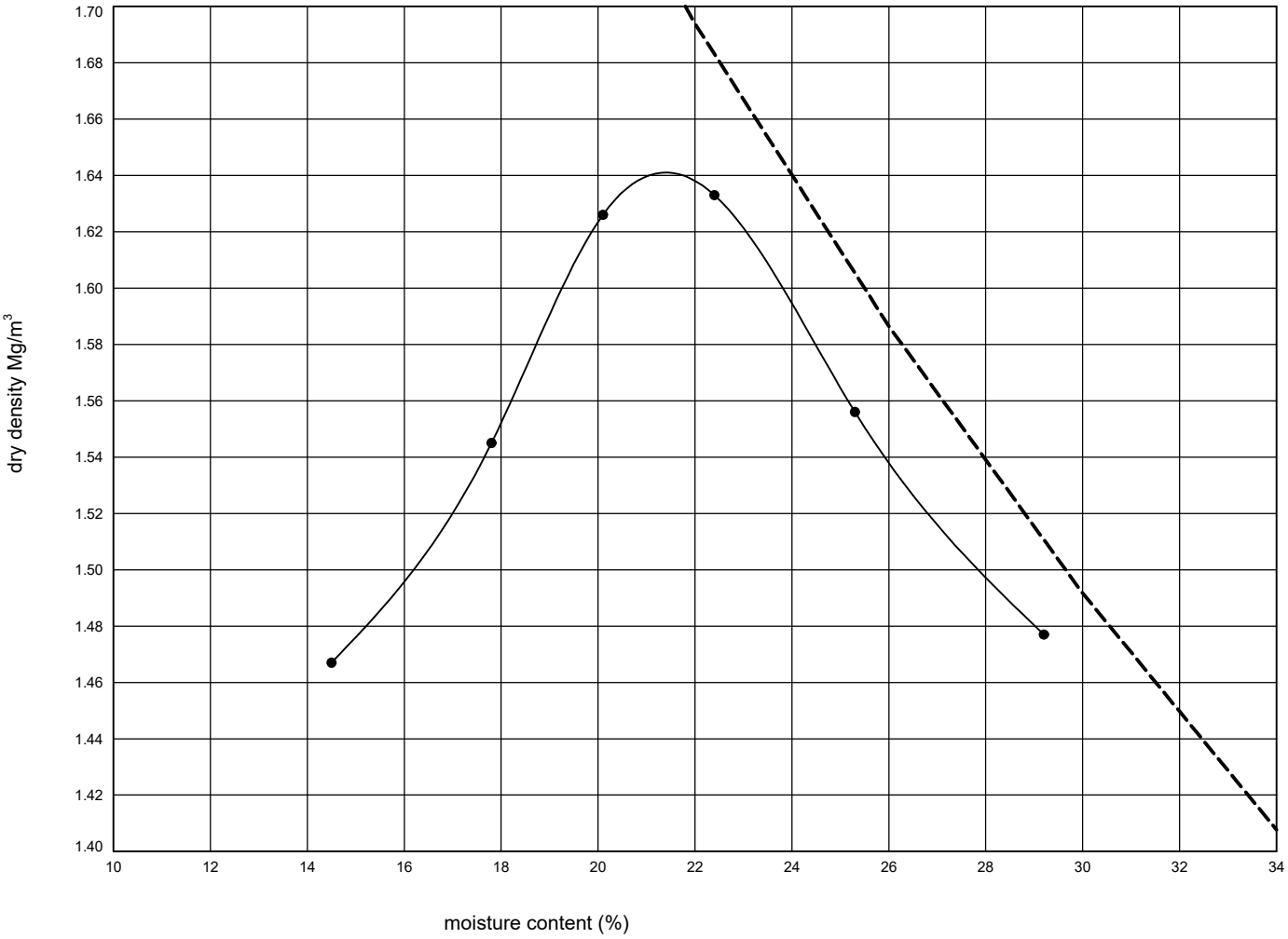
BS.1377 : Part 4 : 1990 : 3

CLIENT ASK PROPERTY DEVELOPMENTS LTD

SITE PLOTS 6, 7 & 8 FIRST STREET, MANCHESTER

DESCRIPTION Brown slightly gravelly slightly sandy silty CLAY

BH/TP No.	CP/RC102
SAMPLE No./TYPE	2B
SAMPLE DEPTH (m)	0.30
SPECIMEN DEPTH (m)	0.30



test method		3.3.4.1 2.5kg dynamic compaction - 1L mould			
preparation procedure		3.2.4.1 (grading zone 1)			
sample preparation		C,R			
proportion retained on 37.5mm sieve	(%)	0	initial moisture content	(%)	22
proportion retained on 20mm sieve	(%)	0	maximum dry density	(Mg/m^3)	1.64
particle density	(Mg/m^3)	#2.70	optimum moisture content	(%)	21

remarks:

– – – – – represents 0% air voids curve

# denotes particle density has been assigned
an assumed value
C denotes sample has been chopped to pass 20mm sieve
S denotes sample has been shredded to pass 20mm sieve
R denotes sample material has been recycled between/for points

CONTRACT	CHECKED
31847	**JC**

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Geotechnical Engineering Limited

DRY DENSITY/MOISTURE CONTENT RELATIONSHIP

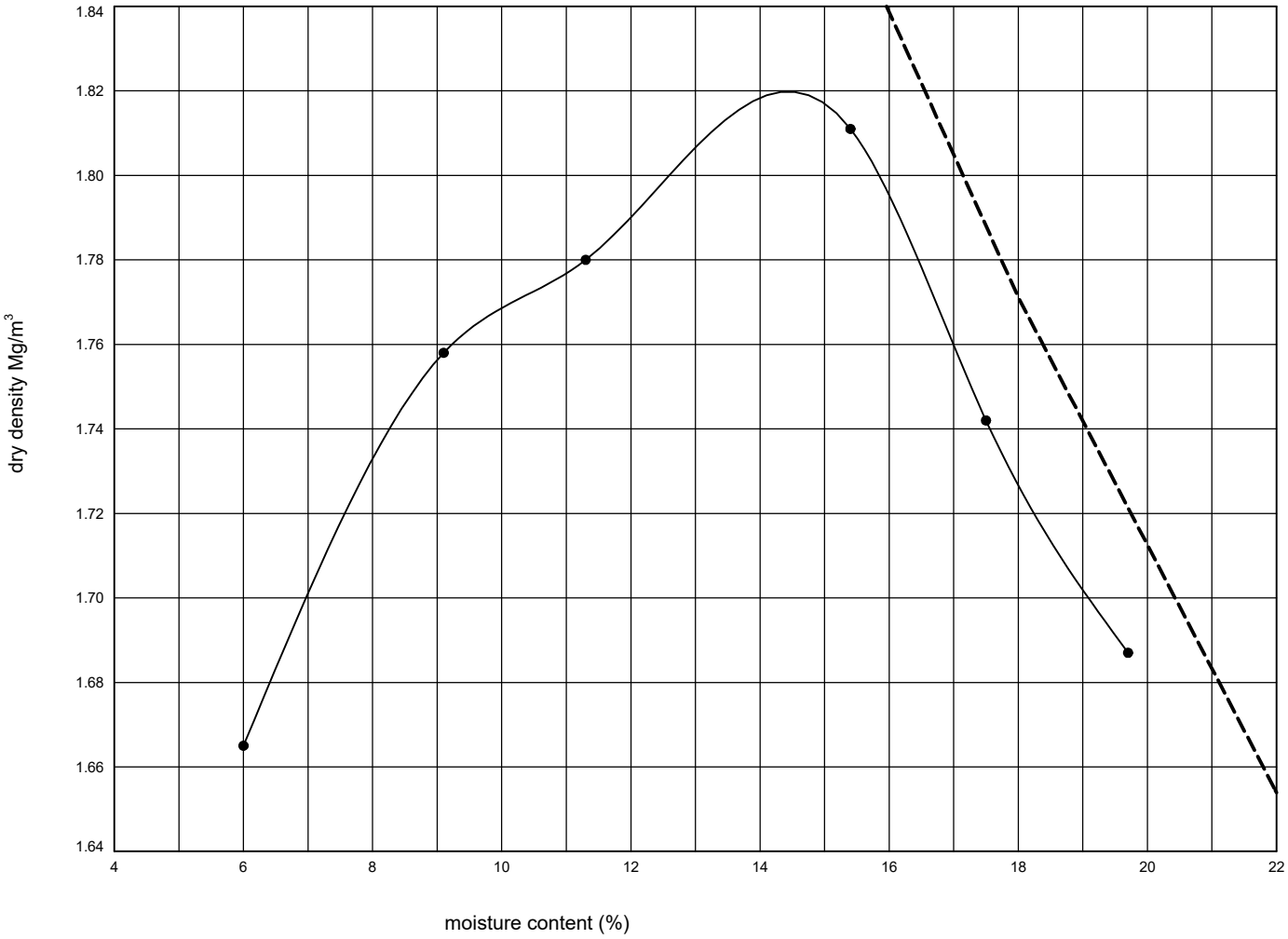
BS.1377 : Part 4 : 1990 : 3

CLIENT ASK PROPERTY DEVELOPMENTS LTD

SITE PLOTS 6, 7 & 8 FIRST STREET, MANCHESTER

DESCRIPTION Brown clayey gravelly SAND

BH/TP No.	CP/RC102A
SAMPLE No./TYPE	4B
SAMPLE DEPTH (m)	1.00
SPECIMEN DEPTH (m)	1.00



test method		3.3.4.1 2.5kg dynamic compaction - 1L mould			
preparation procedure		3.2.4.2 (grading zone 2)			
sample preparation		C,R			
proportion retained on 37.5mm sieve	(%)	0	initial moisture content	(%)	12
proportion retained on 20mm sieve	(%)	3.1	maximum dry density	(Mg/m^3)	1.82
particle density	(Mg/m^3)	#2.60	optimum moisture content	(%)	14

remarks:

– – – – – represents 0% air voids curve

# denotes particle density has been assigned an assumed value
C denotes sample has been chopped to pass 20mm sieve
S denotes sample has been shredded to pass 20mm sieve
R denotes sample material has been recycled between/for points

CONTRACT	CHECKED
31847	**JC**

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DRY DENSITY/MOISTURE CONTENT RELATIONSHIP

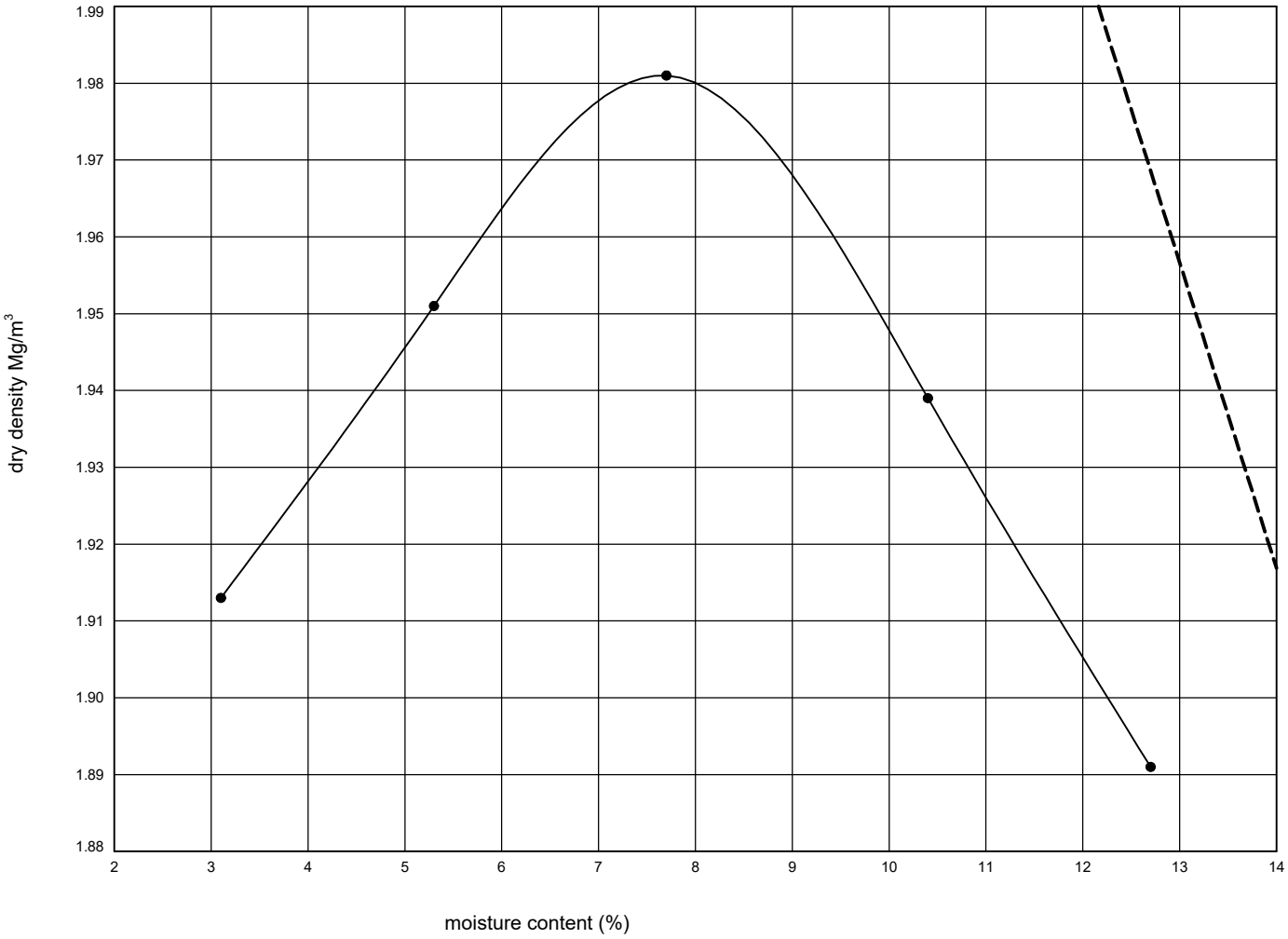
BS.1377 : Part 4 : 1990 : 3

CLIENT ASK PROPERTY DEVELOPMENTS LTD

SITE PLOTS 6, 7 & 8 FIRST STREET, MANCHESTER

DESCRIPTION Brown clayey very sandy GRAVEL

BH/TP No.	CP/RC102A
SAMPLE No./TYPE	10L
SAMPLE DEPTH (m)	3.20
SPECIMEN DEPTH (m)	3.20



test method		3.4.4.1 2.5kg dynamic compaction - CBR mould			
preparation procedure		3.2.5.1 (grading zone 3)			
sample preparation		C,R			
proportion retained on 37.5mm sieve	(%)	0	initial moisture content	(%)	3.1
proportion retained on 20mm sieve	(%)	12.1	maximum dry density	(Mg/m^3)	1.98
particle density	(Mg/m^3)	#2.62	optimum moisture content	(%)	7.7

remarks:

