

Intrusive Geoenvironmental and Geotechnical Site Assessment

NCP Car Park
Sackville Street
Manchester
M1 3LY

December 2025

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Executive Summary

TRC Companies Limited (TRC) was commissioned by Lysara Limited (the 'Client') to undertake a Tier 2 Geoenvironmental and Geotechnical Site Assessment at NCP Car Park, Sackville Street, Manchester, M1 3LY (hereafter referred to as the 'Site').

This Executive Summary is part of the complete report; and findings, opinions or conclusions in this Executive Summary are made in context with the complete report. TRC recommends that the user reads the entire report for all supporting information related to findings opinions and conclusions.

Executive Summary	
Site Details	
Client	Lysara Limited
Site Address & Grid Reference	NCP Car Park, Sackville Street, Manchester, M1 3LY Easting 384275, Northing 397861
Site Area	0.35 Ha
Proposed Development	23 electric vehicle charging spaces are proposed to be installed in the central eastern area of the Site. A substation and supportive infrastructure are proposed to be installed in the southern corner of the Site.
Site Setting	
Current Site Use	The Site currently comprises an NCP open-space car park.
Site History	A review of historical maps report that the Site comprised terraced buildings in 1848. By 1948 the terraced buildings appear to have been demolished and by 1964 the Site is labelled as a car park. This reflects its current land use.
Expected Geology (based on desk study Information)	Made Ground – Expected to be present due to historical land use. Superficial deposits – Till Devensian-Diamicton Bedrock geology – Chester Formation
Expected Hydrogeology (based on desk study Information)	Superficial deposits –Secondary (Undifferentiated) Aquifer Bedrock geology - Principal Aquifer The Site does not lie within a groundwater source protection zone. Groundwater is therefore considered to be moderately sensitive to contamination.
Expected Hydrology (based on desk study Information)	The nearest surface water feature is the Rochdale Canal which is located approximately 70m southeast of the Site. The River Medlock is located approximately 225m south of the Site. Surface water is therefore considered to be moderately sensitive to contamination.
Investigation Findings	
Ground Conditions	Made Ground was encountered between ground level and between 2.20m and at least 3.45m bgl, recording a thickness of at least 3.45m. The base of the Made Ground was only encountered in one location, at 2.20m bgl. Superficial deposits comprising Till was encountered between 2.20m and at least 3.00m bgl, recording a thickness of at least 0.80m. The base of the Till was not encountered. Bedrock was not encountered during this investigation.
Groundwater Conditions	Groundwater was not encountered during the ground investigation or during subsequent monitoring.

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Geotechnical Assessment	
Geotechnical Hazards	The ground investigation has identified a number of geotechnical hazards at the Site which relate to the proposed development. These are Made Ground to at least 3.45m bgl, buried obstructions, medium volume change potential of the Till, potential soil desiccation in the vicinity of vegetation and collapsible Made Ground soils. These are discussed in detail along with mitigation measures in section 6 of this report.
Foundations & Slabs	Ground improvement by way of excavation and recompaction to a suitable specification, Rapid Impact Compaction or High Energy Impact Compaction, vibro-stone columns (VSCs) or controlled modulus columns (CMCs), could be applied at the Site, to accommodate foundation needs, subject to cost and feasibility confirmation by a specialist contractor. Details of ground improvement options are discussed in section 6.4
Excavations	Excavations for shallow foundations, floor slabs, and laying services should be readily achievable using standard excavation plant. However, hard surfacing and old foundations may require the use of breaking apparatus. Obstructions were encountered in Made Ground in the form of cobbles and concrete slabs during the ground investigation. Dewatering measures such as local pumping of groundwater may be required for any perched groundwater might be encountered in Made Ground or Till. Details for anticipated excavations are provided in section 6.6.
Pavements	Following the application of a ground improvement technique as discussed previously in this report, proposed pavements and hardstanding could be safely constructed in accordance with suitable specification and design. Details for proposed pavements are provided in section 6.7 of this report.
Buried Concrete	With reference to BRE Digest SD1 (2005) and based on the ground investigation results, design sulphate classes of DS-1 and AC-1s ACEC classes are recommended for the Made Ground and the Till.
Soakaways	Soakaway testing was initially planned in boreholes, however given the thickness of the Made Ground and contaminants present in Made Ground, the testing was not undertaken as it would not have been in line with current guidance. Nevertheless, due to the underlying cohesive Till, shallow soakaways will likely not be feasible for future developments.
Contaminated Land Assessment	
Human Health	Exceedances of lead and some PAH compounds were detected within the soils underlying the Site, which exceeded the GAC for commercial end.
Controlled Waters	Groundwater samples were not able to be obtained from the Site as all monitoring wells were dry during both monitoring visits. Further investigation is recommended to assess any potential risks to controlled waters from contamination at the Site.
Ground Gas and Organic Vapour	Preliminary gas monitoring results indicate that the Site would be classified as Characteristic Situation 1 (very low risk). Further ground gas monitoring is recommended to confirm this classification. Based on the results of this assessment, further investigation of organic vapour risk from soils and groundwater would also be required.
Remediation	Based on the results of this assessment the following remediation/mitigation measures are considered to be required:

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	• Installation of buried services in corridors of clean soil Any works which have the potential to disturb asbestos must be undertaken in accordance with CAR 2012 and a Plan of Work will be required.

Recommendations

This report has attempted to provide recommendations for the proposed development, but further work will be required to fully quantify the risks and allow detailed design. Further work should comprise:

- Additional exploratory holes, ideally using a cable percussion (CP) rig, are recommended to delineate the sequence of strata beneath the proposed substation and electric charging units due to target depths not being reached during this investigation as deep Made Ground was recorded beneath the Site.
- The deeper CP boreholes will assist confirming the depth and properties of the Till across the Site and inform earthworks design and future ground improvement works.
- There are data gaps in the environmental investigation carried out at the Site. Sampling of natural soil was limited, and groundwater samples were also not able to be obtained. Therefore, further investigation is recommended to address these data gaps and further assess risks to human health and controlled waters at the Site.
- Additional investigation could be undertaken to delineate the extent of identified soil contamination. Ground gas monitoring data is also considered limited due to the amount of monitoring visits undertaken and the atmospheric pressure conditions during the visits. Whilst the Site has been classified as very low risk, further ground gas monitoring is recommended to confirm this.
- Early discussions with specialist ground improvement contractors are recommended to inform the foundation solution for the proposed development. The contents of this report should be made available for an informed decision.

1.0 Introduction

1.1 Appointment and Purpose

TRC Companies Limited (TRC) was commissioned by Lysara Limited (the 'Client') to undertake a Tier 2 Geoenvironmental and Geotechnical Site Assessment at NCP Car Park, Sackville Street, Manchester, M1 3LY (hereafter referred to as the 'Site').

A site location plan is presented as Figure 1 in Annex A.

This report has been prepared in accordance with TRC's proposal dated 02/10/2025 and the respective terms and conditions contained therein.

This Tier 2 report uses intrusive investigation methodologies to aid site characterisation and to inform the Client of potential environmental and geotechnical liabilities, identify risk, allow design development, and inform cost estimates.

It is expected that this report will be submitted as part of a future planning application for development of the Site, for a commercial land use, as discussed in detail in the following section.

1.2 Proposed Development

The Site is currently used as an open space car park. A total of 23 electric vehicle charging spaces are proposed to be installed in the central eastern area of the Site. A substation and infrastructure to support the electric vehicle charging spaces are proposed to be installed in the southern corner of the Site. The remainder of the Site will comprise standard vehicle parking spaces.

Based on the above and the anticipated site-specific ground conditions presented in this report, the proposed development is considered to fall into geotechnical category 1 with respect to BS EN 1997 (Eurocode 7).

The end user sensitivity is considered to be low for the proposed commercial end use.

A proposed development plan is presented as Figure 2 in Annex A.

1.3 Available Information & Standards

This report is based on the following information:

- Historical uses of the Site and surroundings;
- Current use and condition of the Site;
- Environmental setting in terms of geology, hydrogeology, hydrology and surrounding land uses;
- Relevant publicly available environmental records; and,
- Intrusive investigation including geoenvironmental and geotechnical sampling and testing.

This report was conducted with due regard to the following guidance and standards:

- The National Planning Policy Framework;
- BS5930:2015 (+A1:2020) Code of Practice for Ground Investigations;
- BS EN 1997 Eurocode 7;
- BS8485:2015 (+A1:2019) Code of Practice for the Design of Protective Measures for Methane and Carbon Dioxide Ground Gases for New Buildings;
- BS8576:2013 Guidance on Investigations for Ground Gas – Permanent Gases and Volatile Organic Compounds (VOCs);
- BS10175:2011 (+A2:2017) Investigation of Potentially Contaminated Sites – Code of Practice;
- Land Contamination: Risk Management (LCRM) 2020 (2025 update).

The geotechnical appraisal has been carried out in accordance with Eurocode 7. Sections 1 to 5, together with Annexes A to E, comprise the Ground Investigation Report.

Preliminary geotechnical recommendations are presented in Section 6 and these may need to be verified in a Geotechnical Design Report once structural details of the proposed development are confirmed.

1.4 Significant Assumptions

This report presents TRC's observations, findings, and conclusions as they existed on the date that this report was issued. This report is subject to modification if TRC becomes aware of additional information after the date of issue of this report that is material to its findings and conclusions.

The reliability of information provided by others to TRC cannot be guaranteed to be accurate or complete. Performance of this Tier 2 Geoenvironmental and Geotechnical Site Assessment is intended to reduce, but not eliminate, uncertainty of geoenvironmental and geotechnical conditions associated with the Site; therefore, the findings and conclusions made in this report should not be construed to warrant or guarantee the Site, or express or imply, including without limitation, warranties as to its marketability for a particular use. TRC found no reason to question the validity of information received unless explicitly noted elsewhere in this report.

1.5 User Reliance

This report was prepared for Lysara Limited. Reliance on this report by any other third party is subject to requesting and fully executing a reliance letter between TRC and the third party that acknowledges the TRC Standard Terms and Conditions with the Client, to the same extent as if they were the Client thereunder.

TRC has been provided with information from third parties for information purposes only and without representation or warranty, express or implied as to its accuracy or completeness and without any liability on such third parties part to revise or update the information. Where reliance has been provided by third parties to potential purchasers this is noted in our report.

2.0 The Site

2.1 Location

The Site comprises an approximate 0.35 ha plot of land located at NCP Car Park, Sackville Street, Manchester, M1 3LY, centred on National Grid Reference Easting 384275, Northing 397861, situated approximately 300m west of Piccadilly Station.

A site location plan is presented as Figure 1 in Annex A.

2.2 Site Description

The Site is located within an area of mixed land use.

The Site is a rectangular plot of land approximately 60m long by 50m wide located to the southwest of Sackville Street and the northwest of Bloom Street. The Site is currently an open space car park accessed from Bloom Street. The Site is covered by tarmac hardstanding with peripheral soft landscaping and mature trees along the northern, eastern and southern boundaries. The western boundary borders a bar and a separate car park.

The tarmac hardstanding was in poor condition and the surfacing undulated across the Site. The average Site level is approximately 42m above Ordnance Datum (aOD).

2.3 Surrounding Area

Land uses in the immediate vicinity include the following principal features:

Table 2.1: Summary of Surrounding Land Use

Direction	Land Use
North	Immediately north of the Site is Major Street and two multi storey hotel buildings.
East	Immediately west of the Site is Sackville Street and Manchester Coach Station.
South	Immediately south of the Site is Bloom Street and a row of terraced buildings comprising food and drink establishments.
West	Immediately west of the Site is a bar and additional car park.

2.4 Site Environmental Setting

2.4.1 Geology

Based on publicly available information (British Geological Survey), the Site is underlain by a variable thickness of Made Ground over superficial deposits of Till Devensian Diamicton and sandstone bedrock of the Chester Formation.

2.4.2 Hydrogeology

The British Geological Survey (BGS) geological mapping and hydrogeological mapping presented by DEFRA (MAGIC website) indicate the following hydrogeological information for the Site:

Table 2.2: Summary of Hydrogeology

Geology	Geological Description	Aquifer Status	Aquifer Description
Superficial Deposits: Till Devensian-Diamicton	Clay, sand, gravel, and boulders varying widely in size and shape	Secondary (Undifferentiated) Aquifer	Rock deposits (or strata) with variable permeability and storage proprieties that are neither consistently Secondary A nor Secondary B.
Bedrock: Chester Formation	Sandstone	Principal Aquifer	Geological strata that exhibit high intergranular and/or fracture permeability. They usually provide a high level of water storage and can support water supply and/or base flow to rivers, lakes and wetlands on a strategic scale.

The Site does not lie within a groundwater source protection zone.

2.4.3 Hydrology

The nearest surface water feature is the Rochdale Canal which is located approximately 70m southeast of the Site. The River Medlock is located approximately 225m south of the Site.

2.5 Summary of Site History

A review of historical maps report that the Site comprised terraced buildings in 1848. By 1948 the terraced buildings appear to have been demolished and by 1964 the Site is labelled as a car park. This reflects its current land use.

2.6 Previous Investigations, Reports or Remediation

No known previous assessments have been carried out at the Site.

3.0 Ground Investigation

3.1 Scheduled Scope of Works

The scheduled TRC Tier 2 investigation scope of works comprised the following:

- Five windowless sample boreholes (WS101-WS105) to a maximum depth of 5m below ground level (bgl);
- Nine TRL DCP tests (locations TRL101-TRL104, WS101-WS105) to a maximum depth of 1m bgl;
- Four pavement cores (PC101-PC104) with core logging and PAK marker testing;
- Three falling head permeability tests in boreholes;
- In-situ logging, ground sampling and testing;
- Field screening for contamination using a Photo-Ionisation Detector (PID);
- Construction of five gas and groundwater monitoring wells;
- Field monitoring of bulk ground gases and groundwater levels on two occasions; and,
- Collection of groundwater samples for laboratory testing.

3.2 Investigation Rationale

The ground investigation was specified by the the Client to gather information on the geoenvironmental and geotechnical ground, groundwater and ground-borne gas conditions at the Site.

The investigation aimed to gain good general coverage of the Site with focus on the areas of proposed development in the central eastern area and southern corner.

Table 3.1: Summary of Exploratory Hole Locations

Exploratory Hole	Location
WS101	Located in the northern corner of the Site.
WS102	Located in the eastern corner of the Site close to the proposed charging bays.
WS103	Located in the western corner of the Site.
WS104	Located in the centre of the Site close to the proposed charging bays.
WS105	Located in the southern corner of the Site close to the proposed substation.
TRL101	Located in the centre of the Site.
TRL102	Located in the western corner of the Site.
TRL103	Located in the southern corner of the Site close to the proposed substation.
TRL104	Located in the centre of the north-eastern boundary of the Site close to the proposed charging bays.
PC101	Located in the central northern area of the Site.
PC102	Located in the central eastern area of the Site close to the proposed charging bays.
PC103	Located in the centre of the south-western boundary of the Site.
PC104	Located in the centre of the south-eastern boundary of the Site.

3.3 Investigation Methodology

3.3.1 Ground Investigation

The TRC Tier 2 investigation was conducted at the Site on 6th November 2025.