– – – – – represents 0% air voids curve

# denotes particle density has been assigned
an assumed value
C denotes sample has been chopped to pass 20mm sieve
S denotes sample has been shredded to pass 20mm sieve
R denotes sample material has been recycled between/for points

CONTRACT	CHECKED
31847	**JC**

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Geotechnical Engineering Limited

LIQUID AND PLASTIC LIMITS

BS.1377 : Part 2 : 1990 : 4 and 5

CLIENT ASK PROPERTY DEVELOPMENTS LTD

SITE PLOTS 6, 7 & 8 FIRST STREET, MANCHESTER

borehole /trial pit no.	sample		specimen depth (m)	natural water content (%)	specimen preparation and test method	fraction >0.425 mm (%)	liquid limit (%)	plastic limit (%)	plasticity index (%)	description and remarks
	no./type	depth (m)								
CP/RC101B	8D	4.20	4.20	15.3	BXE	11	31	15	16	Brown slightly gravelly slightly sandy CLAY
CP/RC101B	12D	6.20	6.20	15.5	BXE	16	31	15	16	Brown slightly sandy slightly gravelly CLAY
CP/RC101B	14D	7.20	7.20	17.2	BXE	11	33	15	18	Brown slightly gravelly slightly sandy CLAY
CP/RC102A	16D	7.20	7.20	11.9	BXE	17	29	14	15	Brown slightly sandy slightly gravelly CLAY
CP/RC102A	20D	9.20	9.20	17.0	BXE	7	36	17	19	Brown slightly gravelly slightly sandy CLAY
CP/RC102A	23D	10.20	10.20	11.4	BXE	8	32	15	17	Brown slightly gravelly slightly sandy CLAY
CP/RC102A	25D	11.15	11.20	14.8	BXE	10	29	13	16	Brown slightly gravelly slightly sandy CLAY
CP/RC103	11D	4.20	4.20	12.5	BXE#	27	29	14	15	Brown slightly sandy slightly gravelly CLAY
CP/RC103	14D	5.20	5.20	13.3	BXE	27	30	15	15	Brown slightly sandy slightly gravelly CLAY
CP/RC103	16D	6.20	6.20	17.2	BXE	10	37	17	20	Brown slightly sandy slightly gravelly CLAY
CP/RC103	19D	7.20	7.20	11.2	BXE	7	35	16	19	Brown slightly sandy slightly gravelly CLAY
CP/RC104A	14D	6.20	6.20	12.9	BXE	15	32	15	17	Brown slightly sandy slightly gravelly CLAY
CP/RC104A	16D	7.20	7.20	14.7	BXE	24	35	16	19	Brown slightly sandy slightly gravelly CLAY
CP/RC105	22D	9.20	9.20	19.0	BXE	8	35	17	18	Brown slightly sandy silty CLAY
CP/RC105	26D	11.20	11.20	11.9	BXE	15	23	14	9	Brown slightly gravelly sandy silty CLAY
CP/RC108	7D	2.00	2.00	25.6	BXE	4	32	18	14	Brown slightly sandy slightly gravelly CLAY
CP/RC108	11D	5.00	5.00	12.5	BXE	21	30	14	16	Dark grey slightly sandy slightly gravelly CLAY
CP/RC108	17D	7.00	7.00	15.6	BXE	7	37	17	20	Brown slightly gravelly slightly sandy CLAY

general remarks:
natural water content determined in accordance with BS EN ISO 17892 - 1 : 2014
NP denotes non-plastic
# denotes sample tested is smaller than that which is recommended in accordance with BS1377 or BS EN ISO 17892

specimen preparation:
A - as received
B - washed on 0.425mm sieve
C - air dried
D - oven dried (60°C)
E - oven dried (105°C)
F - not known

test method:
X - cone penetrometer (test 4.3)
Y - one point cone penetrometer (test 4.4)
Z - Casagrande apparatus (test 4.5)

CONTRACT **31847**

CHECKED **JC**

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PARTICLE SIZE DISTRIBUTION

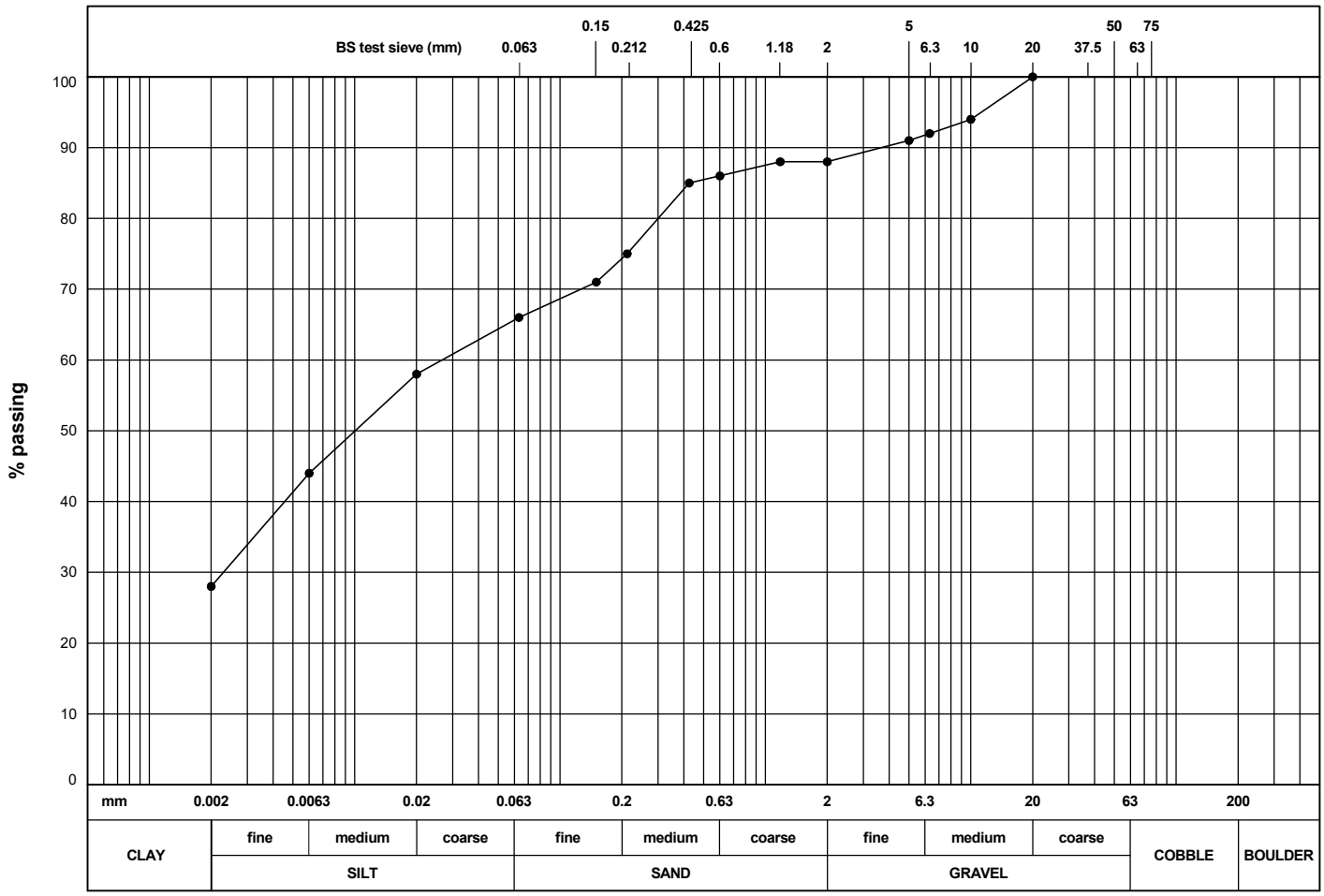
BS.1377 : Part 2 : 1990 : 9

CLIENT ASK PROPERTY DEVELOPMENTS LTD

SITE PLOTS 6, 7 & 8 FIRST STREET, MANCHESTER

DESCRIPTION Brown slightly gravelly slightly sandy silty CLAY

BH/TP No.	CP/RC102
SAMPLE No./TYPE	2B
SAMPLE DEPTH (m)	0.30
SPECIMEN DEPTH (m)	0.30



soil type	% fraction
CLAY	28
SILT	38
SILT & CLAY	66
SAND	22
GRAVEL	12
COBBLE & BOULDER	0
test method(s)	9.2# & 9.4

test method:
9.2 - wet sieving
9.3 - dry sieving
9.4 - sedimentation by pipette
9.5 - sedimentation by hydrometer

BS test sieve (mm)	% passing	BS test sieve (mm)	% passing	particle size (μm)	% finer
150		5	91	20	58
75		2	88	6	44
63		1.18	88	2	28
50		0.6	86		
37.5		0.425	85		
20	100	0.212	75		
10	94	0.15	71		
6.3	92	0.063	66		

remarks:
# denotes sample tested is smaller than that which is recommended in accordance with BS1377

CONTRACT	CHECKED
31847	**JC**

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PARTICLE SIZE DISTRIBUTION

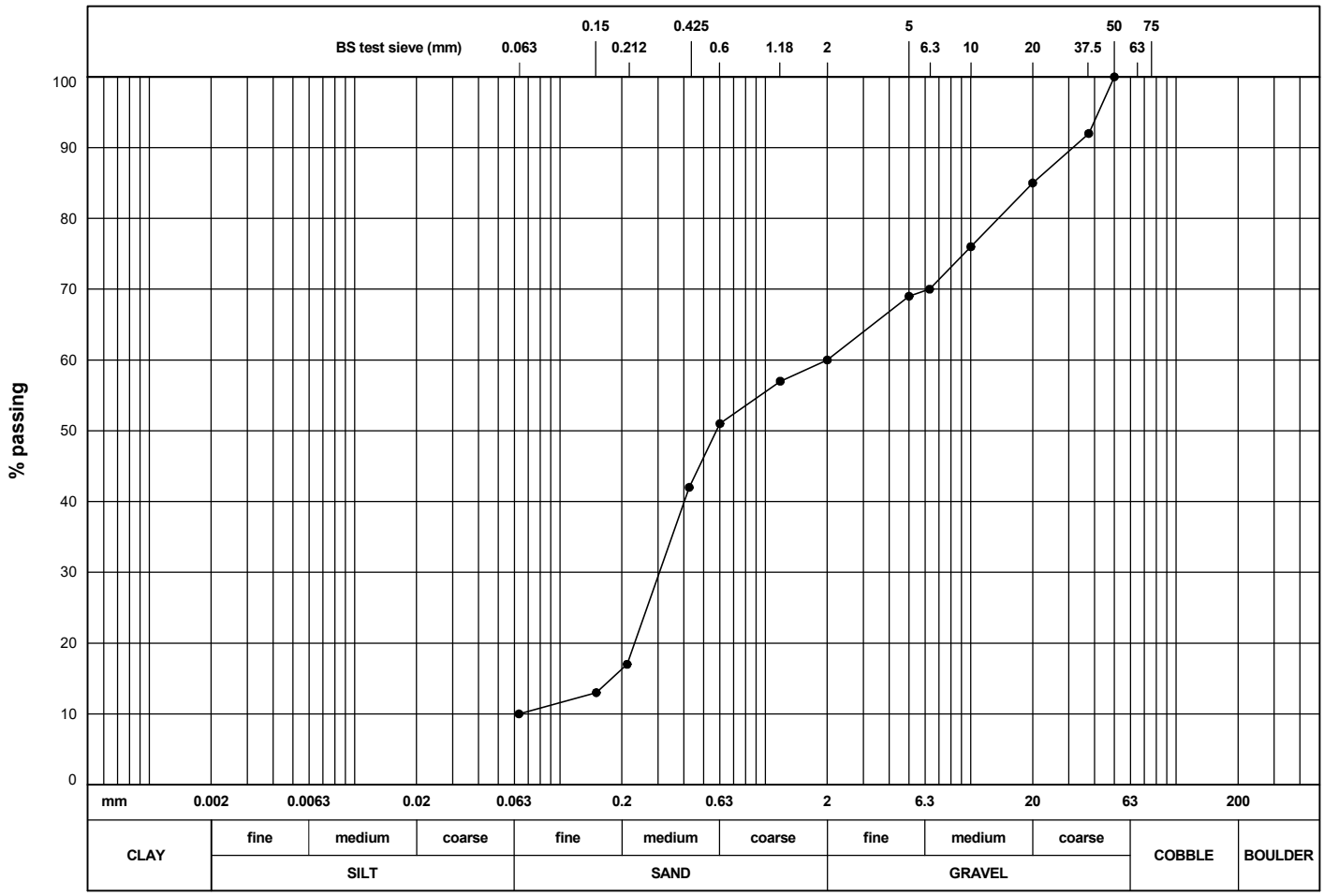
BS.1377 : Part 2 : 1990 : 9

CLIENT ASK PROPERTY DEVELOPMENTS LTD

SITE PLOTS 6, 7 & 8 FIRST STREET, MANCHESTER

DESCRIPTION Brown clayey very gravelly SAND

BH/TP No.	CP/RC102
SAMPLE No./TYPE	3B
SAMPLE DEPTH (m)	0.60
SPECIMEN DEPTH (m)	0.60



soil type	% fraction
CLAY	
SILT	
SILT & CLAY	10
SAND	50
GRAVEL	40
COBBLE & BOULDER	0
test method(s)	9.2#

test method:
9.2 - wet sieving
9.3 - dry sieving
9.4 - sedimentation by pipette
9.5 - sedimentation by hydrometer

BS test sieve (mm)	% passing	BS test sieve (mm)	% passing	particle size (μm)	% finer
150		5	69	20	
75		2	60	6	
63		1.18	57	2	
50	100	0.6	51		
37.5	92	0.425	42		
20	85	0.212	17		
10	76	0.15	13		
6.3	70	0.063	10		

remarks:
# denotes sample tested is smaller than that which is recommended in accordance with BS1377

CONTRACT	CHECKED
31847	**JC**

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PARTICLE SIZE DISTRIBUTION

BS.1377 : Part 2 : 1990 : 9

CLIENT ASK PROPERTY DEVELOPMENTS LTD

SITE PLOTS 6, 7 & 8 FIRST STREET, MANCHESTER

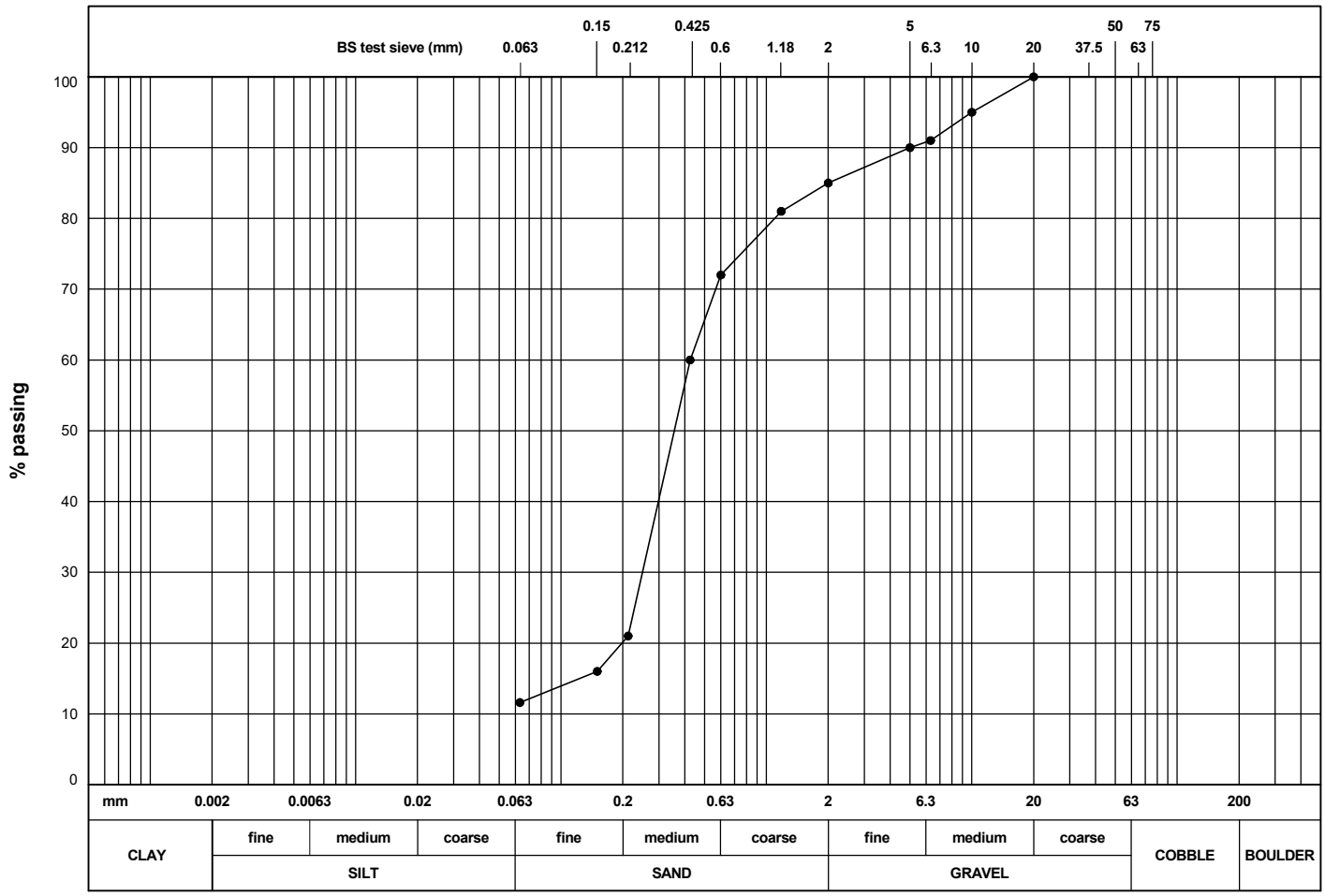
DESCRIPTION Brown clayey gravelly SAND

BH/TP No. CP/RC102A

SAMPLE No./TYPE 4B

SAMPLE DEPTH (m) 1.00

SPECIMEN DEPTH (m) 1.00



soil type	% fraction
CLAY	
SILT	
SILT & CLAY	12
SAND	73
GRAVEL	15
COBBLE & BOULDER	0
test method(s)	9.2

BS test sieve (mm)	% passing	BS test sieve (mm)	% passing	particle size (μm)	% finer
150		5	90	20	
75		2	85	6	
63		1.18	81	2	
50		0.6	72		
37.5		0.425	60		
20	100	0.212	21		
10	95	0.15	16		
6.3	91	0.063	12		

test method:
9.2 - wet sieving
9.3 - dry sieving
9.4 - sedimentation by pipette
9.5 - sedimentation by hydrometer

remarks:
# denotes sample tested is smaller than that which is recommended in accordance with BS1377

CONTRACT **31847**

CHECKED **JC**

Geotechnical Engineering Ltd, Centurion House, Olympus Park, Quedgeley, Gloucester, GL2 4NF. Tel. 01452 527743 31847.GPJ 14/06/2016 13:46:12

Geotechnical Engineering Limited

PARTICLE SIZE DISTRIBUTION

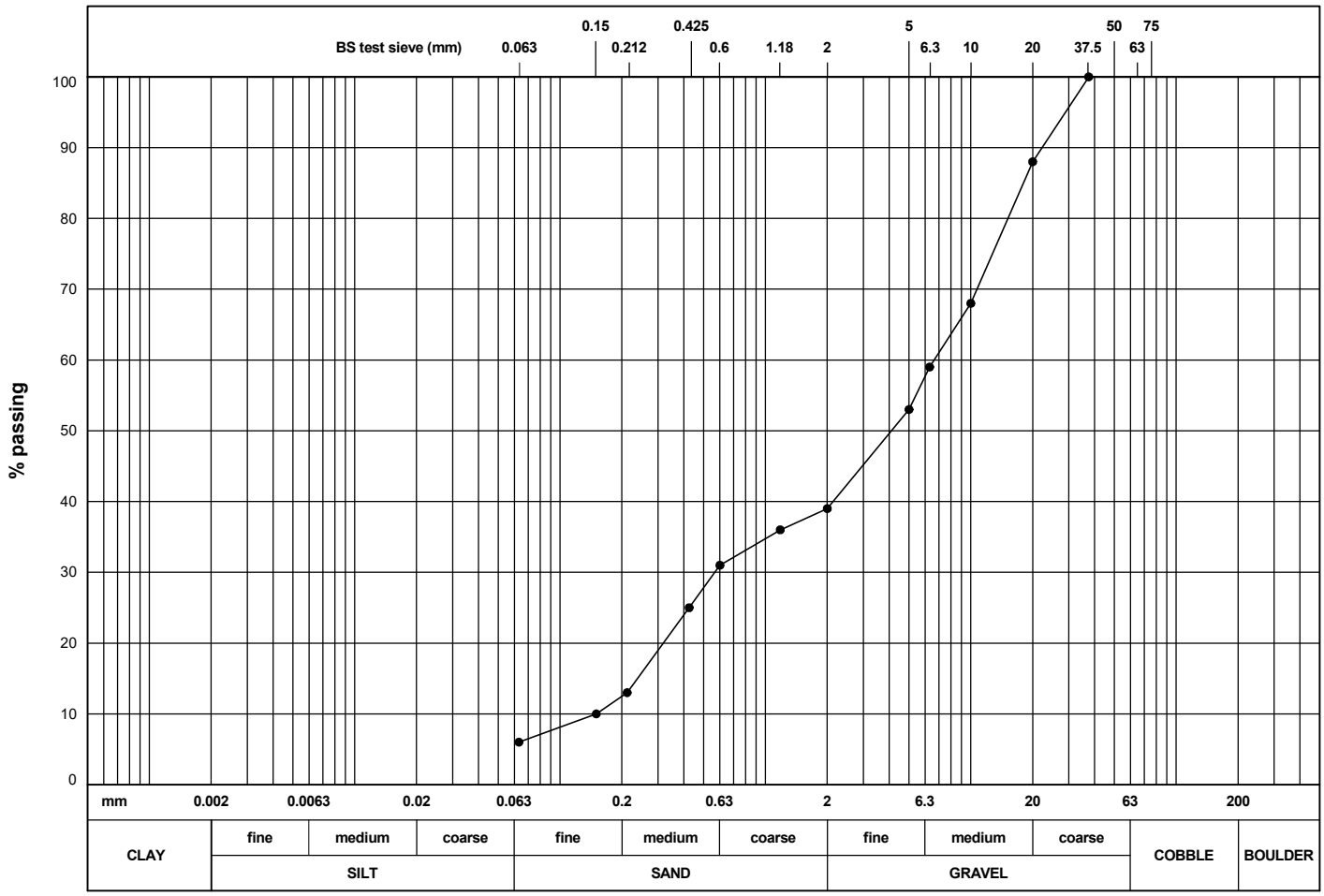
BS.1377 : Part 2 : 1990 : 9

CLIENT ASK PROPERTY DEVELOPMENTS LTD

SITE PLOTS 6, 7 & 8 FIRST STREET, MANCHESTER

DESCRIPTION Brown clayey very sandy GRAVEL

BH/TP No.	CP/RC102A
SAMPLE No./TYPE	10L
SAMPLE DEPTH (m)	3.20
SPECIMEN DEPTH (m)	3.20



soil type	% fraction
CLAY	
SILT	
SILT & CLAY	6
SAND	33
GRAVEL	61
COBBLE & BOULDER	0
test method(s)	9.2#

BS test sieve (mm)	% passing	BS test sieve (mm)	% passing	particle size (μm)	% finer
150		5	53	20	
75		2	39	6	
63		1.18	36	2	
50		0.6	31		
37.5	100	0.425	25		
20	88	0.212	13		
10	68	0.15	10		
6.3	59	0.063	6		

test method:
9.2 - wet sieving
9.3 - dry sieving
9.4 - sedimentation by pipette
9.5 - sedimentation by hydrometer

remarks:
# denotes sample tested is smaller than that which is recommended in accordance with BS1377

CONTRACT	CHECKED
31847	**JC**

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POINT LOAD STRENGTH TEST RESULTS