TRC commissioned Geo Site Surveys to undertake the drilling and coring works at the Site. Each window sample borehole was advanced using a Competitor Dart drilling rig. The drilling works were overseen by a TRC engineer who performed field assessment and logging of the exploratory holes.

The works included the following key actions:

- Review of available underground services plans for the Site;
- Each of the proposed exploratory hole locations was cleared using a Cable Avoidance Tool (CAT) and ground penetrating radar (GPR) by an independent utilities surveyor;
- Window sample drilling and pavement coring was performed at each specified location by the drilling contractor, including in-situ geotechnical testing;
- TRL DCP testing was performed at each specified location by a TRC engineer;
- A UXO engineer supported the safe completion of the exploratory holes by use of a magnetometer ahead of drilling.
- On-site ground logging, testing, and assessment of potential indicators of contamination;
- Field screening using a PID;
- Collection of soil and groundwater samples for environmental and geotechnical laboratory analysis;
- Construction of gas and groundwater monitoring wells in three borehole locations (WS101, WS104 and WS105);
- Reinstatement of pavement cores; and,
- Surveying of the exploratory hole final locations.

The following alterations to exploratory hole depths were made during the course of the ground investigation:

- WS101 was terminated at 2m bgl and WS103 was terminated at 1.60m bgl due to obstructions within the Made Ground deflecting the drilling rods;
- WS102 was terminated at 0.30m bgl due to encountering a concrete slab;
- WS104 was terminated at 3m bgl due to collapsing strata;
- WS105 was terminated at 3.45m bgl due to a metallic anomaly being detected by the UXO engineer;
- The TRL DCP tests within WS105 and TRL103 were terminated at 0.14m and 0.73m bgl respectively due to encountering an obstruction;
- The TRL DCP test within WS102 was terminated at 0.17m bgl due to equipment failure;
- The TRL DCP tests within WS101 and TRL104 were not attempted due to equipment failure; and
- Due to the thickness of the Made Ground and the contaminants present in the Made Ground, the falling head tests were not undertaken as it would not have been in line with current guidance.

The exploratory hole location plan for the ground investigation undertaken, is presented as Figure 3 in Annex A.

Photographs taken during the investigation are presented in Annex B. The exploratory hole logs are presented in Annex C and include the in-situ sampling and testing undertaken at the Site.

3.3.2 Groundwater and Ground Gas Monitoring

The ground conditions encountered with respect to the response zone of the monitoring installations are summarised in the table below.

Table 3.2: Monitoring Wells Summary

Exploratory Hole	Response Zone (m bgl)	Response Zone Strata (m bgl)
WS101	0.50 – 1.50	Made Ground
WS104	0.50 – 1.50	Made Ground
WS105	1.00 – 2.00	Made Ground

Groundwater and ground gas monitoring was conducted by a TRC technician on two occasions. The dates of the monitoring visits were 19th and 24th November 2025.

During each visit, groundwater elevation and potential presence of any free phase oils was measured using an oil/water interface probe. Gas monitoring was undertaken using a portable gas analyser at each monitoring well head. The field assessment gathered data relating to the concentrations of permanent ground gases (e.g. methane, carbon dioxide, carbon monoxide and oxygen).

3.4 Geotechnical In-Situ Testing

In-situ testing was undertaken for geotechnical purposes. The details of the in-situ test results are presented in the logs within Annex C and in the field data within Annex D.

The site based geotechnical testing is summarised in the table below.

Table 3.3: In-situ Tests (Geotechnical)

Test Type and Standard	Number
Standard penetration test (BS EN ISO 22476-3:2005+A1:2011)	7
Hand penetrometer (in accordance with manufacturers guidelines – Controls Group)	2
Dynamic cone penetrometer (TRL Probe Method)	7

Any limitations to the in-situ testing that require consideration during the evaluation of the data are described in the following paragraphs.

Although the Standard Penetration Test (SPT) is a standardised test, uncorrected SPT 'N' values may display a considerable amount of scatter. Calibrated SPT hammers were used during the ground investigation and in our evaluation, presented in Section 5, the results have been normalised to 'N_{60}' in accordance with Eurocode 7.

The following SPT straddles two strata and so is considered to be representative of neither and has been discounted from subsequent analysis:

- WS104 at 2.00m bgl

The pocket penetrometer apparatus, due to operational reasons, provides only an estimate of the unconfined compressive strength and the undrained shear strength as is it less precise than other test methods, especially when undertaken on samples obtained from dynamic sampling equipment. Given the limitations of this test method, in isolation, it is only considered indicative of the undrained shear strength for foundation purposes. However, it can provide useful information on the relative intact strength of soils so as to assist with the assessment of desiccation.

The dynamic cone penetrometer (DCP) has been used to provide estimates of the in-situ CBR. Dynamic cone penetrometer testing provides an estimate of CBR rather than a direct measurement of this parameter. The DCP apparatus is better suited to coarser, stronger materials and so the accuracy of the results may be limited in soft and/or cohesive soils. In addition, as a handheld probe, it can be deflected or return anomalous readings due to obstructions or large particles. In addition, in-situ estimates of CBR value are influenced by the conditions that prevail at the time of testing, which may be different to those that prevail at the time of construction or over the lifetime of the pavement.

The above factors have been considered in the appraisal of geotechnical results presented in Section 5.

3.5 Geotechnical Laboratory Testing

Laboratory testing was undertaken for geotechnical purposes.

The geotechnical laboratory testing is summarised in the table below.

Table 3.4: Laboratory Tests (Geotechnical)

Test Type and Standard (BS 1377 unless stated differently)	Number
Water (moisture) content (BS EN ISO 17892-1)	2
Liquid and plastic limits and plasticity index (BS EN ISO 17892-12)	1
Water soluble sulphate content 2:1 aqueous extract (BRE SD1 2005)	3
Total sulphur content (BRE SD1 2005)	3
Acid soluble sulphate content (BRE SD1 2005)	3
Soil pH (BRE SD1 2005)	3

As with in-situ testing, it is necessary to consider the limitations associated with any laboratory testing and to review any potentially anomalous results. In all geotechnical tests the specimen is selected from a much larger volume of material which may have an inherent degree of variability, particularly in Made Ground.

Water content determinations on disturbed samples may not be representative due to the disturbance arising from the sampling process. Moisture content results can be influenced by climatic factors and it cannot be guaranteed that the values determined at the time of investigation will be the same as those at the time of construction.

The above factors have been considered in the appraisal of the geotechnical results given in Section 5.

The full set of laboratory geotechnical results is presented in Annex E.

3.6 Environmental Laboratory Analysis

A total of seven soil samples were collected for environmental analysis during the investigation works. All soil samples were packed in laboratory provided containers and delivered to i2 Analytical (i2) chemical analysis.

All soil samples were collected in order to provide environmental data on the quality of near surface and shallow soils beneath the Site. Representative samples of Made Ground / Fill and natural deposits were collected where feasible. The analytical suite of soils included the following parameters:

- Asbestos (Made Ground/Fill Materials only);
- Heavy metals suite;
- Polycyclic aromatic hydrocarbons (PAH);
- Polychlorinated biphenyls (PCB);
- Total petroleum hydrocarbons – Criteria Working Group (TPH-CWG); and,
- Waste acceptance criteria (WAC) testing.

4.0 Ground Conditions

4.1 Ground Profile

The investigation observed that the soils underlying the Site generally comprised the following:

Table 4.1: Ground Profile

Stratum	From		To		Thickness (m)
	m bgl	m aOD[1]	m bgl	m aOD[1]	
Made Ground	0.00	42.49/41.30	>3.45	<37.85	>3.45
Till Devensian-Diamicton *(hereafter referred to as 'Till')* *(WS104 only)*	2.20	39.78	>3.00	<38.98	Unknown

[1] *metres above Ordnance Datum (m aOD)*

The ground conditions encountered correspond with the publicly available records of ground conditions published by the British Geological Survey (BGS). Published BGS borehole records within or near the Site area found similar results.

4.2 Made Ground

Made Ground was encountered in all of the exploratory holes from ground level to depths between 2.20m and >3.45m bgl (39.78m to <37.85m aOD). The base of the Made Ground was only encountered within WS104 at a depth of 2.20m bgl. Made Ground thicker than 3.45m bgl cannot be ruled out.

Bituminous surfacing, crushed aggregate and/or concrete was encountered from surface level to a maximum depth of 0.50m bgl. The underlying Made Ground soils were heterogeneous in nature but generally comprised dark brown very clayey very gravelly SAND. Sand was fine to coarse grained. Gravel was angular to subrounded, fine to coarse grained and comprised brick and concrete. There was a variable cobble content of brick and concrete. Refusal due to obstructions was encountered within the Made Ground in the exploratory holes WS101, WS102 and WS103. The Made Ground soils collapsed in WS104 which led to early termination.

4.3 Till

Till was only encountered within WS104 from 2.20m to >3.00m bgl (39.78m to <38.98m aOD). The base of the Till was not recorded during the ground investigation.

The Till comprised stiff dark brown slightly silty CLAY.

4.4 Groundwater

Groundwater was not recorded during the site works nor during the post-fieldwork monitoring visits.

The local presence of limited groundwater within parts of the Made Ground or Till which include sand and silt fractions, cannot be ruled out.

Groundwater may be subject to seasonal variations especially after periods of prolonged rain or drought.

The groundwater monitoring data are presented in Annex D.

4.5 Visual and Olfactory Evidence of Contamination

No visual or olfactory evidence of contamination was encountered during the ground investigation.

4.6 Pavement Cores

Four pavement cores were taken from across the Site. The cores were logged and tested for the presence of tar using a PAK marker spray test.

The pavement cores ranged in thickness from 0.50m to 0.70m thick. They generally comprised grey to black asphalt with an angular to sub-angular, fine to coarse aggregate of limestone. Sandstone and brick aggregate was present within the core retrieved from borehole WS101. Small to medium voids were present in all cores with voids percentage ranging between 1% and 10%.

PAK marker testing was undertaken with a tar spray. This test indicates the presence of polyaromatic compounds typically associated with tar. A positive tar spray test result strongly suggests (but does not conclusively confirm) the presence of tar. All pavement cores tested positive indicating they contain tar. Follow up PAH testing should be undertaken to confirm this.

The pavement core logging and testing results are presented in full in Annex C.

5.0 Geotechnical Assessment

5.1 Strata Properties

5.1.1 Made Ground

Bituminous surfacing, crushed aggregate and/or concrete was encountered from surface level to a maximum depth of 0.50m bgl. The underlying Made Ground soils were heterogeneous in nature but generally comprised dark brown very clayey very gravelly SAND. Sand was fine to coarse grained. Gravel was angular to subrounded, fine to coarse grained and comprised brick and concrete. There was a variable cobble content of brick and concrete. Refusal due to obstructions was encountered within the Made Ground in the exploratory holes WS101, WS102 and WS103. The Made Ground soils collapsed in WS104 which led to early termination.

Six SPTs conducted in the Made Ground, yielded N_{60} values ranging between 0 and 28, indicating the very loose to medium dense nature of the material. The results are presented on Figure 4, Annex A.

Seven dynamic cone penetrometer (DCP) tests using a TRL probe, were undertaken within the Made Ground. The CBR values ranged between 4% and >100%. The results are presented in Annex D.

One moisture content test undertaken on a sample of the Made Ground recorded a value of 13.5%.

Table 5.1: Summary of Ground Parameters for Made Ground

Soil Parameters	Number of Tests	Range of Results	Characteristic Value[1]
Moisture Content (%)	1	13.5	-
California Bearing Ratio (%)	7	4->100	3
SPT N_{60} Values	6	0-28	Refer to Figure 4 in Annex A

1. Cautious estimate

5.1.2 Till

The Till was only encountered in one location and comprised stiff dark brown slightly silty CLAY.

No SPTs were conducted within the Till due to its limited presence in the boreholes.

One moisture content test undertaken on a sample of the Till recorded a value of 22.7%.

One Atterberg limits test undertaken on a sample of the Till recorded values of 43% for the liquid limit, 20% for the plastic limit, and 23% for the plasticity index. The modified plasticity index was 21%. The results indicate that the Till is of intermediate plasticity and of medium volume change potential (VCP) in accordance with NHBC Standards. Desiccation could exist given the trees surrounding the Site, however due to the depth that the Till was recorded and the limited test data available to-date, desiccation will likely not be an issue at this Site, but additional future testing would be useful to clarify this matter.

Two in-situ pocket penetrometer tests were undertaken on the Till, which yielded undrained shear strength values of 65kPa and 222kPa, indicating the stiff to very stiff nature of the stratum.

Table 5.2: Summary of Ground Parameters for Till

Soil Parameters	Number of Tests	Range of Results	Characteristic Value[1]
Liquid Limit (%)	1	43	43
Plastic Limit (%)	1	20	20
Plasticity Index (%)	1	23	23
Modified Plasticity Index (%)	1	21	21
Plasticity	1	CI	CI
Volume Change Potential (NHBC)	1	Medium	Medium
Moisture Content (%)	1	22.7	-
Undrained Shear Strength (kN/m^2) *(Pocket penetrometer only)*	2	65-222	-

1. Cautious estimate

5.2 Buried Concrete

Three soil samples, comprising two from the Made Ground and one from the Till were subjected to pH and water-soluble sulphate determinations.

The characteristic value of water-soluble sulphate was 246 mg/l for Made Ground and 42.8 mg/l for the Till.

Three soil samples, comprising two from the Made Ground and one from the Till were subjected to total sulphur and acid soluble sulphate content testing to allow an assessment to be made in relation to the potential thaumasite form of concrete attack. None of the oxidisable sulphides values calculated for either the Made Ground or Till were in excess of 0.3%. Consequently, the results are not considered indicative of significant risk from this form of concrete attack. A modification to DS class is therefore not proposed for the Made Ground or Till.

The characteristic value of pH was 8.1 for the Made Ground and 7.9 for the Till.

Overall, with reference to the BRE Digest SD1 (2005), and considering the results of the soil samples, DS Class DS-1 and ACEC Class AC-1s is appropriate for both the Made Ground and the Till.

Static groundwater and brownfield conditions have been considered in this assessment in accordance with the ground investigation findings.

As noted in chapter 7, concentrations of hydrocarbons exceeding the GACs were detected in soil samples (both Made Ground and natural soils). Some preliminary advice is provided in the following paragraphs with regards to the effect of hydrocarbon contamination on foundation concrete.

Wilson et al. (2001) conducted tests to investigate the effect of hydrocarbon contamination on foundation concrete. The results indicated that petroleum hydrocarbons reduce the long-term strength gain of concrete by up to 25%. This can be allowed for in design, thus avoiding the need for expensive sleeving or surface protection systems. Available evidence suggests that the effects of petroleum hydrocarbons on hardened concrete, which has achieved its design strength, are of limited concern. Creosote, however, can affect hardened concrete that has achieved its design strength. Where hardened concrete is likely to come into contact with creosote derived contamination, a reduction in long-term strength should be considered.

Alfach and Wilkinson (2020) looked at the effect of crude-oil-contaminated soil on the geotechnical behaviour of piled foundations. This was a parametric study conducted using numerical analyses (finite element). The research concluded that oil contamination of soils adversely affected the geotechnical behavior of the soil supporting piles. It also reported that as the oil content of soil increases the hydraulic permeability reduces.