I.S.R.M. Suggested Methods 2007 Edition

CLIENT ASK PROPERTY DEVELOPMENTS LTD

SITE PLOTS 6, 7 & 8 FIRST STREET, MANCHESTER

borehole /trial pit no.	sample depth (m)	test type	test orientation	moisture condition	width W (mm)	length L (mm)	platen sep. D (mm)	failure load P (kN)	equiv. dia. De (mm)	Is (MPa)	size factor F	Is(50) (MPa)	rock type
CP/RC101B	26.30	D	Y	P		50	90	0.85	90.00	0.10	1.30	0.14	Reddish brown SANDSTONE
CP/RC101B	26.30	A	X	P	90		50	1.26	75.69	0.22	1.21	0.27	Reddish brown SANDSTONE
CP/RC101B	26.60	D	Y	P		50	90	0.97	90.00	0.12	1.30	0.16	Reddish brown SANDSTONE
CP/RC101B	26.60	A	X	P	90		50	1.26	75.69	0.22	1.21	0.26	Reddish brown SANDSTONE
CP/RC101B	27.00	D	Y	P		80	90	0.95	90.00	0.12	1.30	0.15	Reddish brown SANDSTONE
CP/RC101B	27.00	A	X	P	90		75	1.82	92.71	0.21	1.32	0.28	Reddish brown SANDSTONE
CP/RC102A	23.50	D	Y	P		50	90	0.74	90.00	0.09	1.30	0.12	Reddish brown SANDSTONE
CP/RC102A	23.50	A	X	P	90		45	1.85	71.81	0.36	1.18	0.42	Reddish brown SANDSTONE
CP/RC102A	23.60	D	Y	P		70	90	1.47	90.00	0.18	1.30	0.24	Reddish brown SANDSTONE
CP/RC102A	23.60	A	X	P	90		70	2.38	89.56	0.30	1.30	0.38	Reddish brown SANDSTONE
CP/RC102A	24.50	D	Y	P		50	90	1.18	90.00	0.15	1.30	0.19	Reddish brown SANDSTONE
CP/RC102A	24.50	A	X	P	90		45	1.58	71.81	0.31	1.18	0.36	Reddish brown SANDSTONE
CP/RC102A	25.15	D	Y	P		80	90	0.66	90.00	0.08	1.30	0.11	Reddish brown SANDSTONE
CP/RC102A	25.15	A	X	P	90		55	0.94	79.39	0.15	1.23	0.18	Reddish brown SANDSTONE
CP/RC102A	25.40	D	Y	P		55	90	0.48	90.00	0.06	1.30	0.08	Reddish brown SANDSTONE
CP/RC102A	25.40	A	X	P	90		65	1.08	86.30	0.14	1.28	0.18	Reddish brown SANDSTONE
CP/RC102A	25.65	D	Y	P		75	90	0.48	90.00	0.06	1.30	0.08	Reddish brown SANDSTONE
CP/RC102A	25.65	A	X	P	90		75	1.08	92.71	0.13	1.32	0.17	Reddish brown SANDSTONE

remarks: Tests carried out in accordance with I.S.R.M.(2007): Suggested Methods for Determining Point Load Strength. Int. J. Rock Mech. Min. Sci. and Geotech. Abstr. Vol.22 No. 2.

test type:
D - diametral
A - axial
I - Irregular lump

test orientation relative to discontinuities:
X - perpendicular
Y - parallel
Z - oblique
U - unknown

moisture condition:
N - natural moisture content
P - partially air dried
S - soaked

CONTRACT **31847**

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POINT LOAD STRENGTH TEST RESULTS

I.S.R.M. Suggested Methods 2007 Edition

CLIENT ASK PROPERTY DEVELOPMENTS LTD

SITE PLOTS 6, 7 & 8 FIRST STREET, MANCHESTER

borehole /trial pit no.	sample depth (m)	test type	test orientation	moisture condition	width W (mm)	length L (mm)	platen sep. D (mm)	failure load P (kN)	equiv. dia. De (mm)	Is (MPa)	size factor F	Is(50) (MPa)	rock type
CP/RC102A	26.60	D	Y	P		50	90	0.94	90.00	0.12	1.30	0.15	Reddish brown SANDSTONE
CP/RC102A	26.60	A	X	P	90		45	1.38	71.81	0.27	1.18	0.31	Reddish brown SANDSTONE
CP/RC102A	26.90	D	Y	P		60	90	1.01	90.00	0.12	1.30	0.16	Reddish brown SANDSTONE
CP/RC102A	26.90	A	X	P	90		55	0.78	79.39	0.12	1.23	0.15	Reddish brown SANDSTONE
CP/RC102A	27.50	D	Y	P		70	90	1.53	90.00	0.19	1.30	0.25	Reddish brown SANDSTONE
CP/RC102A	27.50	A	X	P	90		100	2.60	107.05	0.23	1.41	0.32	Reddish brown SANDSTONE
CP/RC103	15.10	D	Y	P		120	90	0.33	90.00	0.04	1.30	0.05	Reddish brown SANDSTONE
CP/RC103	15.10	A	X	P	90		60	0.66	82.92	0.10	1.26	0.12	Reddish brown SANDSTONE
CP/RC103	15.35	I	U	P	80	100	75	0.23	87.40	0.03	1.29	0.04	Reddish brown SANDSTONE
CP/RC103	15.60	D	Y	P		30	90	0.71	90.00	0.09	1.30	0.11	Reddish brown SANDSTONE
CP/RC103	15.60	A	X	P	90		40	1.11	67.70	0.24	1.15	0.28	Reddish brown SANDSTONE
CP/RC103	15.80	D	Y	P		65	90	0.67	90.00	0.08	1.30	0.11	Reddish brown SANDSTONE
CP/RC103	15.80	A	X	P	90		45	0.61	71.81	0.12	1.18	0.14	Reddish brown SANDSTONE
CP/RC103	16.20	D	Y	P		50	90	0.33	90.00	0.04	1.30	0.05	Reddish brown SANDSTONE
CP/RC103	16.20	A	X	P	90		60	0.78	82.92	0.11	1.26	0.14	Reddish brown SANDSTONE
CP/RC103	16.70	D	Y	P		70	90	0.47	90.00	0.06	1.30	0.08	Reddish brown SANDSTONE
CP/RC103	16.70	A	X	P	90		70	1.12	89.56	0.14	1.30	0.18	Reddish brown SANDSTONE
CP/RC103	18.90	D	Y	P		50	90	0.90	90.00	0.11	1.30	0.14	Reddish brown SANDSTONE

remarks: Tests carried out in accordance with I.S.R.M.(2007): Suggested Methods for Determining Point Load Strength. Int. J. Rock Mech. Min. Sci. and Geotech. Abstr. Vol.22 No. 2.

test type:
D - diametral
A - axial
I - Irregular lump

test orientation relative to discontinuities:
X - perpendicular
Y - parallel
Z - oblique
U - unknown

moisture condition:
N - natural moisture content
P - partially air dried
S - soaked

CONTRACT **31847**

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Geotechnical Engineering Limited

UNDRAINED TRIAXIAL COMPRESSION

BS.1377 : Part 7 : 1990 : 8 and 9

CLIENT ASK PROPERTY DEVELOPMENTS LTD

SITE PLOTS 6, 7 & 8 FIRST STREET, MANCHESTER

borehole /trial pit no.	sample		specimen depth (m)	code	moisture content (%)	density		cell pressure (kPa)	deviator stress (kPa)	failure strain (%)	failure mode	shear strength* (kPa)	description and remarks
	no./ type	depth (m)				bulk (Mg/m^3)	dry (Mg/m^3)						
CP/RC101A	15LS	5.80	5.82	UU100	15.4	2.22	1.92	120	175	20.0	I	88	Brown slightly sandy slightly gravelly silty CLAY
CP/RC101B	11LS	5.90	6.05	UU100	13.2	2.25	1.99	120	153	20.0	B	77	Brown slightly sandy slightly gravelly CLAY
CP/RC102A	15LS	6.95	6.95	UU100	12.7	2.22	1.97	140	217	20.3	S	109	Brown slightly sandy slightly gravelly CLAY
CP/RC102A	22LS	9.90	10.00	UU100	15.7	2.21	1.91	200	187	13.1	S	94	Brown slightly sandy slightly gravelly CLAY
CP/RC103	13LS	4.80	4.85	UU100	14.3	2.09	1.83	100	233	20.5	B	117	Brown slightly sandy slightly gravelly CLAY
CP/RC103	18LS	6.80	6.82	UU100	14.4	2.14	1.87	140	331	20.0	B	166	Brown slightly sandy slightly gravelly CLAY
CP/RC104A	13LS	5.70	5.80	UU100	13.2	2.24	1.98	120	302	20.0	I	151	Brown slightly sandy slightly gravelly CLAY
CP/RC105	14LS	5.75	5.78	UU100	12.6	2.25	2.00	120	390	19.8	I	195	Brown slightly sandy slightly gravelly silty CLAY
CP/RC105	19LS	7.80	7.80	UU100	13.9	2.21	1.94	160	319	20.0	B	160	Brown slightly sandy slightly gravelly silty CLAY
CP/RC108	16LS	6.60	6.60	UU100	13.9	2.21	1.94	140	468	20.2	I	234	Brown slightly sandy slightly gravelly CLAY

general remarks: * shear strength taken as half deviator stress at failure for each stage.
# denotes sample unsuitable to test.

code:
CD - Consolidated drained
CU - Consolidated undrained
UU - Unconsolidated undrained
M - Multistage
S - Set of 3 specimens
R - Remoulded
38 - 38mm dia. x 76mm
70 - 69mm dia. x 140mm
100 - 106mm dia. x 200mm

failure mode:
B - barrelling (plastic failure)
S - shear (brittle failure)
I - intermediate
O - other (see remarks)

membrane correction applied
sample taken vertically (unless specified)
rate of strain = 2%/min (unless specified)

membrane thickness:
38 - 0.2mm 70 - 0.4mm
106 - 0.4mm

CONTRACT **31847**

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UNIAXIAL COMPRESSIVE STRENGTH OF ROCK

I.S.R.M. Suggested Methods : 2007 Edition

CLIENT ASK PROPERTY DEVELOPMENTS LTD

SITE PLOTS 6, 7 & 8 FIRST STREET, MANCHESTER

borehole no.	sample no./type	sample depth (m)	specimen depth (m)	diameter D (mm)	height H (mm)	H/D	moisture content (%)	bulk density (Mg/m³)	loading rate (kN/min)	time to failure (min:sec)	UCS (MPa)	description and coding test remarks
CP/RC101B	27Cs	13.05	13.10	89.1	215.7	2.42	15.8	2.16	10	4:20	6.86	Reddish brown SANDSTONE Ax
CP/RC101B	33C	20.20	20.80	89.3	233.7	2.62	10.4	2.30	10	11:22	17.76	Reddish brown SANDSTONE Ax
CP/RC101B	37Cs	25.20	25.20	89.4	227.3	2.54	11.6	2.26	10	5:51	9.24	Reddish brown SANDSTONE Ax,Ca
CP/RC102A	28C	14.20	15.40	89.3	202.8	2.27	6.7	2.13	10	6:20	9.80	Reddish brown SANDSTONE Ax,Ca
CP/RC102A	29C	15.70	16.90	88.7	169.3	1.91	7.7	2.05	10	4:00	6.20	Reddish brown SANDSTONE Ax,Ca
CP/RC102A	30C	17.20	17.30	88.8	223.0	2.51	10.9	2.28	10	6:45	10.80	Reddish brown SANDSTONE Ax
CP/RC102A	31C	18.70	19.55	73.7	219.6	2.98	12.9	3.36	10	5:00	11.30	Reddish brown SANDSTONE Ax,Ca
CP/RC102A	32C	20.20	20.70	71.5	190.7	2.67	10.6	3.21	10	5:10	12.70	Reddish brown SANDSTONE Ax,Ca
CP/RC102A	33C	21.70	22.90	88.9	229.1	2.58	6.4	2.14	10	7:15	11.50	Reddish brown SANDSTONE Ax
CP/RC102A	35Cs	23.75	23.80	89.1	244.8	2.75	7.9	2.23	10	9:52	15.70	Reddish brown SANDSTONE Ax
CP/RC102A	38Cs	27.10	27.10	88.7	233.9	2.64	10.6	2.19	10	6:22	10.20	Reddish brown SANDSTONE Ca
CP/RC103	35C	17.20	17.75	88.9	243.3	2.74	11.7	2.24	10	9:05	14.40	Reddish brown SANDSTONE Ax
CP/RC104A	33C	14.70	15.70	89.3	181.5	2.03	13.8	2.20	10	8:15	13.00	Reddish brown SANDSTONE Ax,Ca
CP/RC104A	34C	16.20	16.70	89.3	233.3	2.61	11.2	2.23	10	5:40	9.00	Reddish brown SANDSTONE Ax
CP/RC104A	35Cs	17.00	17.00	89.2	213.7	2.40	12.0	2.23	10	3:40	5.80	Reddish brown SANDSTONE Ax
CP/RC104A	36C	17.70	18.75	89.5	217.3	2.43	8.3	2.28	10	7:01	11.40	Reddish brown SANDSTONE Ax
CP/RC104A	38Cs	19.40	19.40	89.6	225.8	2.52	11.1	2.25	10	5:41	8.90	Reddish brown SANDSTONE Ax
CP/RC104A	39C	20.70	21.00	89.9	203.8	2.27	12.1	2.23	10	9:18	14.50	Reddish brown SANDSTONE Ax
CP/RC104A	44Cs	27.20	27.20	89.5	233.5	2.61	10.3	2.30	10	8:12	12.90	Reddish brown SANDSTONE Ax

general remarks:

Sample obtained from vertically drilled core (unless specified).

Test machine - ELE 1500.

CODING

moisture condition :
N - natural moisture content
F - fully saturated
S - soaked
P - air/partially dried

sample storage :
U - sample not wrapped
F - sample wrapped in cling film/foil
W - sample waxed
G - sample contained in sealed Geoline

failure mode:
Ax - axial cleavage
Ca - cataclasis
Sh - shear
Ex - explosive

CONTRACT	CHECKED
31847	**JC**

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APPENDIX J

	GRM TIER 1 ASSESSMENT CRITERIA		
LAND USE	Residential without Plant Uptake		
CONTAMINANT	**1%**	**2.50%**	**6%**
[a] Arsenic	40	40	40
[a] Cadmium	150	150	150
[b] Chromium III	910	910	910
[a] Chromium VI	21	21	21
[a] Lead	310	310	310
[b/c] Mercury	56	56	56
[b] Selenium	430	430	430
[b] Nickel	180	180	180
[b] Phenols	750	1300	2300
[b] Copper	7100	7100	7100
[b] Zinc	40000	40000	40000
[d] Cyanide	34	34	34
[b] Benzene	0.4	0.7	1.4
[b] Toluene	880	1900	3900
[b] Ethylbenzene	83	190	440
[b] *o* - xylene	88	210	480
[b] *m* - xylene	82	190	450
[b] *p* - xylene	79	180	430
Non Genotoxic PAHs			
[b] Acenaphthene	3000	4700	6000
[b] Acenaphthylene	2900	4600	6000
[b] Anthracene	31000	35000	37000
[b] Fluoranthene	1500	1600	1600
[b] Fluorene	2800	3800	4500
[b] Napthalene	2.3	5.6	13
[b] Phenanthrene	1300	1500	1500
[b] Pyrene	3700	3800	3800
Genotoxic PAHs			
[a/e] Benzo(a)pyrene	5.3	5.3	5.3
ALIPHATIC HYDROCARBONS			
[b] C5-C6	42	78	160
[b] C6-C8	100	230	530
[b] C8-C10	27	65	150
[b] C10-C12	130	330	770
[b] C12-C16	1100	2400	4400
[b] C16-35	65000	92000	110000
AROMATIC HYDROCARBONS			
[b] C5-7 (benzene)	370	690	1400
[b] C7-8 (toluene)	860	1800	3900
[b] C8-C10	47	110	270
[b] C10-C12	250	590	1200
[b] C12-C16	1800	2300	2500
[b] C16-C21	1900	1900	1900
[b] C21-C35			

Notes

a C4SL - SP1010 (2014) - Benzene and Benzo(a)pyrene values for 1% and 2.5% SOM have been calculated using default C4SL parameters in CLEA v1.07

b LQM/CIEH S4UL values (2015).

c S4UL for inorganic Hg used.

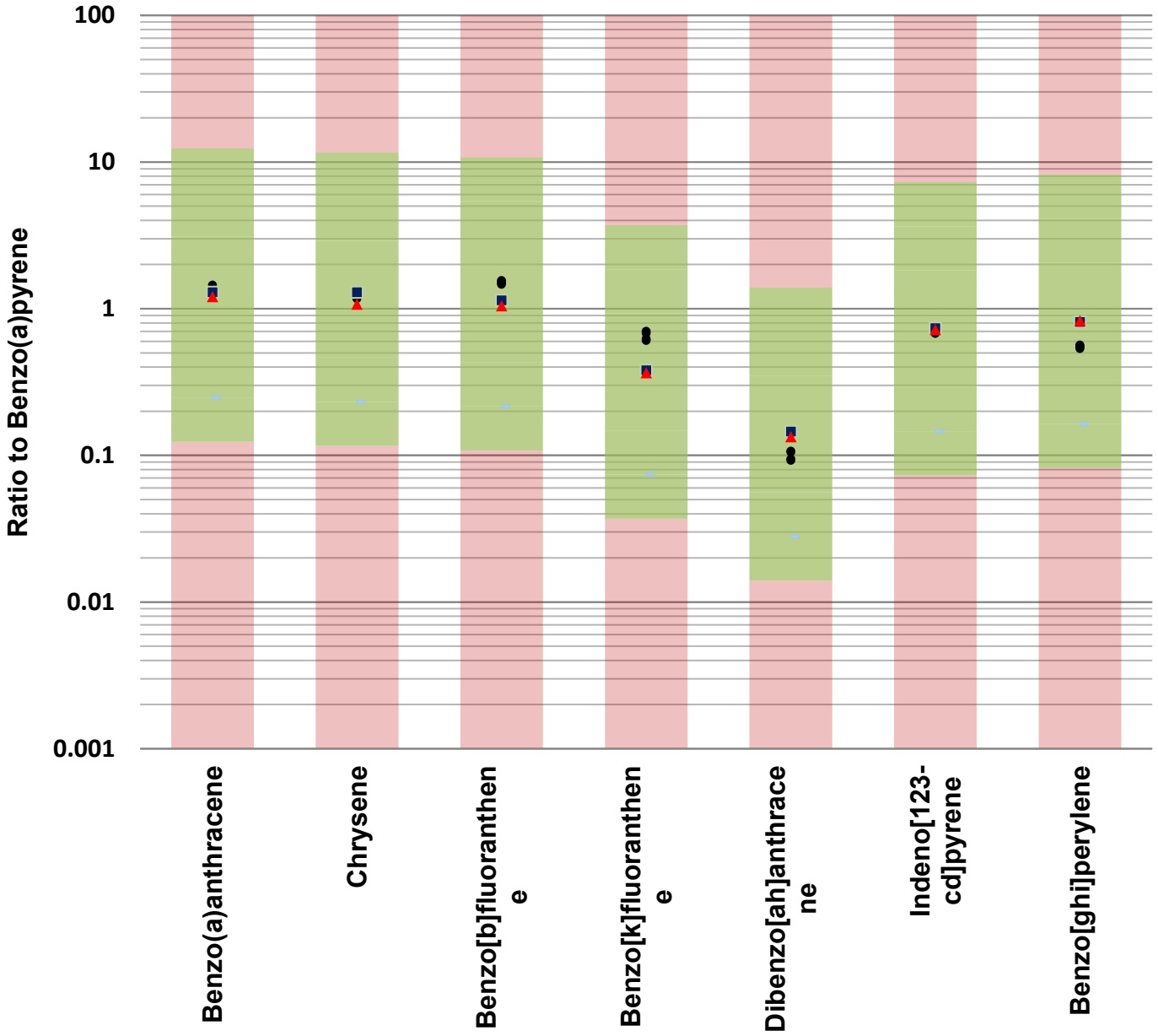
d Atkins ATRISKsoil Value

e Benzo(a)pyrene is a surrogate marker for the 8 genotoxic PAHs (Benzo(a)pyrene, Benzo(a)anthracene, Benzo(b)fluoranthene, Benzo(ghi)perylene, Benzo(k)fluoranthene, Chrysene, Dibenzo(ah)anthracene, Ideno(1,2,3-cd)pyrene)

GRM TAC 11-2016

APPENDIX K

PAH Mixture Analysis



Greater than ± 10x the mean of the Culp data (outside HPA upper & lower limit)

Within ± 2.5x and ± 10x the mean of the Culp data

Coal Tar 1 (Culp et al 1988)

Coal Tar 2 (Culp et al 1988)

P No: P10418
Site: Block C First Street Manchester
Client: Carley Daines and Partners Ltd
Engineer: RP/GRM

APPENDIX L

HazWasteOnline™

Waste Classification Report

HazWasteOnline™ classifies waste as either **hazardous** or **non-hazardous** based on its chemical composition, related legislation and the rules and data defined in the current UK or EU technical guidance (Appendix C) (note that HP 9 Infectious is not assessed). It is the responsibility of the classifier named below to:

a) understand the origin of the waste
b) select the correct List of Waste code(s)
c) confirm that the list of determinands, results and sampling plan are fit for purpose
d) select and justify the chosen metal species (Appendix B)
e) correctly apply moisture correction and other available corrections
f) add the meta data for their user-defined substances (Appendix A)
g) check that the classification engine is suitable with respect to the national destination of the waste (Appendix C)

To aid the reviewer, the laboratory results, assumptions and justifications managed by the classifier are highlighted in pale yellow.

RH28N-MPY90-HW14V

Job name

P10418 First Street, Manchester - Historic Data

Description/Comments

Historic chemical data. Note for some samples, phenol and TPH results have not been provided. No moisture corrections has been applied to provide a conservative assessment of the historic chemical data.

Project

P10418

Site

First Street Manchester

Classified by

Name:
Sonia Singh
Date:
13 Nov 2023 10:34 GMT
Telephone:
01283 551 249

Company:
GRM Development Solutions Ltd
Laurus House
First Avenue
Burton on Trent
DE14 2WH

HazWasteOnline™ provides a two day, hazardous waste classification course that covers the use of the software and both basic and advanced waste classification techniques. Certification has to be renewed every 3 years.

HazWasteOnline™ Certification: **CERTIFIED**

Course	Date
Hazardous Waste Classification	19 Sep 2017 *
Most recent 3 year Refresher	05 Oct 2023

Next 3 year Refresher due by Oct 2026
* training course booked

Purpose of classification

2 - Material Characterisation

Address of the waste

Block C First Street Manchester. **Post Code** M15 5FJ.

SIC for the process giving rise to the waste

41202 Construction of domestic buildings

Description of industry/producer giving rise to the waste

Construction Industry.

Description of the specific process, sub-process and/or activity that created the waste

Foundation arisings, soil generated from landscaping.

Description of the waste

Made ground.

Job summary

#	Sample name	Depth [m]	Classification Result	Hazard properties	Page
1	CP/RC102	0.3	Non Hazardous		3
2	CP/RC102A	0.6	Non Hazardous		5
3	CP/RC107	1.0	Non Hazardous		7
4	TP109	0.1 - 0.3	Non Hazardous		9

Related documents

#	Name	Description
1	GRM Validation Suite - WM3 V1.2.GB	waste stream template used to create this Job

Report

Created by: Sonia Singh

Created date: 13 Nov 2023 10:34 GMT

Appendices	Page
Appendix A: Classifier defined and non GB MCL determinands	11
Appendix B: Rationale for selection of metal species	12
Appendix C: Version	13

Classification of sample: CP/RC102

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
CP/RC102
Sample Depth:
0.3 m
Moisture content:
17%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 17% No Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		8.1 mg/kg	1.32	10.695 mg/kg	0.00107 %		
2	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2 mg/kg	1.285	<0.257 mg/kg	<0.00002 %		<**LOD**
3	chromium { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		27 mg/kg	1.462	39.462 mg/kg	0.00395 %		
4	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		25 mg/kg	1.126	28.147 mg/kg	0.00281 %		
5	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	16 mg/kg		16 mg/kg	0.0016 %		
6	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<**LOD**
7	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		27 mg/kg	1.579	42.646 mg/kg	0.00426 %		
8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1 mg/kg	1.405	<1.405 mg/kg	<0.000141 %		<**LOD**
9	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		75 mg/kg	2.469	185.197 mg/kg	0.0185 %		
10	phenol	604-001-00-2	203-632-7	108-95-2		<10 mg/kg		<10 mg/kg	<0.001 %		<**LOD**
11	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1 mg/kg	1.884	<1.884 mg/kg	<0.000188 %		<**LOD**
12	pH			PH		7.6 pH		7.6 pH	7.6 pH		
13	acenaphthene		201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
14		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
15		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
16		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
17		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
18		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
19		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
			205-883-8	191-24-2									
20		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
21		chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
22		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
23		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-912-4	206-44-0									
24		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
25		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
26		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		601-052-00-2	202-049-5	91-20-3									
27		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
28		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-927-3	129-00-0									
29		TPH (C6 to C40) petroleum group				<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
				TPH									
										Total:	0.0347 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: CP/RC102A

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
CP/RC102A
Sample Depth:
0.6 m
Moisture content:
16%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 16% No Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		70 mg/kg	1.32	92.423 mg/kg	0.00924 %		
2	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2 mg/kg	1.285	<0.257 mg/kg	<0.00002 %		<**LOD**
3	chromium { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		19 mg/kg	1.462	27.77 mg/kg	0.00278 %		
4	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		21 mg/kg	1.126	23.644 mg/kg	0.00236 %		
5	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	32 mg/kg		32 mg/kg	0.0032 %		
6	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %		<**LOD**
7	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		15 mg/kg	1.579	23.692 mg/kg	0.00237 %		
8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1 mg/kg	1.405	<1.405 mg/kg	<0.000141 %		<**LOD**
9	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		60 mg/kg	2.469	148.158 mg/kg	0.0148 %		
10	phenol	604-001-00-2	203-632-7	108-95-2		<10 mg/kg		<10 mg/kg	<0.001 %		<**LOD**
11	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1 mg/kg	1.884	<1.884 mg/kg	<0.000188 %		<**LOD**
12	pH			PH		6.8 pH		6.8 pH	6.8 pH		
13	acenaphthene		201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
14		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-917-1	208-96-8									
15		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			204-371-1	120-12-7									
16		benzo[a]anthracene				0.23	mg/kg		0.23	mg/kg	0.000023 %		
		601-033-00-9	200-280-6	56-55-3									
17		benzo[a]pyrene; benzo[def]chrysene				0.23	mg/kg		0.23	mg/kg	0.000023 %		
		601-032-00-3	200-028-5	50-32-8									
18		benzo[b]fluoranthene				0.22	mg/kg		0.22	mg/kg	0.000022 %		
		601-034-00-4	205-911-9	205-99-2									
19		benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
			205-883-8	191-24-2									
20		benzo[k]fluoranthene				0.14	mg/kg		0.14	mg/kg	0.000014 %		
		601-036-00-5	205-916-6	207-08-9									
21		chrysene				0.19	mg/kg		0.19	mg/kg	0.000019 %		
		601-048-00-0	205-923-4	218-01-9									
22		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-041-00-2	200-181-8	53-70-3									
23		fluoranthene				0.42	mg/kg		0.42	mg/kg	0.000042 %		
			205-912-4	206-44-0									
24		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-695-5	86-73-7									
25		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-893-2	193-39-5									
26		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
27		phenanthrene				0.27	mg/kg		0.27	mg/kg	0.000027 %		
			201-581-5	85-01-8									
28		pyrene				0.46	mg/kg		0.46	mg/kg	0.000046 %		
			204-927-3	129-00-0									
29		TPH (C6 to C40) petroleum group				<10	mg/kg		<10	mg/kg	<0.001 %		<**LOD**
				TPH									
										Total:	0.0374 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: CP/RC107