6.0 Geotechnical Recommendations

6.1 General

Twenty-three electric vehicle charging spaces are proposed to be installed in the central eastern area of the Site. A substation and infrastructure to support the electric vehicle charging spaces is proposed to be installed in the southern corner of the Site. The remainder of the Site will comprise standard vehicle parking spaces. Current proposals are indicated in Figure 2 in Annex A.

Details of the proposed structures, anticipated loadings and serviceability criteria were under development at the time of the writing of this report, which is based on a preliminary investigation. Further investigation may be required once proposals are fully developed and a detailed Geotechnical Design Report may need to be prepared.

The primary purpose of this report is to identify risk, allow design development and inform cost estimates. This report does not constitute a detailed design report for the proposed development.

For the purposes of this assessment, TRC assumed that finished ground levels will be at, or close to, existing ground levels. Otherwise, a proposed cut and fill plan should be made available and this assessment be revisited to examine potential changes in recommendations.

6.2 Geotechnical Hazards

The current ground investigation has identified a number of geotechnical hazards at the Site which relate to the proposed development. These are summarised below and are discussed in more detail in the following sections along with mitigation measures where appropriate.

- Made Ground recorded to depths of at least 3.45m. Thicker Made Ground cannot be ruled out to be present across the Site;
- Buried obstructions, such as hardstanding, and cobbles in Made Ground and Till;
- Medium volume change potential of the Till;
- Potential soil desiccation of the Till in the vicinity of vegetation;
- Collapsible Made Ground soils in excavations.

6.3 Foundations

As described in section 4, the Site is underlain by Made Ground to at least 3.45m bgl over Till to greater depths. The base of the Till was not encountered during the ground investigation.

The Made Ground, unless treated to an appropriate specification, is not considered a competent foundation stratum due to its lithological variability and poor engineering properties. As such, the Made Ground cannot support the foundation requirements for the proposed substation and the car park spaces.

It is therefore considered that a ground improvement solution would be the most suitable option for the Site. The final selection of foundation methodology would likely be dependent on a cost versus benefit analysis.

6.4 Ground Improvement

Ground improvement will enable shallow foundations to be used for the proposed development. The advice of reputable specialist contractors experienced in the ground conditions discussed in this report should be sought. They should be responsible for the selection of appropriate equipment and the final design of the treatment.

Given below is a discussion in relation to forms of ground treatment, commonly adopted in the UK which may be suitable for the proposed scheme.

Based on the available limited ground investigation information, excavation to about 1.50-2.00m depth and recompaction of the mostly granular Made Ground to a suitable specification such the SHW 600 series, should provide a competent foundation stratum for the proposed development.

An alternative to excavation and recompaction of the Made Ground, could be the employment of a dynamic compaction method such as the Rapid Impact Compaction or the High Energy Impact Compaction applicable from the ground surface. The feasibility of these methods will need to be confirmed by specialist contractors, as ground vibration and noise involved in the process may not allow their use due to the dense built-up area in proximity.

Alternative methods, albeit more expensive, to treat the Made Ground are discussed in the following paragraphs.

The Site is considered likely to be amenable to treatment by the formation of vibro-stone columns (VSC). Upon treatment an allowable bearing capacity in the region of 125-150kN/m^2 is anticipated subject to confirmation by a specialist contractor.

Controlled Modulus Columns (CMC) is a non-vibratory technique and could be applied to this Site to fully treat the Made Ground to the top of the competent Till and avoid ground vibrations in view of the surrounding built-up environment.

Asbestos contamination has been encountered in the Made Ground, as discussed in section 7. This may have particular implications for the use of a ground improvement method. However, additional ground investigation by way of trial pitting may enable such matters to be reconsidered.

The presence of obstructions or cobbles recorded during the ground investigation within the Made Ground and potentially Till, should be considered in the selection of the most appropriate treatment method.

Unless the finally selected treatment scheme deals with the volume change potential of the soils on-site, in the vicinity of retained, removed or proposed vegetation, final foundation depths and heave precautions are recommended to be considered in accordance with Chapter 4.2 of the NHBC Standards, based on a medium volume change (shrink-swell) potential of the Till. The foundations should also be taken below any desiccated soils and 300mm below any live roots, as may be encountered during construction, in cohesive soils.

6.5 Floor Slabs

Use of ground-bearing floor slabs following a ground improvement technique is likely to be the most cost-effective solution for the proposed substation, provided that the required settlement tolerances can be achieved and the finally selected ground treatment solution deals with the medium volume change potential of the Site soils in the vicinity of any retained, removed, or proposed vegetation. Advice from a specialist ground treatment contractor should be sought once the required floor loadings and settlement tolerances are known.

6.6 Excavations

Excavations for shallow foundations and laying services should be readily achievable using standard excavation plant. However, hard surfacing and old foundations may require the use of breaking apparatus. Obstructions were encountered in Made Ground in the form of cobbles and concrete slabs during the ground investigation.

For any load bearing formations, careful inspection should be undertaken to ensure placement in competent natural strata unless ground treatment has been carried out and properly validated. Any soft spots identified should be excavated and replaced with compacted granular fill or lean mix concrete. Concrete should be placed as soon as possible following excavation to avoid softening of the ground. A similar recommendation is also made for road pavement formations, although compacted granular fill could be used instead of concrete.

Any relic foundations or other subterranean structures beneath the footprint of the proposed buildings should be fully grubbed out. Such excavations should be surveyed and backfilled with an acceptable granular fill, placed and compacted to an engineering specification. The same recommendations are made for excavations that may be required to remove soil contamination.

It may be impractical to remove some obstructions, such as former piles etc., beneath engineered fill. These should be adequately surveyed, and their locations accurately recorded. In this case, any retained relic structure or obstructions should be a minimum of 2m beneath the underside of proposed building foundations.

In areas of road pavements and hard standing, relic subterranean structures should be broken down to around 1m below finished Site level to minimise the risk of differential settlement due to the presence of hard spots. In soft landscaped areas it may be possible to limit such operations to 0.50m bgl.

Stability in excavation faces in Made Ground cannot be relied on and allowance should be made for battering faces back to a safe angle of repose or providing shuttering. Support or battering of the excavation faces to a safe angle of repose will be required for all excavations where man entry is necessary, the nature and extent of which will need to be evaluated under CDM regulations.

Groundwater was not encountered during ground investigation or monitoring. Thus, it is considered that any excavations to approximately 3.45m are anticipated to be dry, although local perched water within Made Ground or Till cannot be ruled out. Measures such as localised pumping of groundwater may be required for any shallow perched groundwater.

Groundwater levels vary seasonally and the timing of the construction programme may influence the volumes of groundwater that need to be managed. The developer should also consider the impact of weather and potential for rainwater and surface run-off to accumulate within excavations.

Water pumped from excavations may require pre-treatment prior to discharge. This could include settlement tanks to reduce silt and suspended solids. Contamination has been identified at the Site, therefore further filtration or other such treatment during the construction stage is considered likely, if perched water be encountered. The contractor should consult with the local water authority and/or Environment Agency to obtain necessary discharge consents and agree the scope of pre-treatment prior to any discharge required.

6.7 Pavements

The variable thickness of the Made Ground and the medium volume change potential of the natural site soils may create settlement issues at the Site. Following the application of a ground improvement technique as discussed previously in this report, proposed pavements and hardstanding could be safely constructed in accordance with suitable specification and design. R

Assuming excavation formation soils to comprise Made Ground and based on the formation preparation outlined above, an equilibrium CBR value of 3% is recommended for preliminary design purposes. Higher CBR values would be applicable following a ground improvement technique.

Confirmatory in-situ CBR testing at final formation level is recommended just prior to pavement construction.

6.8 Buried Concrete

In the consideration of sulphate attack on buried concrete, reference has been made to BRE Digest SD1 (2005) which classifies the Site as a brownfield site with static groundwater conditions. Additionally, as Made Ground and Till can be pyrite bearing, it has also been necessary to assess the potential for the thaumasite form of attack in case these strata are disturbed.

Based on the results of the concrete classification tests design sulphate classes of DS-1 for the Made Ground and the Till are recommended. Further, considering the pH values, ACEC Classes of AC-1s for the Made Ground and Till are recommended.

As noted in chapter 7, concentrations of hydrocarbons exceeding the GACs were detected in soil samples (both Made Ground and natural soils). Some preliminary advice is provided in section 5.2 with regards to the effect of hydrocarbon contamination on foundation concrete.

6.9 Soakaway Potential

Soakaway testing was initially planned in boreholes, however given the thickness of the Made Ground and contaminants present in Made Ground, the testing was not undertaken as it would not have been in line with current guidance. Nevertheless, due to the underlying cohesive Till, shallow soakaways will likely not be feasible for future developments.

6.10 Recommendations for Further Work

The preceding sections have attempted to provide recommendations for the proposed development, but further work will be required to fully quantify the risks and allow detailed design. Further work should comprise:

- Additional exploratory holes, ideally using a cable percussion rig, are recommended to further delineate the sequence of strata beneath the proposed substation and electric charging units to determine a suitable founding stratum. The deep boreholes will assist confirming the depth and properties of the Till across the Site and inform earthworks design and future ground improvement works.
- Early discussions with specialist ground improvement contractors are recommended to inform the foundation solution for the proposed development. The contents of this report should be made available for an informed decision. Additional ground investigation information may be requested by the specialist contractors to inform their design.

7.0 Human Health Risk Assessment

7.1 Soil Assessment

In order to appraise the significance of the concentrations reported by laboratory testing, TRC has assessed each contaminant species that is elevated above the laboratory method detection limits (MDL) against published screening criteria referred to as Generic Assessment Criteria (GAC). GACs are derived from the following reference material:

- Land Quality Management Limited and Chartered Institute of Environmental Health (November 2014), the LQM/CIEH S4ULs for Human Health Risk Assessment. Document reference: S4UL3435;
- Development of Category 4 Screening Levels for assessment of land affected by contamination – SP1010 (September 2014);
- LQM S4ULs: evaluation of 2017USEPA Toxicological Review of Benzo(a)pyrene; and,
- LQM/CIEH S4ULs for Nickel according to land use (revised August 2015).

TRC has selected GACs for a commercial or industrial land use, based on the proposed development being for the continued use of the Site, as a car park.

A conservative value of 1% of soil organic matter (SOM) has been assumed based on the soil type.

A summary of the laboratory data and the screening tables with relevant GACs is presented in Annex G.

7.2 Heavy Metals

Concentrations of heavy metals were detected in soil samples (both Made Ground and natural soils). Concentrations exceeding the GACs are presented in the table below.

Table 7.1: Summary of Metal Exceedances in Soil

Contaminant	GAC (mg/kg)	Maximum Concentration (mg/kg)	Location of Maximum Concentration	No. of Exceedances
Lead	2330	4300	WS104	1

7.3 Hydrocarbons

Concentrations of hydrocarbons were detected in soil samples (both Made Ground and natural soils). Concentrations exceeding the GACs are presented in the table below.

Table 7.2: Summary of Hydrocarbon Exceedances

Contaminant	GAC (mg/kg)	Maximum Concentration (mg/kg)	Location of Maximum Concentration	No. of Exceedances
Benzo(b)fluoranthene	44	250	WS104	1
Benzo(a)pyrene	35	190	WS104	2
Benzo(ghi)perylene	3.5	17	WS104	2

7.4 Asbestos

Asbestos fibres in soil were encountered within two samples analysed in the Made Ground. These samples were WS101 at 0.5m and WS103 at 0.5m bgl. WS101 was found to contain chrysotile with a quantification of 0.002% and WS103 was found to contain crocidolite with a quantification of 0.002%.

7.5 Polychlorinated Biphenyls

Polychlorinated biphenyls (PCB) were tested for in three samples – WS102 at 0.20m, WS104 at 0.80m and WS105 at 0.60m bgl. WS104 recorded PCB concentrations below the laboratory limit of detection. However, WS102 and WS105 recorded PCB concentrations of 0.035mg/kg and 30mg/kg respectively.

7.6 Discussion

Concentrations of lead and PAHs were identified within both Made Ground and natural soils within WS104. Concentrations were higher in the Made Ground sample. There is potential for contamination within the Made Ground to be leaching into the natural soils. It is possible that this contamination has arisen from the Site's continued use as a car park for over 60 years.

PCB contamination was also identified within two samples. The source of this contamination is unknown as there is no evidence of electrical infrastructure being historically present on site.

It is recommended that additional works are carried out to further assess the contamination at the Site. Deeper drilling is recommended to obtain further natural soil samples.

Asbestos was identified within two samples of Made Ground, both with a quantification of 0.002%. This asbestos does not pose a risk to future site users as the Site will be covered in hardstanding which will act as a barrier. However, there is potential for asbestos to be disturbed during the construction phase. Any works which have the potential to disturb asbestos must be carried out under Control of Asbestos Regulations (CAR) 2012, and a Plan of Works must be in place.

8.0 Controlled Waters Risk Assessment

Groundwater samples were not able to be obtained from the Site as all monitoring wells were dry during both monitoring visits.

The Site is underlain by superficial deposits of Till which are classified as a secondary (undifferentiated) aquifer, and sandstone bedrock of the Chester Formation which is classified as a principal aquifer. The nearest surface water feature is the Rochdale Canal which is located approximately 70m southeast of the Site. The River Medlock is located approximately 225m south of the Site. Further investigation is recommended to assess any potential risks to these controlled waters from contamination at the Site.

9.0 Ground Gas and Organic Vapour Risk Assessment

A preliminary ground gas risk assessment has been undertaken in accordance with British Standard BS 8485:2015+A1:2019 to assess the impact of permanent ground gases upon the proposed development.

The dataset is considered to be limited. Only two monitoring visits were carried out, therefore, the ground gas assessment is considered to be preliminary.

9.1 Ground Gas Assessment

Field monitoring for permanent ground gases was performed at six monitoring well locations on two occasions on the 19th and 24th November 2025. The maximum concentrations are summarised in the table below and the complete monitoring data are provided within Annex D.

Table 9.1: Summary of Gas Monitoring Results

Location	Maximum Methane Concentration (%v/v)	Maximum Carbon Dioxide Concentration (%v/v)	Minimum Oxygen Concentration (%v/v)	Maximum Flow Rate (l/hr)
WS101	<0.1	0.4	20.1	0.0
WS104	<0.1	1.3	18.6	0.0
WS105	<0.1	0.8	19.2	0.0

Methane was not detected in any of the monitoring wells during the two monitoring visits.

Carbon dioxide was detected in all of the monitoring wells on both visits with concentrations ranging from 0.4% to 1.3%.

Oxygen concentrations were minorly depleted in the monitoring wells and was noted to correlate to higher carbon dioxide concentrations in these monitoring wells.

No flow was detected in any of the monitoring wells on either monitoring visit.

TRC has assessed the permanent ground gas concentrations in accordance with current guidance (BS8485:2015). Based on the results, the Site would be classified as Characteristic Situation 1 (very low risk).

9.2 Organic Vapour from Soil Assessment

For hydrocarbons and other VOCs the LQM S4ULs are considered to be protective of human health from indoor inhalation of organic vapour. Based on the results presented in section 7, there were exceedances of some PAHs within WS104, and further assessment will be required.

Elevated PID readings were not identified during the ground investigation.