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
CP/RC107
Sample Depth:
1.0 m
Moisture content:
6.8%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 6.8% No Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		6.6	mg/kg	1.32	8.714	mg/kg	0.000871 %		
2	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2	mg/kg	1.285	<0.257	mg/kg	<0.00002 %		<**LOD**
3	chromium { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		19	mg/kg	1.462	27.77	mg/kg	0.00278 %		
4	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		15	mg/kg	1.126	16.888	mg/kg	0.00169 %		
5	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	32	mg/kg		32	mg/kg	0.0032 %		
6	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<**LOD**
7	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		20	mg/kg	1.579	31.59	mg/kg	0.00316 %		
8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		<**LOD**
9	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		73	mg/kg	2.469	180.259	mg/kg	0.018 %		
10	phenol	604-001-00-2	203-632-7	108-95-2		<10	mg/kg		<10	mg/kg	<0.001 %		<**LOD**
11	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<**LOD**
12	pH			PH		8.1	pH		8.1	pH	8.1 pH		
13	acenaphthene		201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
14		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-917-1	208-96-8									
15		anthracene				0.36	mg/kg		0.36	mg/kg	0.000036 %		
			204-371-1	120-12-7									
16		benzo[a]anthracene				0.74	mg/kg		0.74	mg/kg	0.000074 %		
		601-033-00-9	200-280-6	56-55-3									
17		benzo[a]pyrene; benzo[def]chrysene				0.6	mg/kg		0.6	mg/kg	0.00006 %		
		601-032-00-3	200-028-5	50-32-8									
18		benzo[b]fluoranthene				0.84	mg/kg		0.84	mg/kg	0.000084 %		
		601-034-00-4	205-911-9	205-99-2									
19		benzo[ghi]perylene				0.38	mg/kg		0.38	mg/kg	0.000038 %		
			205-883-8	191-24-2									
20		benzo[k]fluoranthene				0.27	mg/kg		0.27	mg/kg	0.000027 %		
		601-036-00-5	205-916-6	207-08-9									
21		chrysene				0.68	mg/kg		0.68	mg/kg	0.000068 %		
		601-048-00-0	205-923-4	218-01-9									
22		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-041-00-2	200-181-8	53-70-3									
23		fluoranthene				1.9	mg/kg		1.9	mg/kg	0.00019 %		
			205-912-4	206-44-0									
24		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-695-5	86-73-7									
25		indeno[123-cd]pyrene				0.37	mg/kg		0.37	mg/kg	0.000037 %		
			205-893-2	193-39-5									
26		naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
27		phenanthrene				1.8	mg/kg		1.8	mg/kg	0.00018 %		
			201-581-5	85-01-8									
28		pyrene				1.6	mg/kg		1.6	mg/kg	0.00016 %		
			204-927-3	129-00-0									
										Total:	0.0321 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP109

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
TP109
Sample Depth:
0.1 - 0.3 m
Moisture content:
15%
(no correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 15% No Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		25 mg/kg	1.32	33.008 mg/kg	0.0033 %		
2	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.2 mg/kg	1.285	<0.257 mg/kg	<0.00002 %		<**LOD**
3	chromium { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		19 mg/kg	1.462	27.77 mg/kg	0.00278 %		
4	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		71 mg/kg	1.126	79.938 mg/kg	0.00799 %		
5	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	150 mg/kg		150 mg/kg	0.015 %		
6	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.8 mg/kg	1.353	1.083 mg/kg	0.000108 %		
7	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		21 mg/kg	1.579	33.169 mg/kg	0.00332 %		
8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1 mg/kg	1.405	<1.405 mg/kg	<0.000141 %		<**LOD**
9	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		99 mg/kg	2.469	244.46 mg/kg	0.0244 %		
10	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1 mg/kg	1.884	<1.884 mg/kg	<0.000188 %		<**LOD**
11	pH			PH		6.5 pH		6.5 pH	6.5 pH		
12	acenaphthene		201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**
13	acenaphthylene		205-917-1	208-96-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
14		anthracene				0.17	mg/kg		0.17	mg/kg	0.000017 %		
			204-371-1	120-12-7									
15		benzo[a]anthracene				1.1	mg/kg		1.1	mg/kg	0.00011 %		
		601-033-00-9	200-280-6	56-55-3									
16		benzo[a]pyrene; benzo[def]chrysene				0.68	mg/kg		0.68	mg/kg	0.000068 %		
		601-032-00-3	200-028-5	50-32-8									
17		benzo[b]fluoranthene				0.91	mg/kg		0.91	mg/kg	0.000091 %		
		601-034-00-4	205-911-9	205-99-2									
18		benzo[ghi]perylene				0.52	mg/kg		0.52	mg/kg	0.000052 %		
			205-883-8	191-24-2									
19		benzo[k]fluoranthene				0.5	mg/kg		0.5	mg/kg	0.00005 %		
		601-036-00-5	205-916-6	207-08-9									
20		chrysene				1.1	mg/kg		1.1	mg/kg	0.00011 %		
		601-048-00-0	205-923-4	218-01-9									
21		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-041-00-2	200-181-8	53-70-3									
22		fluoranthene				2.2	mg/kg		2.2	mg/kg	0.00022 %		
			205-912-4	206-44-0									
23		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-695-5	86-73-7									
24		indeno[123-cd]pyrene				0.33	mg/kg		0.33	mg/kg	0.000033 %		
			205-893-2	193-39-5									
25		naphthalene				0.17	mg/kg		0.17	mg/kg	0.000017 %		
		601-052-00-2	202-049-5	91-20-3									
26		phenanthrene				0.17	mg/kg		0.17	mg/kg	0.000017 %		
			201-581-5	85-01-8									
27		pyrene				2.1	mg/kg		2.1	mg/kg	0.00021 %		
			204-927-3	129-00-0									
28		TPH (C6 to C40) petroleum group				10	mg/kg		10	mg/kg	0.001 %		
				TPH									
										Total:	0.0593 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because Soils are considered not to be flammable at low TPH concentrations.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.001%)

Appendix A: Classifier defined and non GB MCL determinands

chromium(III) oxide (worst case) (EC Number: 215-160-9, CAS Number: 1308-38-9)

Description/Comments: Data from C&L Inventory Database
Data source: https://echa.europa.eu/information-on-chemicals/cl-inventory-database/-/discli/details/33806
Data source date: 17 Jul 2015
Hazard Statements: Acute Tox. 4; H332 , Acute Tox. 4; H302 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Resp. Sens. 1; H334 , Skin Sens. 1; H317 , Repr. 1B; H360FD , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

lead compounds with the exception of those specified elsewhere in this Annex

GB MCL index number: 082-001-00-6
Description/Comments: Least-worst case: IARC considers lead compounds Group 2A; Probably carcinogenic to humans; Lead REACH Consortium, following MCL protocols, considers many simple lead compounds to be Carcinogenic category 2
Additional Hazard Statement(s): Carc. 2; H351
Reason for additional Hazards Statement(s):
20 Nov 2021 - Carc. 2; H351 hazard statement sourced from: IARC Group 2A (Sup 7, 87) 2006; Lead REACH Consortium www.reach-lead.eu/substanceinformation.html. Review date 29/09/2015

salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex

GB MCL index number: 006-007-00-5
Description/Comments: Conversion factor based on a worst case compound: sodium cyanide
Additional Hazard Statement(s): EUH032 >= 0.2 %
Reason for additional Hazards Statement(s):
20 Nov 2021 - EUH032 >= 0.2 % hazard statement sourced from: WM3, Table C12.2

pH (CAS Number: PH)

Description/Comments: Appendix C4
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: None.

acenaphthene (EC Number: 201-469-6, CAS Number: 83-32-9)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410 , Aquatic Chronic 2; H411

acenaphthylene (EC Number: 205-917-1, CAS Number: 208-96-8)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Acute Tox. 4; H302 , Acute Tox. 1; H330 , Acute Tox. 1; H310 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315

anthracene (EC Number: 204-371-1, CAS Number: 120-12-7)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Skin Sens. 1; H317 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

benzo[ghi]perylene (EC Number: 205-883-8, CAS Number: 191-24-2)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 28/02/2015
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 23 Jul 2015
Hazard Statements: Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

fluoranthene (EC Number: 205-912-4, CAS Number: 206-44-0)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21 Aug 2015
Hazard Statements: Acute Tox. 4; H302 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

- **fluorene** (EC Number: 201-695-5, CAS Number: 86-73-7)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

- **indeno[123-cd]pyrene** (EC Number: 205-893-2, CAS Number: 193-39-5)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Carc. 2; H351

- **phenanthrene** (EC Number: 201-581-5, CAS Number: 85-01-8)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Acute Tox. 4; H302 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Carc. 2; H351 , Skin Sens. 1; H317 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410 , Skin Irrit. 2; H315

- **pyrene** (EC Number: 204-927-3, CAS Number: 129-00-0)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 2014
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21 Aug 2015
Hazard Statements: Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

- **TPH (C6 to C40) petroleum group** (CAS Number: TPH)

Description/Comments: Hazard statements taken from WM3 1st Edition 2015; Risk phrases: WM2 3rd Edition 2013
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: Flam. Liq. 3; H226 , Asp. Tox. 1; H304 , STOT RE 2; H373 , Muta. 1B; H340 , Carc. 1B; H350 , Repr. 2; H361d , Aquatic Chronic 2; H411

Appendix B: Rationale for selection of metal species

arsenic {arsenic trioxide}

Worst case species based on risk phrases

cadmium {cadmium sulfide}

Worst case species based on risk phrases

chromium {chromium(III) oxide (worst case)}

No hexavalent Cr has been recorded within the samples.

copper {dicopper oxide; copper (I) oxide}

Most likely common species

lead {lead compounds with the exception of those specified elsewhere in this Annex}

No hexavalent Cr has been recorded within the samples.

mercury {mercury dichloride}

Worst case species based on risk phrases

nickel {nickel dihydroxide}

Worst case species based on risk phrases

selenium {selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex}

Worst case species based on risk phrases

zinc {zinc sulphate}

No hexavalent Cr has been recorded within the samples.

cyanides {salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex}

Worst case species

Appendix C: Version

HazWasteOnline Classification Engine: WM3 1st Edition v1.2.GB - Oct 2021
HazWasteOnline Classification Engine Version: 2023.314.5806.10740 (10 Nov 2023)
HazWasteOnline Database: 2023.314.5806.10740 (10 Nov 2023)

This classification utilises the following guidance and legislation:
WM3 v1.2.GB - Waste Classification - 1st Edition v1.2.GB - Oct 2021
CLP Regulation - Regulation 1272/2008/EC of 16 December 2008
1st ATP - Regulation 790/2009/EC of 10 August 2009
2nd ATP - Regulation 286/2011/EC of 10 March 2011
3rd ATP - Regulation 618/2012/EU of 10 July 2012
4th ATP - Regulation 487/2013/EU of 8 May 2013
Correction to 1st ATP - Regulation 758/2013/EU of 7 August 2013
5th ATP - Regulation 944/2013/EU of 2 October 2013
6th ATP - Regulation 605/2014/EU of 5 June 2014
WFD Annex III replacement - Regulation 1357/2014/EU of 18 December 2014
Revised List of Waste 2014 - Decision 2014/955/EU of 18 December 2014
7th ATP - Regulation 2015/1221/EU of 24 July 2015
8th ATP - Regulation (EU) 2016/918 of 19 May 2016
9th ATP - Regulation (EU) 2016/1179 of 19 July 2016
10th ATP - Regulation (EU) 2017/776 of 4 May 2017
HP14 amendment - Regulation (EU) 2017/997 of 8 June 2017
13th ATP - Regulation (EU) 2018/1480 of 4 October 2018
14th ATP - Regulation (EU) 2020/217 of 4 October 2019
15th ATP - Regulation (EU) 2020/1182 of 19 May 2020
The Chemicals (Health and Safety) and Genetically Modified Organisms (Contained Use)(Amendment etc.) (EU Exit) Regulations 2020 - UK: 2020 No. 1567 of 16th December 2020
The Waste and Environmental Permitting etc. (Legislative Functions and Amendment etc.) (EU Exit) Regulations 2020 - UK: 2020 No. 1540 of 16th December 2020
GB MCL List - version 1.1 of 09 June 2021

HazWasteOnline™

Waste Classification Report

HazWasteOnline™ classifies waste as either **hazardous** or **non-hazardous** based on its chemical composition, related legislation and the rules and data defined in the current UK or EU technical guidance (Appendix C) (note that HP 9 Infectious is not assessed). It is the responsibility of the classifier named below to:

a) understand the origin of the waste
b) select the correct List of Waste code(s)
c) confirm that the list of determinands, results and sampling plan are fit for purpose
d) select and justify the chosen metal species (Appendix B)
e) correctly apply moisture correction and other available corrections
f) add the meta data for their user-defined substances (Appendix A)
g) check that the classification engine is suitable with respect to the national destination of the waste (Appendix C)

To aid the reviewer, the laboratory results, assumptions and justifications managed by the classifier are highlighted in pale yellow.