9.3 Organic Vapour from Groundwater Assessment

The risk from organic vapour from groundwater was not able to be assessed as all monitoring wells were dry during both monitoring visits and no groundwater samples were able to be obtained.

9.4 Discussion

Based on the results of this preliminary assessment, the Site would be classified as Characteristic Situation 1 (very low risk). It is considered that ground gas protection would not be required at the proposed

development. Due to the limited amount of data available, two further rounds of gas monitoring are recommended to confirm the risk rating for the Site.

Based on the results of this assessment, further investigation of organic vapour risk from soils and groundwater would also be required.

10.0 Contaminated Land Risk Assessment

The methodology of this risk assessment uses the source-pathway-receptor pollutant linkage to provide a qualitative appraisal of environmental risks and potential liabilities associated with soil and groundwater contamination at the Site. The conceptual site model (CSM) has been prepared considering the proposed end use as a car park with electric vehicle charging points.

10.1 Sources of Contamination

The ground investigation performed at the Site by TRC identified the following sources of contamination:

- Lead and PAHs in excess of GAC in Made Ground in WS104
- Asbestos fibres in soil in Made Ground in WS101 and WS103
- PCB concentrations in WS102 and WS105

10.2 Pathways

Based on the information presented in this report the following potentially active pathways have been identified.

- Dermal contact or ingestion with soil
- Inhalation of soil dust or respirable fibres of asbestos
- Contact with buried services

10.3 Receptors

Based on the information presented in this report the following receptors have been identified.

- Future site users could come into contact with soil contamination in areas of soft landscaping
- Neighbouring site users could come into contact with contaminated soil dust
- Construction and maintenance workers could be exposed to contamination during groundworks and future maintenance works
- Construction materials could come into contact with contamination in the ground

10.4 Revised Conceptual Site Model

The following CSM has been prepared to take into consideration the findings from the intrusive investigation.

Table 10.1: Revised Conceptual Site Model

Source	Pathway	Receptor	Risk
Lead and PAHs in excess of GAC in Made Ground in WS104 Asbestos fibres in soil in Made Ground in WS101 and WS103 PCB concentrations in WS102 and WS105	Dermal contact, ingestion and inhalation pathways	Future site users	**Low** The proposed development will be covered by hardstanding which will act as a physical barrier between the contamination and future site users.
		Neighbouring site users	**Low** Neighbouring site users could be exposed to contaminated soil dust and/or respirable fibres of asbestos, particularly during the construction phase. Mitigation measures could include

Source	Pathway	Receptor	Risk
			construction site management solutions such as dust control.
		Construction and maintenance workers	**Low to Moderate** Risk pathway to be mitigated via Personal Protective Equipment (PPE), good hygiene practices and construction site management. Any works which may disturb asbestos must be undertaken in accordance with the Control of Asbestos Regulations (CAR) 2012 and a Plan of Work will be required to manage risks from asbestos.
	Contact with buried services	Buried services	**Low** Proposed development to consider risk of residual contamination and incorporate protective measures as appropriate. This may include clean service corridors and/or use of chemically resistant pipework.

10.5 Remediation and Mitigation

Any works which may disturb asbestos must be undertaken in accordance with the Control of Asbestos Regulations (CAR) 2012 and a Plan of Work will be required to manage risks from asbestos.

Bedding, backfill and surround to all new below ground services should be within clean imported materials such that installation of new pipework and future maintenance is in clean soil.

10.6 Data Gaps

Due to ground conditions encountered at the Site, only one natural soil sample was able to be obtained. Groundwater was not encountered during the investigation and groundwater samples were not able to be obtained. Further investigation is recommended to address these data gaps.

Ground gas monitoring data is also considered limited due to the amount of monitoring visits undertaken (two) and the rising atmospheric pressure conditions during the visits. Whilst the Site has been classified as very low risk, further ground gas monitoring is recommended to confirm this.

11.0 Off-Site Disposal

Any materials which are to be removed from Site need to be classified in terms of waste disposal and export.

11.1 Landfill Acceptance

Waste acceptance criteria (WAC) testing has been undertaken on three samples of Made Ground as part of this assessment. This test is specifically applicable for landfill acceptance. For the purposes of this assessment, it is assumed that the material classifies as non-hazardous. TRC have not been made aware that soil will need to be disposed of as part of the proposed development. However, a request was made for TRC to undertake WAC testing.

The results for material classifying as non-hazardous should be compared with the inert waste landfill WAC limit values to determine if the material is suitable for disposal at an inert waste landfill site. If the inert waste landfill WAC limit values are exceeded, then the material must be disposed of at a non-hazardous waste landfill site. There are no WAC limit values for non-hazardous waste destined for disposal in a non-hazardous waste landfill site.

One sample (WS102 at 0.20m bgl) did not exceed the inert waste landfill WAC limit values suggesting the material should be suitable for disposal to an inert waste landfill site.

Two samples (WS104 at 0.80m and WS105 at 0.60m bgl) exceed the inert waste threshold. WS104 exceeds for pH and total PAHs, and WS105 exceeds for pH and total PCBs. These materials should not be considered suitable for disposal to an inert waste landfill site and should be disposed of to a non-hazardous waste landfill site.

Natural uncontaminated soils should be considered suitable for disposal to an inert waste landfill site, with the exception of Peat and Topsoil which are excluded from the inert waste classification due to their organic content.

Mixing of hazardous waste is prohibited and hazardous and non-hazardous waste must be segregated on site.

All non-hazardous soils require pre-treatment prior to disposal. Effective pretreatment, involving separation, sorting and screening can offer cost reductions.

Costs for disposal of non-hazardous and hazardous soils are significant compared to disposal of inert material.

The proposed receiving landfill site(s) should be provided with a copy of the laboratory test results, including the WAC test results, and the waste classification report in order to confirm the waste classification and that they are suitably permitted to accept the waste.

11.0 Summary and Conclusions

11.1 Findings

The Site is currently used as an open-space car park which is proposed to be redeveloped to include a substation and electric vehicle charging stations. BGS data states that the Site is underlain by superficial deposits of Till which are classified as a secondary (undifferentiated) aquifer, and sandstone bedrock of the Chester Formation which is classified as a principal aquifer. The nearest surface water feature is the Rochdale Canal which is located approximately 70m southeast of the Site. The River Medlock is located approximately 225m south of the Site.

The intrusive investigation found that the Site is underlain by a variable thickness of Made Ground to depths of between 2.20m and >3.45m bgl, underlain by Till. Groundwater was not encountered during the investigation or subsequent monitoring.

11.2 Summary of Geotechnical Assessment

The primary purpose of this assessment is to identify geotechnical risk, allow design development and inform cost estimates. This report does not constitute a detailed geotechnical design report for the proposed development.

The ground investigation has identified a number of geotechnical hazards at the Site which relate to the proposed development. These are Made Ground to at least 3.45m bgl, buried obstructions, medium volume change potential of the Till, potential soil desiccation in the vicinity of vegetation and collapsible Made Ground soils. These are discussed in detail along with mitigation measures in section 6 of this report.

Ground improvement by way of excavation and recompaction to a suitable specification, Rapid Impact Compaction or High Energy Impact Compaction, vibro-stone columns (VSCs) or controlled modulus columns (CMCs) could be applied at the Site, subject to cost and feasibility confirmation by a specialist contractor. Details of ground improvement options are discussed in section 6.4.

Recommendations about proposed floor slabs, excavations, classification for buried concrete design, and proposed pavements for the development are given in sections 6.5 to 6.8.

Due to the thickness of the Made Ground and the contaminants being present in the Made Ground, falling head testing was not undertaken in the boreholes as it had been originally planned, as it would not have been in line with current guidance. Due to the underlying cohesive Till, shallow soakaways will likely not be feasible for future developments, as discussed in section 6.9.

Additional work is recommended to further clarify matters related to geotechnical hazards, as discussed in detail in section 6.10.

11.3 Summary of Contaminated Land Risk Assessment

11.3.1 Soil

Concentrations of lead and some PAH compounds exceeded the GAC for the proposed commercial end use. Elevated PCB concentrations were also identified at the Site. However, there is not considered to be a potential risk to end users of the Site which will be covered in its entirety by hardstanding. There may still be a risk to construction and maintenance workers and neighbouring site users during the construction phase.

Asbestos fibres were identified within two samples of Made Ground (WS101 and WS103). Asbestos quantification was undertaken on these samples and identified a concentration of 0.002% fibres in soil at both locations. The asbestos identified in the samples tested is considered to pose a low risk to future site users as the Site will be predominantly covered in hardstanding. However, asbestos in soil is considered to be a potential risk to future construction and maintenance workers if not adequately addressed. Any work which

may disturb asbestos must be undertaken in accordance with the Control of Asbestos Regulations (CAR) 2012 and a Plan of Work will be required to manage risks from asbestos.

11.3.2 Groundwater

Groundwater samples were not able to be obtained from the Site as all monitoring wells were dry during both monitoring visits. Further investigation is recommended to assess any potential risks to controlled waters from contamination at the Site.

11.3.3 Ground Gas and Organic Vapour

Based on the results of this preliminary assessment the Site would be classified as Characteristic Situation 1 and no ground gas protection measures would be required for the proposed development. Additional ground gas monitoring is recommended to confirm this classification.

Based on the results of this preliminary assessment organic vapour protection measures may be required. However, further assessment is required.

11.3.4 Remediation and Mitigation Measures

Based on the results of the results of the generic risk assessments undertaken remediation the following remediation/mitigation measures are recommended:

- Installation of buried services in corridors of clean soil

Any work which have the potential to disturb asbestos must be undertaken in accordance with CAR 2012 and a Plan of Work will be required.

11.4 Recommendations

There are data gaps in the investigation carried out at the Site. Sampling of natural soil was limited, and groundwater samples were also not able to be obtained. Therefore, further investigation is recommended to address these data gaps and further assess risks to human health and controlled waters at the Site.

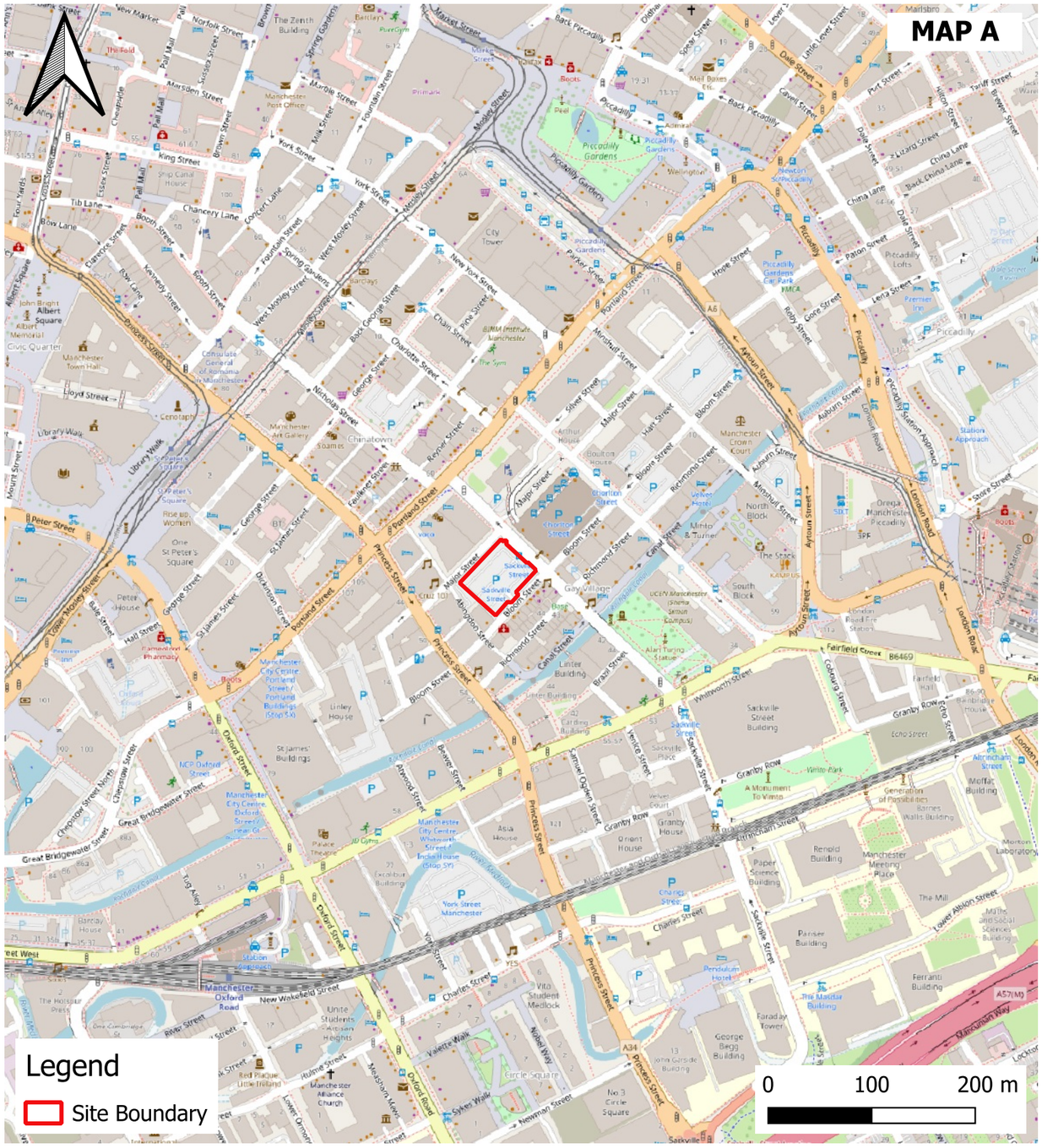
Additional investigation could be undertaken to delineate the extent of identified soil contamination. Should the development proposal require soils to be removed from the Site, then delineation of soils requiring disposal at a non-hazardous waste landfill may be beneficial.