MMB9Z-LRH55-B4JEX

Job name

P10418, First Street Manchester

Description/Comments

Project

P10418

Site

First Street Manchester

Classified by

Name:
Sonia Singh
Date:
13 Nov 2023 10:37 GMT
Telephone:
01283 551 249

Company:
GRM Development Solutions Ltd
Laurus House
First Avenue
Burton on Trent
DE14 2WH

HazWasteOnline™ provides a two day, hazardous waste classification course that covers the use of the software and both basic and advanced waste classification techniques. Certification has to be renewed every 3 years.

HazWasteOnline™ Certification: **CERTIFIED**

Course	Date
Hazardous Waste Classification	19 Sep 2017 *
Most recent 3 year Refresher	05 Oct 2023

Next 3 year Refresher due by Oct 2026
* training course booked

Purpose of classification

2 - Material Characterisation

Address of the waste

Block C First Street Manchester **Post Code** M15 5FJ

SIC for the process giving rise to the waste

41202 Construction of domestic buildings

Description of industry/producer giving rise to the waste

Construction Industry

Description of the specific process, sub-process and/or activity that created the waste

Foundation arisings, soil generated from landscaping

Description of the waste

Made ground

Job summary

#	Sample name	Depth [m]	Classification Result	Hazard properties	Page
1	WS01	0.50	Non Hazardous		3
2	WS02	0.50	Hazardous	HP 3(i), HP 7, HP 11	5
3	WS02[2]	1.20	Hazardous	HP 3(i), HP 7, HP 11	8
4	WS03	0.70	Hazardous	HP 8	11
5	WS04b	0.60	Non Hazardous		14

Related documents

#	Name	Description
1	GRM Validation Suite - WM3 V1.2.GB	waste stream template used to create this Job

Report

Created by: Sonia Singh

Created date: 13 Nov 2023 10:37 GMT

Appendices	Page
Appendix A: Classifier defined and non GB MCL determinands	16
Appendix B: Rationale for selection of metal species	17
Appendix C: Version	18

Classification of sample: WS01

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
WS01
Sample Depth:
0.50 m
Moisture content:
6.3%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 6.3% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		14 mg/kg	1.32	17.389 mg/kg	0.00174 %	✓	
2	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	1 mg/kg	1.285	1.209 mg/kg	0.0000941 %	✓	
3	chromium { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		10 mg/kg	1.462	13.749 mg/kg	0.00137 %	✓	
4	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		77 mg/kg	1.126	81.555 mg/kg	0.00816 %	✓	
5	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	140 mg/kg		131.703 mg/kg	0.0132 %	✓	
6	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<2.5 mg/kg	1.353	<3.384 mg/kg	<0.000338 %		<**LOD**
7	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		17 mg/kg	1.579	25.26 mg/kg	0.00253 %	✓	
8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<8 mg/kg	1.405	<11.24 mg/kg	<0.00112 %		<**LOD**
9	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		93 mg/kg	2.469	216.034 mg/kg	0.0216 %	✓	
10	phenol	604-001-00-2	203-632-7	108-95-2		<1 mg/kg		<1 mg/kg	<0.0001 %		<**LOD**
11	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1 mg/kg	1.884	<1.884 mg/kg	<0.000188 %		<**LOD**
12	pH			PH		8.4 pH		8.4 pH	8.4 pH		
13	acenaphthene		201-469-6	83-32-9		3.3 mg/kg		3.104 mg/kg	0.00031 %	✓	

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
14	●	acenaphthylene		205-917-1	208-96-8		0.44	mg/kg		0.414	mg/kg	0.0000414 %	✓	
15	●	anthracene		204-371-1	120-12-7		5.4	mg/kg		5.08	mg/kg	0.000508 %	✓	
16		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		12	mg/kg		11.289	mg/kg	0.00113 %	✓	
17		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		9.4	mg/kg		8.843	mg/kg	0.000884 %	✓	
18		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		14	mg/kg		13.17	mg/kg	0.00132 %	✓	
19	●	benzo[ghi]perylene		205-883-8	191-24-2		6.4	mg/kg		6.021	mg/kg	0.000602 %	✓	
20		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		5.3	mg/kg		4.986	mg/kg	0.000499 %	✓	
21		chrysene	601-048-00-0	205-923-4	218-01-9		11	mg/kg		10.348	mg/kg	0.00103 %	✓	
22		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		0.99	mg/kg		0.931	mg/kg	0.0000931 %	✓	
23	●	fluoranthene		205-912-4	206-44-0		25	mg/kg		23.518	mg/kg	0.00235 %	✓	
24	●	fluorene		201-695-5	86-73-7		2.3	mg/kg		2.164	mg/kg	0.000216 %	✓	
25	●	indeno[123-cd]pyrene		205-893-2	193-39-5		6.6	mg/kg		6.209	mg/kg	0.000621 %	✓	
26		naphthalene	601-052-00-2	202-049-5	91-20-3		0.36	mg/kg		0.339	mg/kg	0.0000339 %	✓	
27	●	phenanthrene		201-581-5	85-01-8		18	mg/kg		16.933	mg/kg	0.00169 %	✓	
28	●	pyrene		204-927-3	129-00-0		22	mg/kg		20.696	mg/kg	0.00207 %	✓	
29	●	TPH (C6 to C40) petroleum group			TPH		570	mg/kg		536.218	mg/kg	0.0536 %	✓	
											Total:	0.117 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because Soils are unlikely to be flammable at low TPH concentrations and no free product detected.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0536%)

Classification of sample: WS02

Hazardous Waste
Classified as **17 05 03 ***
in the List of Waste

Sample details

Sample name:
WS02
Sample Depth:
0.50 m
Moisture content:
20%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 03 * (Soil and stones containing hazardous substances)

Hazard properties

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"
Force this Hazardous property to hazardous because Soils are unlikely to be flammable at low TPH concentrations and no free product detected.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.917%)

HP 7: Carcinogenic "waste which induces cancer or increases its incidence"

Hazard Statements hit:

Carc. 1B; H350 "May cause cancer [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.917%)

HP 11: Mutagenic "waste which may cause a mutation, that is a permanent change in the amount or structure of the genetic material in a cell"

Hazard Statements hit:

Muta. 1B; H340 "May cause genetic defects [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.917%)

Determinands

Moisture content: 20% Dry Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
1		arsenic { arsenic trioxide }				34	mg/kg	1.32	37.409	mg/kg	0.00374 %	✓	
		033-003-00-0	215-481-4	1327-53-3									
2		cadmium { cadmium sulfide }			1	1.9	mg/kg	1.285	2.035	mg/kg	0.000158 %	✓	
		048-010-00-4	215-147-8	1306-23-6									
3		chromium { chromium(III) oxide (worst case) }				18	mg/kg	1.462	21.923	mg/kg	0.00219 %	✓	
			215-160-9	1308-38-9									

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
4		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		130	mg/kg	1.126	121.971	mg/kg	0.0122 %	✓	
5		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	320	mg/kg		266.667	mg/kg	0.0267 %	✓	
6		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<2.5	mg/kg	1.353	<3.384	mg/kg	<0.000338 %		<**LOD**
7		nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		27	mg/kg	1.579	35.539	mg/kg	0.00355 %	✓	
8		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<8	mg/kg	1.405	<11.24	mg/kg	<0.00112 %		<**LOD**
9		zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		250	mg/kg	2.469	514.437	mg/kg	0.0514 %	✓	
10		phenol	604-001-00-2	203-632-7	108-95-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
11		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				2.4	mg/kg	1.884	3.768	mg/kg	0.000377 %	✓	
12		pH			PH		7.7	pH		7.7	pH	7.7 pH		
13		acenaphthene		201-469-6	83-32-9		90	mg/kg		75	mg/kg	0.0075 %	✓	
14		acenaphthylene		205-917-1	208-96-8		3.4	mg/kg		2.833	mg/kg	0.000283 %	✓	
15		anthracene		204-371-1	120-12-7		89	mg/kg		74.167	mg/kg	0.00742 %	✓	
16		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		130	mg/kg		108.333	mg/kg	0.0108 %	✓	
17		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		90	mg/kg		75	mg/kg	0.0075 %	✓	
18		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		140	mg/kg		116.667	mg/kg	0.0117 %	✓	
19		benzo[ghi]perylene		205-883-8	191-24-2		56	mg/kg		46.667	mg/kg	0.00467 %	✓	
20		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		50	mg/kg		41.667	mg/kg	0.00417 %	✓	
21		chrysene	601-048-00-0	205-923-4	218-01-9		110	mg/kg		91.667	mg/kg	0.00917 %	✓	
22		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		8.5	mg/kg		7.083	mg/kg	0.000708 %	✓	
23		fluoranthene		205-912-4	206-44-0		290	mg/kg		241.667	mg/kg	0.0242 %	✓	
24		fluorene		201-695-5	86-73-7		58	mg/kg		48.333	mg/kg	0.00483 %	✓	
25		indeno[123-cd]pyrene		205-893-2	193-39-5		61	mg/kg		50.833	mg/kg	0.00508 %	✓	
26		naphthalene	601-052-00-2	202-049-5	91-20-3		35	mg/kg		29.167	mg/kg	0.00292 %	✓	
27		phenanthrene		201-581-5	85-01-8		300	mg/kg		250	mg/kg	0.025 %	✓	
28		pyrene		204-927-3	129-00-0		240	mg/kg		200	mg/kg	0.02 %	✓	
29		TPH (C6 to C40) petroleum group			TPH		11000	mg/kg		9166.667	mg/kg	0.917 %	✓	

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
								Total:	1.164 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Hazardous result
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: WS02[2]

Hazardous Waste
Classified as **17 05 03 ***
in the List of Waste

Sample details

Sample name:
WS02[2]
Sample Depth:
1.20 m
Moisture content:
8.6%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 03 * (Soil and stones containing hazardous substances)

Hazard properties

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"
Force this Hazardous property to hazardous because Soils are unlikely to be flammable at low TPH concentrations and no free product detected.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 1.197%)

HP 7: Carcinogenic "waste which induces cancer or increases its incidence"

Hazard Statements hit:

Carc. 1B; H350 "May cause cancer [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 1.197%)

HP 11: Mutagenic "waste which may cause a mutation, that is a permanent change in the amount or structure of the genetic material in a cell"

Hazard Statements hit:

Muta. 1B; H340 "May cause genetic defects [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 1.197%)

Determinands

Moisture content: 8.6% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		28 mg/kg	1.32	34.042 mg/kg	0.0034 %	✓	
2	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	3 mg/kg	1.285	3.55 mg/kg	0.000276 %	✓	
3	chromium { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		9.5 mg/kg	1.462	12.785 mg/kg	0.00128 %	✓	

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
4		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		180	mg/kg	1.126	186.611	mg/kg	0.0187 %	✓	
5		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	510	mg/kg		469.613	mg/kg	0.047 %	✓	
6		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<2.5	mg/kg	1.353	<3.384	mg/kg	<0.000338 %		<LOD
7		nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		30	mg/kg	1.579	43.633	mg/kg	0.00436 %	✓	
8		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<8	mg/kg	1.405	<11.24	mg/kg	<0.00112 %		<LOD
9		zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		420	mg/kg	2.469	954.977	mg/kg	0.0955 %	✓	
10		phenol	604-001-00-2	203-632-7	108-95-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
11		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
12		pH			PH		8	pH		8	pH	8pH		
13		acenaphthene		201-469-6	83-32-9		59	mg/kg		54.328	mg/kg	0.00543 %	✓	
14		acenaphthylene		205-917-1	208-96-8		6.7	mg/kg		6.169	mg/kg	0.000617 %	✓	
15		anthracene		204-371-1	120-12-7		88	mg/kg		81.031	mg/kg	0.0081 %	✓	
16		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		170	mg/kg		156.538	mg/kg	0.0157 %	✓	
17		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		130	mg/kg		119.705	mg/kg	0.012 %	✓	
18		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		190	mg/kg		174.954	mg/kg	0.0175 %	✓	
19		benzo[ghi]perylene		205-883-8	191-24-2		79	mg/kg		72.744	mg/kg	0.00727 %	✓	
20		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		71	mg/kg		65.378	mg/kg	0.00654 %	✓	
21		chrysene	601-048-00-0	205-923-4	218-01-9		160	mg/kg		147.33	mg/kg	0.0147 %	✓	
22		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		12	mg/kg		11.05	mg/kg	0.0011 %	✓	
23		fluoranthene		205-912-4	206-44-0		380	mg/kg		349.908	mg/kg	0.035 %	✓	
24		fluorene		201-695-5	86-73-7		40	mg/kg		36.832	mg/kg	0.00368 %	✓	
25		indeno[123-cd]pyrene		205-893-2	193-39-5		92	mg/kg		84.715	mg/kg	0.00847 %	✓	
26		naphthalene	601-052-00-2	202-049-5	91-20-3		13	mg/kg		11.971	mg/kg	0.0012 %	✓	
27		phenanthrene		201-581-5	85-01-8		300	mg/kg		276.243	mg/kg	0.0276 %	✓	
28		pyrene		204-927-3	129-00-0		330	mg/kg		303.867	mg/kg	0.0304 %	✓	
29		TPH (C6 to C40) petroleum group			TPH		13000	mg/kg		11970.534	mg/kg	1.197 %	✓	

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
								Total:	1.565 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Hazardous result
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: WS03

Hazardous Waste
Classified as **17 05 03 ***
in the List of Waste

Sample details

Sample name:
WS03
Sample Depth:
0.70 m
Moisture content:
8.1%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 03 * (Soil and stones containing hazardous substances)

Hazard properties

HP 8: Corrosive "waste which on application can cause skin corrosion"

pH; pH "Assumed to be irritant/corrosive because of pH value"