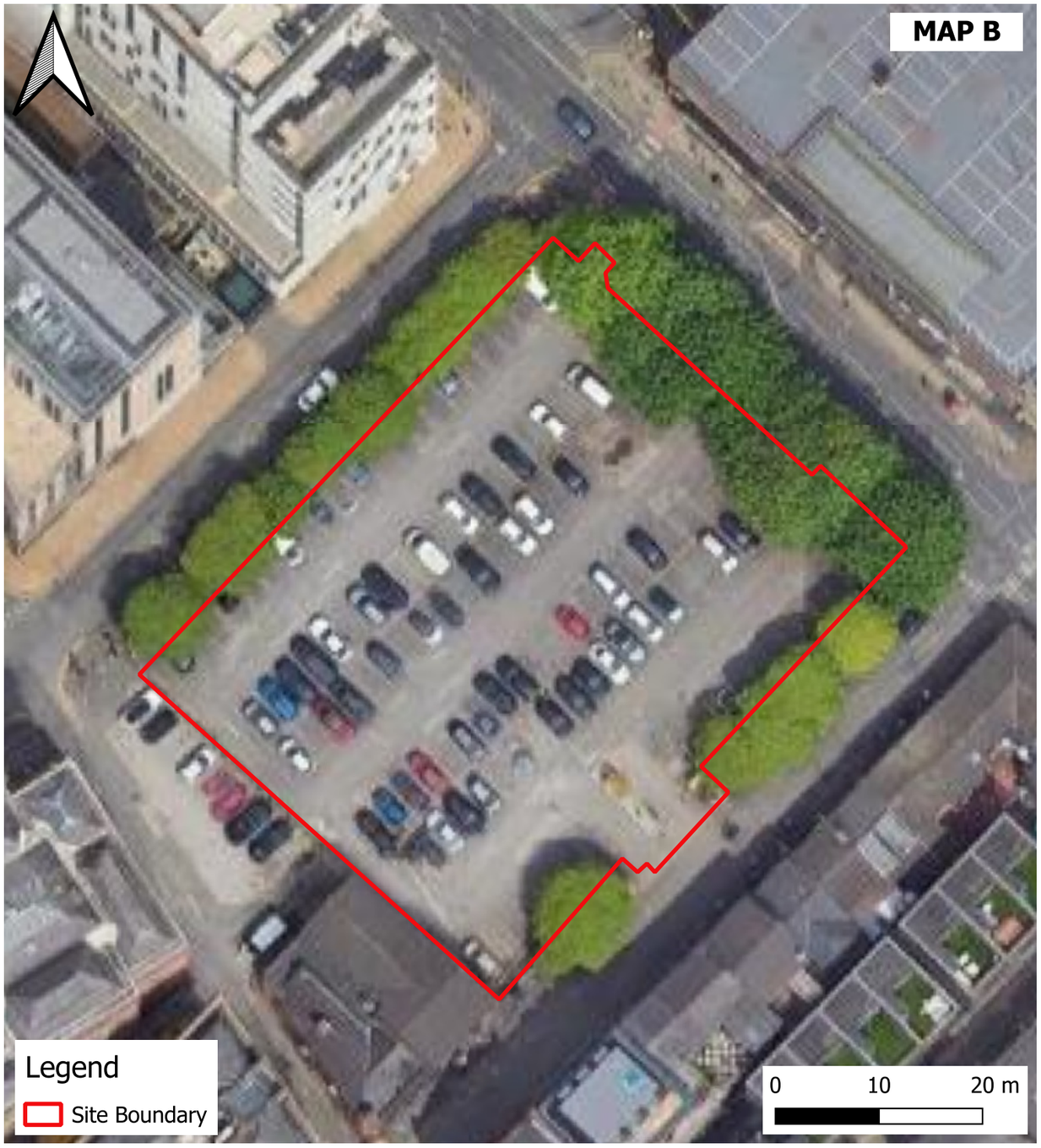
Ground gas monitoring data is also considered limited due to the amount of monitoring visits undertaken and the atmospheric pressure conditions during the visits. Whilst the Site has been classified as very low risk, two further rounds of ground gas monitoring are recommended to confirm this.

Materials destined for off-site disposal to landfill may require further assessment in accordance with WM3 ‘Guidance on the classification and assessment of waste’ (1st edition version 1.2 GB 2021) to determine their waste classification.

If materials are to be re-used on site or imported from another development site, a materials management plan may be required in accordance with the CL:AIRE Definition of Waste: Development Industry Code of Practice in order to demonstrate that the material is not a waste.

Annex A: Figures





NOTES

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REVISIONS

REV.				
P01	FIRST ISSUE			
	Initials	NJ	13/11/2025	
REV.	REVISION NOTES/COMMENTS			
	Initials			

TRC
Arkwright House
Manchester
M3 2LF

TITLE
SITE LOCATION PLAN

TRC PROJECT NO.
700480.0000.0000

SCALE
MAP A: 1:5,000 @ A3
MAP B: 1:500 @ A3

CLIENT
LYSARA LIMITED

PURPOSE OF ISSUE
SUITABLE FOR INFORMATION

STATUS

PROJECT
SACKVILLE STREET, MANCHESTER

DRAWING NO
700480.0000.FIG01

REVISION
PO1



LEGEND:

- SITE BOUNDARY
- EXISTING ELEMENTS
- PROPOSED DC EV CHARGING POINT (UP-STAND UNIT)
- PROPOSED AC EV CHARGING POINT (POST MOUNTED)
- PROPOSED BOLLARD
- PROPOSED EV PARKING SPACE
- PROPOSED DNO
- PROPOSED LV PANELBOARD
- PROPOSED KEMPOWER POWER UNIT
- PROPOSED SCADA
- PROPOSED ARMCO BARRIER
- PROPOSED KERB

Architects are to be notified of any discrepancies.
Contractors must check all dimensions on site.
This drawing is subject to copyright laws and is for use on this project only.
This drawing is to be used solely for the information as titled only.
For other information refer to the latest revision of any cross referenced drawings.
To be read in conjunction with relevant design standard specifications.

This is a colour drawing. In order to ensure any subsequent reproduction is viewed correctly it has to be printed in full colour.

2 0 2 4 6 8 10
SCALE 1:250 m

0.5 0 0.5 1 1.5 2 2.5
SCALE 1:50 m

N

PROPOSED PARKING SUMMARY	
NUMBER OF EV PARKING SPACES	23
TOTAL LOST PARKING SPACE	8
NUMBER OF NON-EV PARKING SPACES	87

Rev	Description	Date	Drn	Chd
P8	GENERAL UPDATES, NEW RFI INPUTS INCORPORATED. BLIND KERB ADJUSTED	17.07.25	KR	JN
P7	GENERAL UPDATES FOLLOWING PLANNING CONSULTANT COMMENTS. CAGE REMOVED. LOCATION ADJUSTED. DIMENSIONS ADDED. NEW NAMING CONVENTION ADOPTED	09.07.25	KR	JN
P6	RED BOUNDARY LINE AMENDED. KEMPOWER UNIT UPDATED. WHIP. STOPPER ADDED	03.07.25	KR	JN
P5	RED BOUNDARY LINE AMENDED TO DRAINAGE PROPOSAL REVISION. COLOR UPDATED FOR FENCE AND GATE	26.06.25	KR	JM
P4	RED BOUNDARY LINE REVISED TO FULL PARKING AREA	17.06.25	KR	JN
P3	NOTE AMENDMENT	12.06.25	TT	KR
P2	EV PARKING ADJUSTED. PROVISION FOR SPACE BETWEEN EV PARKING BAYS	10.06.25	KR	JM
P1	PLANNING ISSUE	03.06.25	HR	JM

Status: PLANNING

SMR
SMALLEY MARSEY RISPIN
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Project: NCP SACKVILLE STREET, MANCHESTER M1 3LY

Client: LYSARA

Drawing Title: PROPOSED SITE PLAN

Proj Ref	Origin	Zone	Level	Type	Role	Num	Status	Rev
7944 - SMR - MA - ZZ - DR - A - 2003 - S3 - P8								

SMR Job Ref	Sheet	Scale	Drawn
7944-MA-2003	A2	NOTED	KR

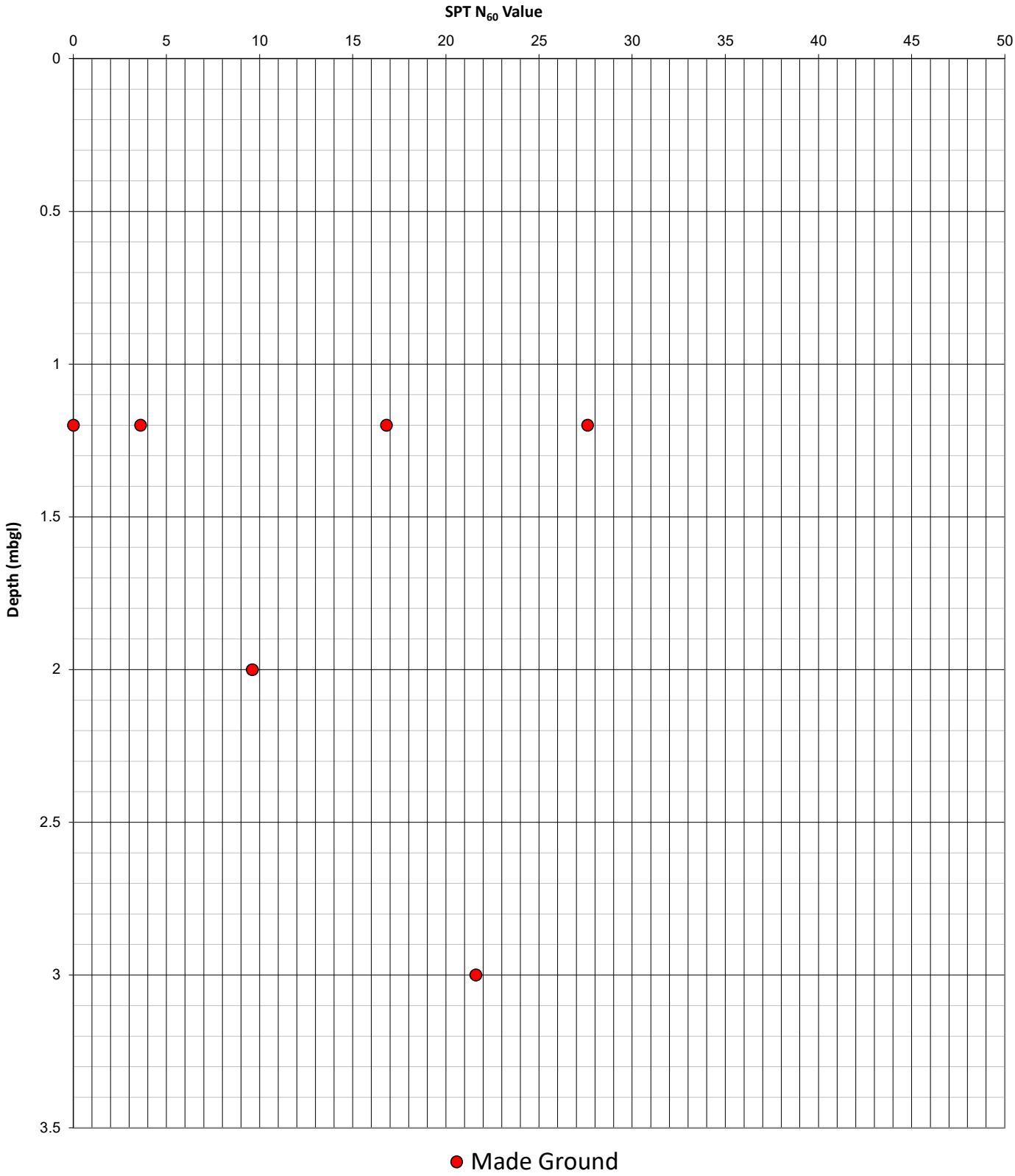
NOTES	COPYRIGHT NOTES	REVISIONS				TRC Arkwright House Manchester M3 2LF	TITLE: PROPOSED DEVELOPMENT PLAN	
							TRC PROJECT NO.: 700480.0000.0000	SCALE: N/A
		P01	FIRST ISSUE			CLIENT: LYSARA LIMITED	PURPOSE OF ISSUE: SUITABLE FOR INFORMATION	STATUS
			Initials	NJ	13/11/2025			
		REV.	REVISION NOTES/COMMENTS			PROJECT: SACKVILLE STREET, MANCHESTER	DRAWING NO: 700480.0000.FIG02	REVISION: PO1
			Initials					



NOTES	COPYRIGHT NOTES Google Imagery January 2025	REVISIONS	Arkwright House Manchester M3 2LF	TITLE EXPLORATORY HOLE LOCATION PLAN	
				TRC PROJECT NO. 700480.0000.0000	SCALE 1:350 @ A3
		P01 FIRST ISSUE Initials KP 17/11/2025	CLIENT LYSARA LIMITED	PURPOSE OF ISSUE SUITABLE FOR INFORMATION	STATUS
		REV. REVISION NOTES/COMMENTS Initials	PROJECT SACKVILLE STREET, MANCHESTER	DRAWING NO 700480.0000.FIG03	REVISION PO1

SPT N_{60} Value Vs Depth

Client	Lysara Limited	Job No.	700480.0000.0000
Site	Sackville Street, Manchester, M1 3LY	Date Drawn	03/12/2025



TRC Companies Limited
20 Red Lion Street, London
WC1R 4PS

Status	F	Fig:
Rev.	A	4

Annex B: Site Photographs

Photograph Log - Sackville Street, Manchester

Client:	Site Location:	Project No.:
Lysara Limited	Sackville Street, Manchester M1 3LY	700480.0000.0000

Photo No.	Date
1	06/11/25 - 07/11/25

Description
WS101 0-1.2m



Photo No.	Date
2	06/11/25 - 07/11/25

Description
WS101 1.2-2m



Photograph Log - Sackville Street, Manchester

Client:	Site Location:	Project No.:
Lysara Limited	Sackville Street, Manchester M1 3LY	700480.0000.0000

Photo No.	Date
3	06/11/25 - 07/11/25

Description
WS102 0-0.2m



Photo No.	Date
4	06/11/25 - 07/11/25

Description
WS102 concrete obstruction



Photograph Log - Sackville Street, Manchester

Client:	Site Location:	Project No.:
Lysara Limited	Sackville Street, Manchester M1 3LY	700480.0000.0000

Photo No.	Date
5	06/11/25 - 07/11/25

Description
WS103 0-1.6m



Photo No.	Date
6	06/11/25 - 07/11/25

Description
WS104 0-1.2m



Photograph Log - Sackville Street, Manchester

Client:	Site Location:	Project No.:
Lysara Limited	Sackville Street, Manchester M1 3LY	700480.0000.0000

Photo No.	Date
7	06/11/25 - 07/11/25

Description
WS104 1.2-3m



Photo No.	Date
8	06/11/25 - 07/11/25

Description
WS105 0-1.2m



Photograph Log - Sackville Street, Manchester

Client:	Site Location:	Project No.:
Lysara Limited	Sackville Street, Manchester M1 3LY	700480.0000.0000

Photo No.	Date
9	06/11/25 - 07/11/25

Description
WS105 1.2-3m



Photo No.	Date
10	06/11/25 - 07/11/25

Description
PC101 - Pavement core reinstatement



Photograph Log - Sackville Street, Manchester

Client:	Site Location:	Project No.:
Lysara Limited	Sackville Street, Manchester M1 3LY	700480.0000.0000

Photo No.	Date
11	06/11/25 - 07/11/25

Description
PC102 - Pavement core reinstatement



Photo No.	Date
12	06/11/25 - 07/11/25

Description
PC103 - Pavement core reinstatement



Photograph Log - Sackville Street, Manchester

Client:	Site Location:	Project No.:
Lysara Limited	Sackville Street, Manchester M1 3LY	700480.0000.0000

Photo No.	Date
13	06/11/25 - 07/11/25

Description
PC104 - Pavement core reinstatement



Annex C: Exploratory Hole Logs

Key to Exploratory Hole Logs

Composite Materials and Lithology

Legend	Code	Description
	101	Topsoil
	102	Made Ground or Fill
	103	Asphalt
	104	Concrete
	201	Clay
	301	Silt
	401	Sand
	501	Gravel
	601	Peat
	701	Cobbles

Legend	Code	Description
	730	Boulders
	801	Mudstone
	802	Siltstone
	803	Sandstone
	804	Limestone or Dolomite
	805	Chalk
	806	Coal
	807	Breccia
	808	Conglomerate
	809	Fine Grained Igneous

Legend	Code	Description
	810	Medium Grained Igneous
	811	Coarse Grained Igneous
	812	Fine Grained Metamorphic
	813	Medium Grained Metamorphic
	814	Coarse Grained Metamorphic
	815	Pyroclastic
	816	Gypsum or Rocksalt
	817	Shale
	998 999	No recovery Void

Backfill

Legend	Code	Description
	901	Sand Filter
	902 908	Gravel Filter Ballast
	903	Bentonite
	904	Grout
	905	Arisings
	906 912	Concrete Paving Slab
	907	Asphalt
	999	Void

NB: Composite soil types are represented by combined legends. Each type will have its own code within the AGS data.