Because of determinand:

pH: (conc.: 11.8 pH)

Determinands

Moisture content: 8.1% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		11 mg/kg	1.32	13.435 mg/kg	0.00134 %	✓	
2	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	1 mg/kg	1.285	1.189 mg/kg	0.0000925 %	✓	
3	chromium { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		8.7 mg/kg	1.462	11.763 mg/kg	0.00118 %	✓	
4	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		42 mg/kg	1.126	43.744 mg/kg	0.00437 %	✓	
5	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	120 mg/kg		111.008 mg/kg	0.0111 %	✓	
6	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<2.5 mg/kg	1.353	<3.384 mg/kg	<0.000338 %		<LOD
7	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		16 mg/kg	1.579	23.378 mg/kg	0.00234 %	✓	
8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<8 mg/kg	1.405	<11.24 mg/kg	<0.00112 %		<LOD
9	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		95 mg/kg	2.469	217.006 mg/kg	0.0217 %	✓	
10	phenol	604-001-00-2	203-632-7	108-95-2		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
11		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<**LOD**
12		pH			PH		11.8	pH		11.8	pH	11.8 pH		
13		acenaphthene		201-469-6	83-32-9		0.95	mg/kg		0.879	mg/kg	0.0000879 %	✓	
14		acenaphthylene		205-917-1	208-96-8		<0.2	mg/kg		<0.2	mg/kg	<0.00002 %		<**LOD**
15		anthracene		204-371-1	120-12-7		2.2	mg/kg		2.035	mg/kg	0.000204 %	✓	
16		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		4	mg/kg		3.7	mg/kg	0.00037 %	✓	
17		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		3	mg/kg		2.775	mg/kg	0.000278 %	✓	
18		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		4.6	mg/kg		4.255	mg/kg	0.000426 %	✓	
19		benzo[ghi]perylene		205-883-8	191-24-2		2.1	mg/kg		1.943	mg/kg	0.000194 %	✓	
20		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		1.6	mg/kg		1.48	mg/kg	0.000148 %	✓	
21		chrysene	601-048-00-0	205-923-4	218-01-9		3.8	mg/kg		3.515	mg/kg	0.000352 %	✓	
22		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		0.32	mg/kg		0.296	mg/kg	0.0000296 %	✓	
23		fluoranthene		205-912-4	206-44-0		8.2	mg/kg		7.586	mg/kg	0.000759 %	✓	
24		fluorene		201-695-5	86-73-7		0.95	mg/kg		0.879	mg/kg	0.0000879 %	✓	
25		indeno[123-cd]pyrene		205-893-2	193-39-5		2.1	mg/kg		1.943	mg/kg	0.000194 %	✓	
26		naphthalene	601-052-00-2	202-049-5	91-20-3		1.7	mg/kg		1.573	mg/kg	0.000157 %	✓	
27		phenanthrene		201-581-5	85-01-8		8.1	mg/kg		7.493	mg/kg	0.000749 %	✓	
28		pyrene		204-927-3	129-00-0		7.8	mg/kg		7.216	mg/kg	0.000722 %	✓	
29		TPH (C6 to C40) petroleum group			TPH		280	mg/kg		259.019	mg/kg	0.0259 %	✓	
											Total:	0.0746 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Hazardous result
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because Soils are unlikely to be flammable at low TPH concentrations and no free product detected.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0259%)

Classification of sample: WS04b

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
WS04b
Sample Depth:
0.60 m
Moisture content:
6.4%
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 6.4% Dry Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		<10 mg/kg	1.32	<13.203 mg/kg	<0.00132 %		<LOD
2	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	1 mg/kg	1.285	1.208 mg/kg	0.000094 %	✓	
3	chromium { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		5.5 mg/kg	1.462	7.555 mg/kg	0.000756 %	✓	
4	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		22 mg/kg	1.126	23.28 mg/kg	0.00233 %	✓	
5	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	14 mg/kg		13.158 mg/kg	0.00132 %	✓	
6	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<2.5 mg/kg	1.353	<3.384 mg/kg	<0.000338 %		<LOD
7	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		16 mg/kg	1.579	23.752 mg/kg	0.00238 %	✓	
8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<8 mg/kg	1.405	<11.24 mg/kg	<0.00112 %		<LOD
9	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		60 mg/kg	2.469	139.246 mg/kg	0.0139 %	✓	
10	phenol	604-001-00-2	203-632-7	108-95-2		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
11	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1 mg/kg	1.884	<1.884 mg/kg	<0.000188 %		<LOD
12	pH			PH		8.4 pH		8.4 pH	8.4 pH		
13	acenaphthene		201-469-6	83-32-9		<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
14		acenaphthylene				<0.02	mg/kg		<0.02	mg/kg	<0.000002 %		<**LOD**
			205-917-1	208-96-8									
15		anthracene				<0.02	mg/kg		<0.02	mg/kg	<0.000002 %		<**LOD**
			204-371-1	120-12-7									
16		benzo[a]anthracene				<0.02	mg/kg		<0.02	mg/kg	<0.000002 %		<**LOD**
		601-033-00-9	200-280-6	56-55-3									
17		benzo[a]pyrene; benzo[def]chrysene				<0.02	mg/kg		<0.02	mg/kg	<0.000002 %		<**LOD**
		601-032-00-3	200-028-5	50-32-8									
18		benzo[b]fluoranthene				<0.02	mg/kg		<0.02	mg/kg	<0.000002 %		<**LOD**
		601-034-00-4	205-911-9	205-99-2									
19		benzo[ghi]perylene				<0.02	mg/kg		<0.02	mg/kg	<0.000002 %		<**LOD**
			205-883-8	191-24-2									
20		benzo[k]fluoranthene				<0.02	mg/kg		<0.02	mg/kg	<0.000002 %		<**LOD**
		601-036-00-5	205-916-6	207-08-9									
21		chrysene				<0.02	mg/kg		<0.02	mg/kg	<0.000002 %		<**LOD**
		601-048-00-0	205-923-4	218-01-9									
22		dibenz[a,h]anthracene				<0.02	mg/kg		<0.02	mg/kg	<0.000002 %		<**LOD**
		601-041-00-2	200-181-8	53-70-3									
23		fluoranthene				<0.02	mg/kg		<0.02	mg/kg	<0.000002 %		<**LOD**
			205-912-4	206-44-0									
24		fluorene				<0.02	mg/kg		<0.02	mg/kg	<0.000002 %		<**LOD**
			201-695-5	86-73-7									
25		indeno[123-cd]pyrene				<0.02	mg/kg		<0.02	mg/kg	<0.000002 %		<**LOD**
			205-893-2	193-39-5									
26		naphthalene				<0.02	mg/kg		<0.02	mg/kg	<0.000002 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
27		phenanthrene				<0.02	mg/kg		<0.02	mg/kg	<0.000002 %		<**LOD**
			201-581-5	85-01-8									
28		pyrene				<0.02	mg/kg		<0.02	mg/kg	<0.000002 %		<**LOD**
			204-927-3	129-00-0									
29		TPH (C6 to C40) petroleum group				<50	mg/kg		<50	mg/kg	<0.005 %		<**LOD**
				TPH									
										Total:	0.0289 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Appendix A: Classifier defined and non GB MCL determinands

- **chromium(III) oxide (worst case)** (EC Number: 215-160-9, CAS Number: 1308-38-9)

Description/Comments: Data from C&L Inventory Database
Data source: https://echa.europa.eu/information-on-chemicals/cl-inventory-database/-/discli/details/33806
Data source date: 17 Jul 2015
Hazard Statements: Acute Tox. 4; H332 , Acute Tox. 4; H302 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Resp. Sens. 1; H334 , Skin Sens. 1; H317 , Repr. 1B; H360FD , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

- **lead compounds with the exception of those specified elsewhere in this Annex**

GB MCL index number: 082-001-00-6
Description/Comments: Least-worst case: IARC considers lead compounds Group 2A; Probably carcinogenic to humans; Lead REACH Consortium, following MCL protocols, considers many simple lead compounds to be Carcinogenic category 2
Additional Hazard Statement(s): Carc. 2; H351
Reason for additional Hazards Statement(s):
20 Nov 2021 - Carc. 2; H351 hazard statement sourced from: IARC Group 2A (Sup 7, 87) 2006; Lead REACH Consortium www.reach-lead.eu/substanceinformation.html. Review date 29/09/2015

- **salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex**

GB MCL index number: 006-007-00-5
Description/Comments: Conversion factor based on a worst case compound: sodium cyanide
Additional Hazard Statement(s): EUH032 >= 0.2 %
Reason for additional Hazards Statement(s):
20 Nov 2021 - EUH032 >= 0.2 % hazard statement sourced from: WM3, Table C12.2

- **pH** (CAS Number: PH)

Description/Comments: Appendix C4
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: None.

- **acenaphthene** (EC Number: 201-469-6, CAS Number: 83-32-9)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410 , Aquatic Chronic 2; H411

- **acenaphthylene** (EC Number: 205-917-1, CAS Number: 208-96-8)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Acute Tox. 4; H302 , Acute Tox. 1; H330 , Acute Tox. 1; H310 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315

- **anthracene** (EC Number: 204-371-1, CAS Number: 120-12-7)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Skin Sens. 1; H317 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

- **benzo[ghi]perylene** (EC Number: 205-883-8, CAS Number: 191-24-2)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 28/02/2015
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 23 Jul 2015
Hazard Statements: Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

- **fluoranthene** (EC Number: 205-912-4, CAS Number: 206-44-0)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21 Aug 2015
Hazard Statements: Acute Tox. 4; H302 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

- **fluorene** (EC Number: 201-695-5, CAS Number: 86-73-7)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

- **indeno[123-cd]pyrene** (EC Number: 205-893-2, CAS Number: 193-39-5)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Carc. 2; H351

- **phenanthrene** (EC Number: 201-581-5, CAS Number: 85-01-8)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Acute Tox. 4; H302 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Carc. 2; H351 , Skin Sens. 1; H317 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410 , Skin Irrit. 2; H315

- **pyrene** (EC Number: 204-927-3, CAS Number: 129-00-0)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 2014
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21 Aug 2015
Hazard Statements: Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

- **TPH (C6 to C40) petroleum group** (CAS Number: TPH)

Description/Comments: Hazard statements taken from WM3 1st Edition 2015; Risk phrases: WM2 3rd Edition 2013
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: Flam. Liq. 3; H226 , Asp. Tox. 1; H304 , STOT RE 2; H373 , Muta. 1B; H340 , Carc. 1B; H350 , Repr. 2; H361d , Aquatic Chronic 2; H411

Appendix B: Rationale for selection of metal species

arsenic {arsenic trioxide}

Worst case species based on risk phrases

cadmium {cadmium sulfide}

Worst case species based on risk phrases

chromium {chromium(III) oxide (worst case)}

No hexavalent Cr recorded in samples

copper {dicopper oxide; copper (I) oxide}

Most likely common species

lead {lead compounds with the exception of those specified elsewhere in this Annex}

No hexavalent Cr recorded in samples

mercury {mercury dichloride}

Worst case species based on risk phrases

nickel {nickel dihydroxide}

Worst case species based on risk phrases

selenium {selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex}

Worst case species based on risk phrases

zinc {zinc sulphate}

No hexavalent Cr recorded in samples

cyanides {salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex}

Worst case species

Appendix C: Version

HazWasteOnline Classification Engine: WM3 1st Edition v1.2.GB - Oct 2021
HazWasteOnline Classification Engine Version: 2023.314.5806.10740 (10 Nov 2023)
HazWasteOnline Database: 2023.314.5806.10740 (10 Nov 2023)

This classification utilises the following guidance and legislation:
WM3 v1.2.GB - Waste Classification - 1st Edition v1.2.GB - Oct 2021
CLP Regulation - Regulation 1272/2008/EC of 16 December 2008
1st ATP - Regulation 790/2009/EC of 10 August 2009
2nd ATP - Regulation 286/2011/EC of 10 March 2011
3rd ATP - Regulation 618/2012/EU of 10 July 2012
4th ATP - Regulation 487/2013/EU of 8 May 2013
Correction to 1st ATP - Regulation 758/2013/EU of 7 August 2013
5th ATP - Regulation 944/2013/EU of 2 October 2013
6th ATP - Regulation 605/2014/EU of 5 June 2014
WFD Annex III replacement - Regulation 1357/2014/EU of 18 December 2014
Revised List of Waste 2014 - Decision 2014/955/EU of 18 December 2014
7th ATP - Regulation 2015/1221/EU of 24 July 2015
8th ATP - Regulation (EU) 2016/918 of 19 May 2016
9th ATP - Regulation (EU) 2016/1179 of 19 July 2016
10th ATP - Regulation (EU) 2017/776 of 4 May 2017
HP14 amendment - Regulation (EU) 2017/997 of 8 June 2017
13th ATP - Regulation (EU) 2018/1480 of 4 October 2018
14th ATP - Regulation (EU) 2020/217 of 4 October 2019
15th ATP - Regulation (EU) 2020/1182 of 19 May 2020
The Chemicals (Health and Safety) and Genetically Modified Organisms (Contained Use)(Amendment etc.) (EU Exit) Regulations 2020 - UK: 2020 No. 1567 of 16th December 2020
The Waste and Environmental Permitting etc. (Legislative Functions and Amendment etc.) (EU Exit) Regulations 2020 - UK: 2020 No. 1540 of 16th December 2020
GB MCL List - version 1.1 of 09 June 2021