In-Situ Testing

Prefix	Type	Comments
SPT(S) SPT(C)	Standard Penetration Test (S) Split Spoon (C) Solid Cone	Uncorrected test results at relevant start depth. Hammer ID and Energy Ratio reported on log and in relevant AGS fields
HV	Hand Vane Test	Undrained Shear Strength reported in kPa.
PP	Hand Penetrometer Test	Unconfined Compressive Strength reported in kPa
PID	On-Site Volatile Headspace Testing by Photo Ionization Detector	Screening reported as ppmv. Headspace testing undertaken as per contract documents
PPM	In-Situ Permeability Test	Permeability (k) reported in m/s. Please refer to individual test sheets for data and methodology

Rotary Boreholes:

T.C.R. - Total Core Recovery %

S.C.R. - Solid Core Recovery %

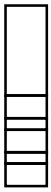
R.Q.D. - Rock Quality Designation %

F.I. - Fracture Index

Sampling

Prefix	Type	Comments
D	Small Disturbed Sample	Nominally 1kg
B	Bulk Disturbed Sample	Nominally 5kg
LB	Large Bulk Disturbed Sample	25kg to 60kg depending on material type, for compaction related tests
U	Undisturbed sample - thick wall driven tube	For CP, nominally 100mm diameter, 450mm length. For WS, nominally 38mm diameter, 100mm length. Blows to drive tube and recovery found in remarks
UT	Undisturbed Sample – Thin wall driven tube	Nominally 100mm diameter, 450mm length. Blows to drive tube and recovery found in remarks
P	Pushed piston sample	Nominally 100mm diameter, 1000mm length. Recovery found in remarks
C	Core sample	-
AMAL	Amalgamated Sample	Details of samples used noted in remarks as well as relevant AGS field
W	Water sample	Not for environmental testing purposes
ES	Environmental sample	Multiple containers used where appropriate
EW	Environmental water sample	Multiple containers used where appropriate

Installations

Legend	Description
	Piezometer Plain Pipe Piezometer Slotted Pipe

Water Observations

Legend	Description
	Water strike
	Standing water level after specified time

Details are provided on each log through the Water Strike Table

All soil and rock descriptions in general accordance with BS5930, BS EN ISO 14688 and BS EN ISO 14689

Windowless Sample Log

Project Name: Sackville Street, Manchester	Client: Lysara Limited	Date: 06/11/2025
Location: Sackville Street, Manchester, M1 3LY	Subcontractor: Geo Site Surveys	Co-ords: E384279.03 N397885.21
Project No. : 700480.0000.0000	Crew Name: FP, SR	Drilling Equipment: Competitor Dart

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
WS101	WS	42.49m AoD	Nyemh Johnson	1:30	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.10	42.39		MADE GROUND: Bituminous surfacing.
					0.20	42.29		MADE GROUND: Light grey crushed aggregate.
		0.50 0.50 0.50	D ES PID	PID=0.00				MADE GROUND: Dark brown clayey very gravelly SAND. Sand is fine to coarse grained. Gravel is angular to sub-rounded, fine to coarse grained of brick and concrete. Low cobble content of brick and concrete.
		1.20	SPT	N=23 (3,3/3,4,11,5)				
					2.00	40.49		End of Borehole at 2.000m

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
2.00	92										

Remarks

1. Utility survey performed prior to excavation.
2. Hand pitted to 1.20m bgl.
3. UXO down-hole tests were conducted within hand pit and at 2m bgl.
4. Groundwater was not encountered.
5. Hole terminated above target depth of 5.00m bgl at 2.00m bgl due to an obstruction deflecting the drilling rods.
6. Monitoring installation comprised plain standpipe with bentonite between 0.00m and 0.50m bgl and slotted pipe with gravel between 0.50m and 1.50m bgl with gas bung.

Windowless Sample Log

Project Name: Sackville Street, Manchester	Client: Lysara Limited	Date: 06/11/2025
Location: Sackville Street, Manchester, M1 3LY	Subcontractor: Geo Site Surveys	Co-ords: E384298.85 N397868.54
Project No. : 700480.0000.0000	Crew Name: FP, SR	Drilling Equipment: Competitor Dart

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
WS102	WS	42.06m AoD	Nyemh Johnson	1:30	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20	D		0.10	41.96		MADE GROUND: Bituminous surfacing.
		0.20	ES		0.20	41.86		MADE GROUND: Dark brown clayey very gravelly SAND. Sand is fine to coarse grained. Gravel is angular to sub-rounded, fine to coarse grained of brick and concrete. Medium cobble content of brick and concrete.
		0.20	PID	PID=0.00	0.30	41.76		MADE GROUND: Concrete.
								End of Borehole at 0.300m

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
0.30	101										

Remarks

1. Utility survey performed prior to excavation.
2. Hand pitted to 1.20m bgl.
3. Groundwater was not encountered.
4. Hole terminated above target depth of 5.00m bgl at 0.30m bgl due to encountering a concrete slab.
5. Borehole was backfilled with arisings.

Windowless Sample Log

Project Name: Sackville Street, Manchester	Client: Lysara Limited	Date: 06/11/2025
Location: Sackville Street, Manchester, M1 3LY	Subcontractor: Geo Site Surveys	Co-ords: E384247.55 N397858.79
Project No. : 700480.0000.0000	Crew Name: FP, SR	Drilling Equipment: Competitor Dart

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
WS103	WS	41.59m AoD	Nyemh Johnson	1:30	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.10	41.49		MADE GROUND: Bituminous surfacing.
		0.50 0.50	ES PID	PID=0.00				MADE GROUND: Dark brown very clayey very gravelly SAND. Sand is fine to coarse grained. Gravel is angular to sub-rounded, fine to coarse grained of brick and concrete. Medium cobble content of brick.
		1.00	D					
		1.20	SPT	N=14 (4,3/2,4,4,4)				
					1.60	39.99		End of Borehole at 1.600m

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
1.60	92										

Remarks

1. Utility survey performed prior to excavation.
2. Hand pitted to 1.20m bgl.
3. UXO down-hole tests were conducted within hand pit.
4. Groundwater was not encountered.
4. Hole terminated above target depth of 5.00m bgl at 1.60m bgl due to an obstruction deflecting the drilling rods.
5. Borehole was backfilled with arisings.

Windowless Sample Log

Project Name: Sackville Street, Manchester	Client: Lysara Limited	Date: 06/11/2025
Location: Sackville Street, Manchester, M1 3LY	Subcontractor: Geo Site Surveys	Co-ords: E384275.64 N397861.65
Project No. : 700480.0000.0000	Crew Name: FP, SR	Drilling Equipment: Competitor Dart

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
WS104	WS	41.98m AoD	Nyemh Johnson	1:30	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.10	41.88		MADE GROUND: Bituminous surfacing.
								MADE GROUND: Dark brown clayey very sandy GRAVEL. Sand is fine to coarse grained. Gravel is angular to sub-rounded, fine to coarse grained of brick and concrete. High cobble content of brick and concrete.
					0.60	41.38		
		0.80	ES					MADE GROUND: Black very clayey very gravelly SAND. Sand is fine to coarse grained. Gravel is angular to sub-rounded, fine to coarse grained of brick. Medium cobble content of brick.
		1.20	ES					
		1.20	SPT	N=0 (1,0/0,0,0,0)				
		1.20	PID	PID=0.00				
		2.00	SPT	N=15 (1,0/1,2,8,4)				
					2.20	39.78		
		2.30	PP	130.76				Stiff dark brown slightly silty CLAY. [TILL].
		2.50	D					
		2.50	ES					
		2.50	PID	PID=0.00				
		2.90	PP	444.57				
					3.00	38.98		End of Borehole at 3.000m

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
2.00	92										
3.00	79										

Remarks

1. Utility survey performed prior to excavation.
2. Hand pitted to 1.20m bgl.
3. UXO down-hole tests were conducted within hand pit, at 2m and 3m bgl.
4. Groundwater was not encountered.
4. Hole terminated above target depth of 5.00m bgl at 3.00m bgl due to collapsing strata.
5. Monitoring installation comprised plain standpipe with bentonite between 0.00m and 0.50m bgl and slotted pipe with gravel between 0.50m and 1.50m bgl with gas bung installed.

Windowless Sample Log

Project Name: Sackville Street, Manchester	Client: Lysara Limited	Date: 06/11/2025
Location: Sackville Street, Manchester, M1 3LY	Subcontractor: Geo Site Surveys	Co-ords: E384271.98 N397831.46
Project No. : 700480.0000.0000	Crew Name: FP, SR	Drilling Equipment: Competitor Dart

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
WS105	WS	41.30m AoD	Nyemh Johnson	1:30	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.10	41.20		MADE GROUND: Bituminous surfacing.
					0.30	41.00		MADE GROUND: Dark grey crushed aggregate.
					0.50	40.80		MADE GROUND: Concrete.
		0.60 0.60	ES PID	PID=0.00				MADE GROUND: Light greyish brown clayey very gravelly SAND. Sand is fine to coarse grained. Gravel is angular to rounded, fine to coarse grained of brick and concrete. Medium cobble content of brick.
		1.20	SPT	N=3 (1,0/1,0,1,1)				
		2.00	SPT	N=8 (2,2/2,2,2,2)				
		3.00	SPT	N=18 (2,2/4,4,5,5)				
					3.45	37.85		End of Borehole at 3.450m

1 2 3 4 5 6

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
2.00 3.00 3.45	92 79 70										

Remarks

1. Utility survey performed prior to excavation.
2. Hand pitted to 1.20m bgl.
3. UXO down-hole tests were conducted within hand pit, at 2m and 3m bgl.
4. Groundwater was not encountered.
4. Hole terminated above target depth of 5.00m bgl at 3.45m bgl due to detection of a metallic anomaly.
5. Monitoring installation comprised plain standpipe with bentonite between 0.00m and 1.00m bgl and slotted pipe with gravel between 1.00m and 2.00m bgl with gas bung installed.

CORE LOGGING OF PAVEMENT MATERIAL

Job Number: 700480

Location: Sackville st Car Park

Sample Number: WS101

Notes:

Core Number:

Logged by: AH

Date: 25/11/25

Layer	Depth (m)		Thickness	Material description	Aggregate %	Voids%	Binder	PAK-Marker Result	Aggregate	
	From	To	(mm)					(Y or N)	Size	Type
1	0	0.02	20	Black ASPHALT. Aggregate angular and fine of limestone. 5% small to medium voids.	70-80	5	Bitumen	Y	Fine	Limestone
2	0.02	0.05	30	Dark grey ASPHALT. Aggregate angular to subangular fine to medium of limestone/sandstone. 1-2% small to medium voids.	70-80	1-2	Bitumen	Y	Fine to medium	Limestone/ sandstone
3	0.05	0.07	20	Dark grey ASPHALT. Aggregate angular to subangular fine to coarse of limestone. 5% small voids.	50-60	5	Bitumen	Y	Fine to coarse	Limestone/ Brick
4										
5										
6										
7										
8										

Notes : The scale is for guidance only. It does not necessarily reflect the actual thickness of individual layer(s).





Material Description

The material description provided (e.g., hot rolled asphalt or asphalt concrete) is intended as a general classification based solely on visual observation. Likewise, any additional descriptors (such as “voided”) are based on visual assessment only. It is important to note that the apparent presence of air voids to the naked eye does not directly correlate with compaction levels, as this relationship is complex and varies by material type.

PAK-Marker (PAH Spray)

The Tar Spray Test offers a quick, qualitative indication of polyaromatic compounds (PACs), which are commonly associated with tar. While PACs can also occur in other road construction materials (such as bitumen), they are typically present at much lower concentrations. Therefore, the likelihood of a false positive from these materials is minimal. A positive Tar Spray Test result strongly suggests (but does not conclusively confirm) the presence of tar. For quantitative analysis, this test should be interpreted alongside other methods, such as PAH testing. (Y result indicates that PAH’s are present)

Binder

The binder type is determined through visual and aromatic inspection, supported by the PAK-Marker test result.

Aggregate Size

The sizes reported represent the best estimate of the material’s nominal aggregate size

CORE LOGGING OF PAVEMENT MATERIAL

Job Number: 700480

Location: Sackville st Car Park

Sample Number: WS102

Notes:

Core Number:

Logged by: AH

Date: 25/11/25

Layer	Depth (m)		Thickness	Material description	Aggregate %	Voids%	Binder	PAK-Marker Result	Aggregate	
	From	To	(mm)					(Y or N)	Size	Type
1	0	0.065	65	Light grey ASPHALT. Aggregate angular to subangular fine to medium of limestone. 1-2% small voids	60-70	1-2	Bitumen	Y	Fine to medium	Limestone
2										
3										
4										
5										
6										
7										
8										

Notes : The scale is for guidance only. It does not necessarily reflect the actual thickness of individual layer(s).





Material Description

The material description provided (e.g., hot rolled asphalt or asphalt concrete) is intended as a general classification based solely on visual observation. Likewise, any additional descriptors (such as “voided”) are based on visual assessment only. It is important to note that the apparent presence of air voids to the naked eye does not directly correlate with compaction levels, as this relationship is complex and varies by material type.

PAK-Marker (PAH Spray)

The Tar Spray Test offers a quick, qualitative indication of polyaromatic compounds (PACs), which are commonly associated with tar. While PACs can also occur in other road construction materials (such as bitumen), they are typically present at much lower concentrations. Therefore, the likelihood of a false positive from these materials is minimal. A positive Tar Spray Test result strongly suggests (but does not conclusively confirm) the presence of tar. For quantitative analysis, this test should be interpreted alongside other methods, such as PAH testing. (Y result indicates that PAH’s are present)

Binder

The binder type is determined through visual and aromatic inspection, supported by the PAK-Marker test result.

Aggregate Size

The sizes reported represent the best estimate of the material’s nominal aggregate size

CORE LOGGING OF PAVEMENT MATERIAL

Job Number: 700480

Location: Sackville st Car Park

Sample Number: WS103

Notes:

Core Number:

Logged by: AH

Date: 25/11/25

Layer	Depth (m)		Thickness	Material description	Aggregate %	Voids%	Binder	PAK-Marker Result	Aggregate	
	From	To	(mm)					(Y or N)	Size	Type
1	0	0.07	70	Dark grey ASPHALT. Aggregate angular to subrounded fine to coarse of limestone. 2-3% small voids	85-90	2-3	Bitumen	Y	Fine to coarse	Limestone
2										
3										
4										
5										
6										
7										
8										

Notes : The scale is for guidance only. It does not necessarily reflect the actual thickness of individual layer(s).





Material Description

The material description provided (e.g., hot rolled asphalt or asphalt concrete) is intended as a general classification based solely on visual observation. Likewise, any additional descriptors (such as "voided") are based on visual assessment only. It is important to note that the apparent presence of air voids to the naked eye does not directly correlate with compaction levels, as this relationship is complex and varies by material type.

PAK-Marker (PAH Spray)

The Tar Spray Test offers a quick, qualitative indication of polyaromatic compounds (PACs), which are commonly associated with tar. While PACs can also occur in other road construction materials (such as bitumen), they are typically present at much lower concentrations. Therefore, the likelihood of a false positive from these materials is minimal. A positive Tar Spray Test result strongly suggests (but does not conclusively confirm) the presence of tar. For quantitative analysis, this test should be interpreted alongside other methods, such as PAH testing. (Y result indicates that PAH's are present)

Binder

The binder type is determined through visual and aromatic inspection, supported by the PAK-Marker test result.

Aggregate Size

The sizes reported represent the best estimate of the material's nominal aggregate size

CORE LOGGING OF PAVEMENT MATERIAL

Job Number: 700480

Location: Sackville st Car Park

Sample Number: WS104

Notes:

Core Number:

Logged by: AH

Date: 25/11/25

Layer	Depth (m)		Thickness	Material description	Aggregate %	Voids%	Binder	PAK-Marker Result	Aggregate	
	From	To	(mm)					(Y or N)	Size	Type
1	0	0.005	5	Black ASPHALT. Aggregate angular and fine of limestone. 8-10% small voids.	75-85	8-10	Bitumen	Y	Fine	Limestone
2	0.005	0.065	60	Grey ASPHALT. Aggregate angular to subangular fine to coarse of limestone. 5% small to medium voids.	70-80	5	Bitumen	Y	Fine to medium	Limestone
3										
4										
5										
6										
7										
8										

Notes : The scale is for guidance only. It does not necessarily reflect the actual thickness of individual layer(s).





Material Description

The material description provided (e.g., hot rolled asphalt or asphalt concrete) is intended as a general classification based solely on visual observation. Likewise, any additional descriptors (such as “voided”) are based on visual assessment only. It is important to note that the apparent presence of air voids to the naked eye does not directly correlate with compaction levels, as this relationship is complex and varies by material type.

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Binder

The binder type is determined through visual and aromatic inspection, supported by the PAK-Marker test result.

Aggregate Size

The sizes reported represent the best estimate of the material’s nominal aggregate size

CORE LOGGING OF PAVEMENT MATERIAL

Job Number: 700480

Location: Sackville st Car Park

Sample Number: WS105

Notes:

Core Number:

Logged by: AH

Date: 25/11/25

Layer	Depth (m)		Thickness	Material description	Aggregate %	Voids%	Binder	PAK-Marker Result	Aggregate	
	From	To	(mm)					(Y or N)	Size	Type
1	0	0.05	50	Black ASPHALT. Aggregate angular to subangular fine to coarse of limestone. 5-7% small to medium voids	60-70	5-7	Bitumen	Y	Fine	Coarse
2										
3										
4										
5										
6										
7										
8										

Notes : The scale is for guidance only. It does not necessarily reflect the actual thickness of individual layer(s).





Material Description

The material description provided (e.g., hot rolled asphalt or asphalt concrete) is intended as a general classification based solely on visual observation. Likewise, any additional descriptors (such as “voided”) are based on visual assessment only. It is important to note that the apparent presence of air voids to the naked eye does not directly correlate with compaction levels, as this relationship is complex and varies by material type.

PAK-Marker (PAH Spray)

The Tar Spray Test offers a quick, qualitative indication of polyaromatic compounds (PACs), which are commonly associated with tar. While PACs can also occur in other road construction materials (such as bitumen), they are typically present at much lower concentrations. Therefore, the likelihood of a false positive from these materials is minimal. A positive Tar Spray Test result strongly suggests (but does not conclusively confirm) the presence of tar. For quantitative analysis, this test should be interpreted alongside other methods, such as PAH testing. (Y result indicates that PAH’s are present)

Binder

The binder type is determined through visual and aromatic inspection, supported by the PAK-Marker test result.

Aggregate Size

The sizes reported represent the best estimate of the material’s nominal aggregate size

GSS
Land Drilling Specialists

SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

Geo Site Surveys Ltd
Unit 10A-10C Harcourt St
Walkden
Greater Manchester
M28 3GN

SPT Hammer Ref:	WS101
Test Date:	02/06/2025
Report Date:	02/06/2025
File Name:	WS101.spt
Test Operator:	LUKE KERSHAW

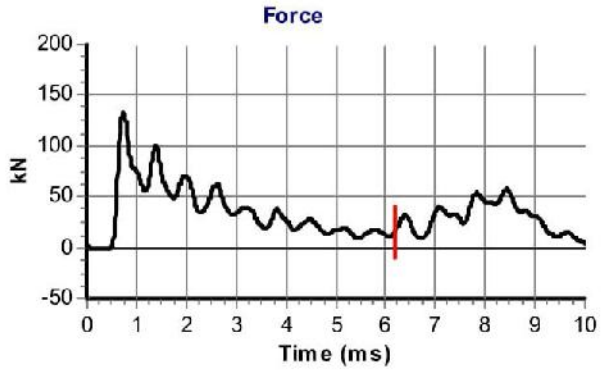
Instrumented Rod Data

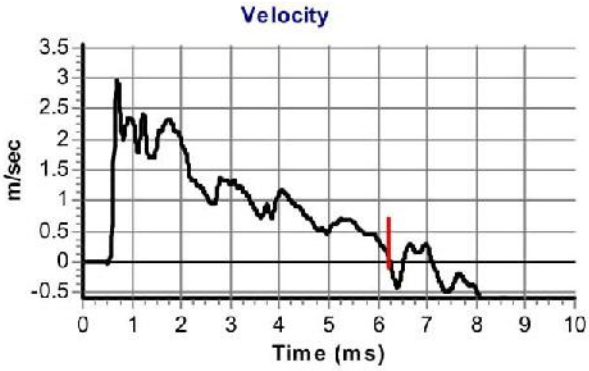
Diameter d_r (mm):	54
Wall Thickness t_r (mm):	6.7
Assumed Modulus E_a (GPa):	208
Accelerometer No.1:	8965
Accelerometer No.2:	6457

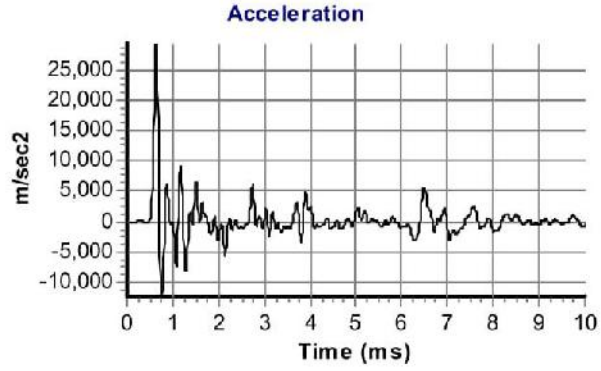
SPT Hammer Information

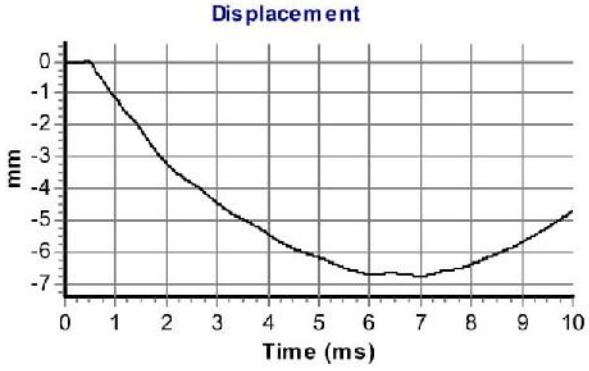
Hammer Mass m (kg):	63.5
Falling Height h (mm):	760
SPT String Length L (m):	13.5

Comments / Location









Calculations

Area of Rod A (mm2):	996
Theoretical Energy E_{theor} (J):	473
Measured Energy E_{meas} (J):	343

Energy Ratio E_r (%): 72

[redacted]

Signed: Luke Kershaw
Title: Supervisor / SLD

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Annex D: Field Data

Gas-GW Monitoring

Site: Sackville Street, Manchester

Project Manager: Jonathon Sander **Project Number:** 700480

VISIT NUMBER: 1 OF 2 **DATE:** 2025-11-19 **OPERATOR:** NYEMH JOHNSON

Monitoring Point	GAS CONCENTRATIONS												VOLATILES		FLOW DATA				WELL AND WATER DATA		COMMENTS
	Methane (% v/v)		%LEL		Carbon dioxide (% v/v)		Carbon monoxide (ppmv)		Hydrogen sulphide (ppmv)		Oxygen (% v/v)		PID Peak (ppm)	Product Thickness (mm)	Flow rate (l/hr)		Differential Borehole Pressure (Pa)	Time for flow to equalise (secs)	Water Level (mbgl)	Depth of well (m)	
	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Min.	Steady			Peak	Steady					
WS101	<0.1	<0.1	<0.1	<0.1	0.4	0.2	<1	<1	<1	<1	20.3	20.4	NR	ND	0.0	0.0	0.0	30	Dry	1.45	
WS104	<0.1	<0.1	<0.1	<0.1	0.4	0.3	<1	<1	<1	<1	20.1	20.2	NR	ND	0.0	0.0	0.0	30	Dry	1.42	
WS105	<0.1	<0.1	<0.1	<0.1	0.8	0.7	<1	<1	<1	<1	19.7	19.8	NR	ND	0.0	0.0	0.0	30	Dry	2.02	

ND - Not detected NR - Not recorded NA - Not applicable

METEOROLOGICAL AND SITE INFORMATION:

(Select correct box with X or enter data, as applicable)

State of ground:		Dry	X	Moist		Wet		Snow		Frozen
Wind:	X	Calm		Light		Moderate		Strong		
Cloud cover:		None		Slight		Cloudy	X	Overcast		
Precipitation:	X	None		Slight		Moderate		Heavy		
Time monitoring performed:			10:59	Start			11:40	End		
Barometric pressure (mbar):			1014	Start			1014	End		
Pressure trend (daily):				Falling	X	Steady		Rising		
Air Temperature (Deg C):			3	Before			3	After		

INSTRUMENTATION TECHNICAL SPECIFICATIONS:

Ground gas meter: GFM436

Gas Range: **CH_4** 0 to 100% **CO_4** 0 to 100% **O_2** 0 to 25%

Gas Flow Range: +100 / -50 l/hour

Differential Presure: (+/-) 1000 Pa

Ambient Air Check: **CH_4** <0.1 **CO_2** <0.1 **O_2** 20.9

Gas-GW Monitoring

Site: Sackville Street, Manchester

Project Manager: Jonathon Sander **Project Number:** 700480

VISIT NUMBER: 2 OF 2 **DATE:** 2025-11-24 **OPERATOR:** NYEMH JOHNSON

Monitoring Point	GAS CONCENTRATIONS												VOLATILES		FLOW DATA				WELL AND WATER DATA		COMMENTS
	Methane (% v/v)		%LEL		Carbon dioxide (% v/v)		Carbon monoxide (ppmv)		Hydrogen sulphide (ppmv)		Oxygen (% v/v)		PID Peak (ppm)	Product Thickness (mm)	Flow rate (l/hr)		Differential Borehole Pressure (Pa)	Time for flow to equalise (secs)	Water Level (mbgl)	Depth of well (m)	
	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Min.	Steady			Peak	Steady					
WS101	<0.1	<0.1	<0.1	<0.1	0.4	0.3	<1	<1	<1	<1	20.1	20.2	NR	ND	0.0	0.0	0.0	30	Dry	1.47	
WS104	<0.1	<0.1	<0.1	<0.1	1.3	0.5	42	10	<0.1	<0.1	18.6	19.9	NR	ND	0.0	0.0	0.0	30	Dry	1.42	
WS105	<0.1	<0.1	<0.1	<0.1	0.8	0.8	<1	<1	<1	<1	19.2	19.4	NR	ND	0.0	0.0	0.0	30	Dry	2.02	

ND - Not detected NR - Not recorded NA - Not applicable

METEOROLOGICAL AND SITE INFORMATION:

(Select correct box with X or enter data, as applicable)

State of ground:		Dry	X	Moist		Wet		Snow		Frozen
Wind:		Calm	X	Light		Moderate		Strong		
Cloud cover:		None		Slight	X	Cloudy		Overcast		
Precipitation:		None	X	Slight		Moderate		Heavy		
Time monitoring performed:			10:11	Start			10:42	End		
Barometric pressure (mbar):			992	Start			993	End		
Pressure trend (daily):				Falling		Steady	X	Rising		
Air Temperature (Deg C):			5	Before			6	After		

INSTRUMENTATION TECHNICAL SPECIFICATIONS:

Ground gas meter: GFM436

Gas Range: **CH_4** 0 to 100% **CO_4** 0 to 100% **O_2** 0 to 25%

Gas Flow Range: +100 / -50 l/hour

Differential Presure: (+/-) 1000 Pa

Ambient Air Check: **CH_4** <0.1 **CO_2** <0.1 **O_2** 20.6

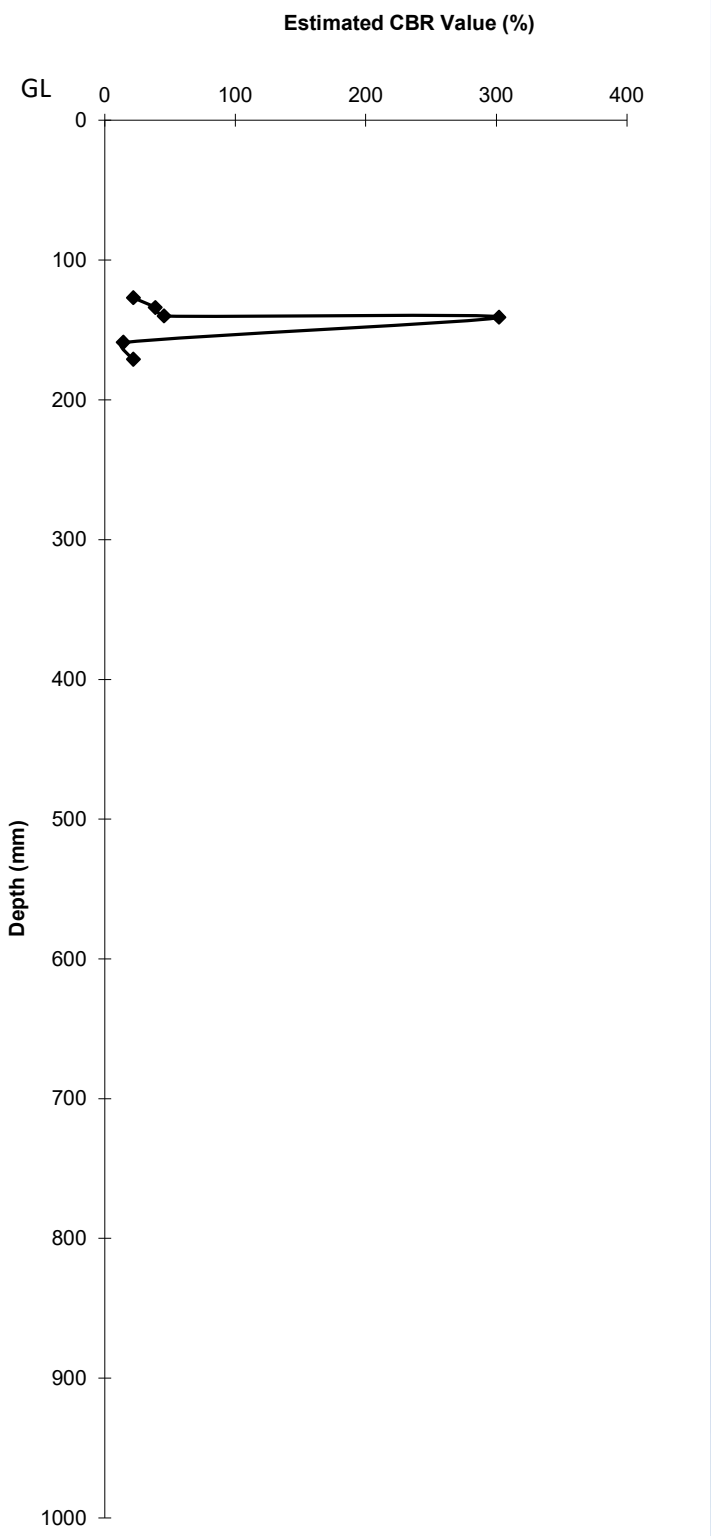
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TRC - In situ CBR by DCP Probe

Cumulative Number of Blows	Penetration Per Blow (mm)	Depth from GL (mm)	Log P	2.48-1.057 Log P	CBR Value (%)
0		115			
1	12	127	1.1	1.339	21.8
2	7	134	0.8	1.587	38.6
3	6	140	0.8	1.657	45.4
4	1	141	0.0	2.480	302.0
5	18	159	1.3	1.153	14.2
6	12	171	1.1	1.339	21.8

Zero reading = start depth below ground surface

Zero reading at start of test: 115 (mm)



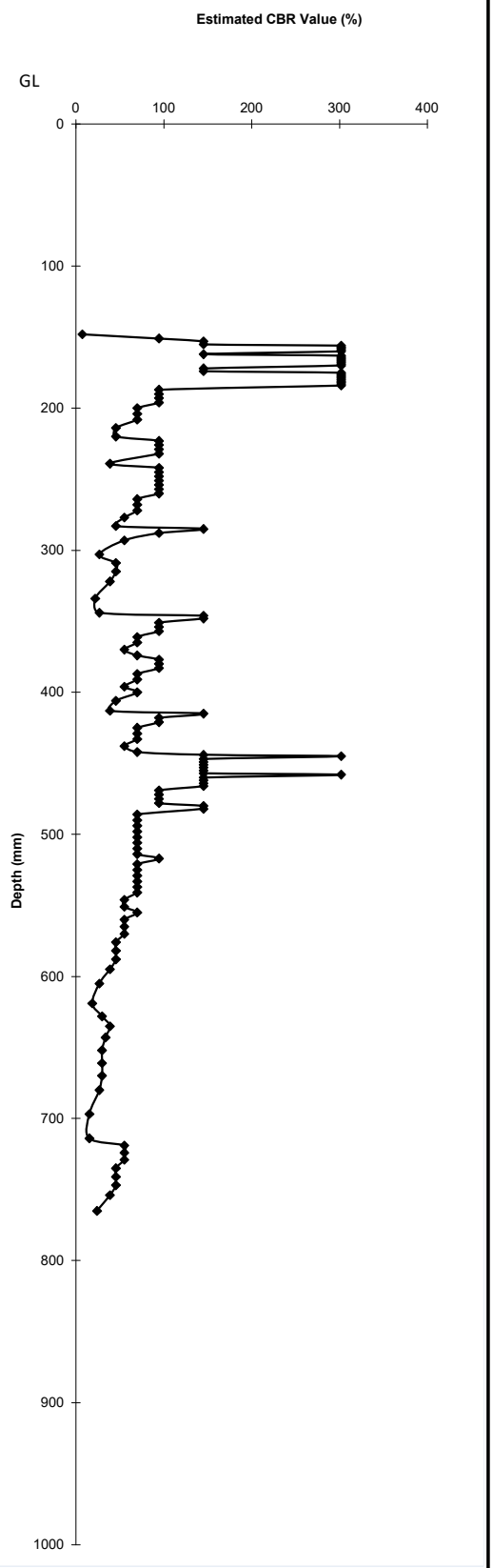
Remarks:	Terminated due to instrument failure	Date:	06/11/2025
Project Number:	700480	Reference:	WS102
Project Title:	Sackville Street, Manchester	Tech/Eng.	Nyemh Johnson

TRC - In situ CBR by DCP Probe

Zero reading = start depth below ground surface

Zero reading at start of test: 114 (mm)

Cumulative Number of Blows	Penetration Per Blow (mm)	Depth from GL (mm)	Log P	2.48-1.057 Log P	CBR Value (%)
0		114			
1	34	148	1.5	0.861	7.3
2	3	151	0.5	1.976	94.6
3	2	153	0.3	2.162	145.1
4	2	155	0.3	2.162	145.1
5	1	156	0.0	2.480	302.0
6	0	156			
7	1	157	0.0	2.480	302.0
8	1	158	0.0	2.480	302.0
9	1	159	0.0	2.480	302.0
10	1	160	0.0	2.480	302.0
11	2	162	0.3	2.162	145.1
12	1	163	0.0	2.480	302.0
13	1	164	0.0	2.480	302.0
14	1	165	0.0	2.480	302.0
15	1	166	0.0	2.480	302.0
16	1	167	0.0	2.480	302.0
17	1	168	0.0	2.480	302.0
18	1	169	0.0	2.480	302.0
19	1	170	0.0	2.480	302.0
20	2	172	0.3	2.162	145.1
21	2	174	0.3	2.162	145.1
22	1	175	0.0	2.480	302.0
23	1	176	0.0	2.480	302.0
24	1	177	0.0	2.480	302.0
25	1	178	0.0	2.480	302.0
26	1	179	0.0	2.480	302.0
27	1	180	0.0	2.480	302.0
28	1	181	0.0	2.480	302.0
29	1	182	0.0	2.480	302.0
30	1	183	0.0	2.480	302.0
31	1	184	0.0	2.480	302.0
32	3	187	0.5	1.976	94.6
33	3	190	0.5	1.976	94.6
34	3	193	0.5	1.976	94.6
35	3	196	0.5	1.976	94.6
36	4	200	0.6	1.844	69.8
37	4	204	0.6	1.844	69.8
38	4	208	0.6	1.844	69.8
39	6	214	0.8	1.657	45.4
40	6	220	0.8	1.657	45.4
41	3	223	0.5	1.976	94.6
42	3	226	0.5	1.976	94.6
43	3	229	0.5	1.976	94.6
44	3	232	0.5	1.976	94.6
45	7	239	0.8	1.587	38.6
46	3	242	0.5	1.976	94.6
47	3	245	0.5	1.976	94.6
48	3	248	0.5	1.976	94.6
49	3	251	0.5	1.976	94.6
50	3	254	0.5	1.976	94.6
51	3	257	0.5	1.976	94.6
52	3	260	0.5	1.976	94.6
53	4	264	0.6	1.844	69.8
54	4	268	0.6	1.844	69.8
55	4	272	0.6	1.844	69.8
56	5	277	0.7	1.741	55.1
57	6	283	0.8	1.657	45.4
58	2	285	0.3	2.162	145.1
59	3	288	0.5	1.976	94.6
60	5	293	0.7	1.741	55.1
61	10	303	1.0	1.423	26.5
62	6	309	0.8	1.657	45.4
63	6	315	0.8	1.657	45.4
64	7	322	0.8	1.587	38.6
65	12	334	1.1	1.339	21.8
66	10	344	1.0	1.423	26.5
67	2	346	0.3	2.162	145.1
68	2	348	0.3	2.162	145.1
69	3	351	0.5	1.976	94.6
70	3	354	0.5	1.976	94.6
71	3	357	0.5	1.976	94.6
72	4	361	0.6	1.844	69.8
73	4	365	0.6	1.844	69.8
74	5	370	0.7	1.741	55.1
75	4	374	0.6	1.844	69.8
76	3	377	0.5	1.976	94.6
77	3	380	0.5	1.976	94.6
78	3	383	0.5	1.976	94.6
79	4	387	0.6	1.844	69.8
80	4	391	0.6	1.844	69.8
81	5	396	0.7	1.741	55.1
82	4	400	0.6	1.844	69.8
83	6	406	0.8	1.657	45.4
84	7	413	0.8	1.587	38.6
85	2	415	0.3	2.162	145.1
86	3	418	0.5	1.976	94.6
87	3	421	0.5	1.976	94.6
88	4	425	0.6	1.844	69.8
89	4	429	0.6	1.844	69.8
90	4	433	0.6	1.844	69.8
91	5	438	0.7	1.741	55.1
92	4	442	0.6	1.844	69.8
93	2	444	0.3	2.162	145.1
94	1	445	0.0	2.480	302.0
95	2	447	0.3	2.162	145.1
96	2	449	0.3	2.162	145.1
97	2	451	0.3	2.162	145.1
98	2	453	0.3	2.162	145.1
99	2	455	0.3	2.162	145.1
100	2	457	0.3	2.162	145.1
101	1	458	0.0	2.480	302.0
102	2	460	0.3	2.162	145.1
103	2	462	0.3	2.162	145.1
104	2	464	0.3	2.162	145.1
105	2	466	0.3	2.162	145.1
106	3	469	0.5	1.976	94.6
107	3	472	0.5	1.976	94.6
108	3	475	0.5	1.976	94.6
109	3	478	0.5	1.976	94.6
110	2	480	0.3	2.162	145.1
111	2	482	0.3	2.162	145.1
112	4	486	0.6	1.844	69.8
113	4	490	0.6	1.844	69.8
114	4	494	0.6	1.844	69.8
115	4	498	0.6	1.844	69.8
116	4	502	0.6	1.844	69.8
117	4	506	0.6	1.844	69.8
118	4	510	0.6	1.844	69.8
119	4	514	0.6	1.844	69.8
120	3	517	0.5	1.976	94.6
121	4	521	0.6	1.844	69.8
122	4	525	0.6	1.844	69.8
123	4	529	0.6	1.844	69.8
124	4	533	0.6	1.844	69.8
125	4	537	0.6	1.844	69.8
126	4	541	0.6	1.844	69.8
127	5	546	0.7	1.741	55.1
128	5	551	0.7	1.741	55.1
129	4	555	0.6	1.844	69.8
130	5	560	0.7	1.741	55.1
131	5	565	0.7	1.741	55.1
132	5	570	0.7	1.741	55.1
133	6	576	0.8	1.657	45.4
134	6	582	0.8	1.657	45.4
135	6	588	0.8	1.657	45.4
136	7	595	0.8	1.587	38.6
137	10	605	1.0	1.423	26.5
138	14	619	1.1	1.269	18.6
139	9	628	1.0	1.471	29.6
140	7	635	0.8	1.587	38.6
141	8	643	0.9	1.525	33.5
142	9	652	1.0	1.471	29.6
143	9	661	1.0	1.471	29.6
144	9	670	1.0	1.471	29.6
145	10	680	1.0	1.423	26.5
146	17	697	1.2	1.179	15.1
147	17	714	1.2	1.179	15.1
148	5	719	0.7	1.741	55.1
149	5	724	0.7	1.741	55.1
150	5	729	0.7	1.741	55.1
151	6	735	0.8	1.657	45.4
152	6	741	0.8	1.657	45.4
153	6	747	0.8	1.657	45.4
154	7	754	0.8	1.587	38.6
155	11	765	1.0	1.379	23.9



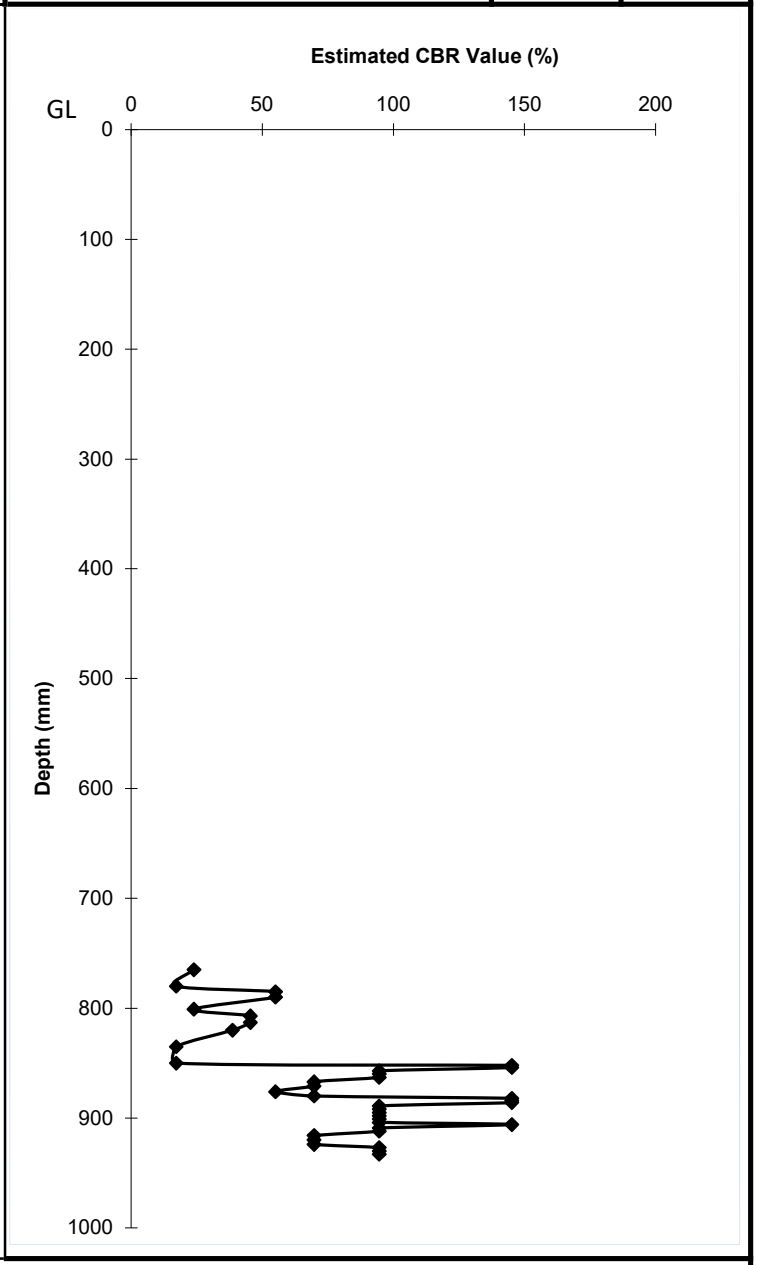
Remarks:	Terminated at target depth	Date:	06/11/2025
Project Number:	700480	Reference:	WS103 (page 1)
Project Title:	Sackville Street, Manchester	Tech/Eng.	Nyemh Johnson

TRC - In situ CBR by DCP Probe

Cumulative Number of Blows	Penetration Per Blow (mm)	Depth from GL (mm)	Log P	2.48-1.057 Log P	CBR Value (%)
0		114			
155	11	765	1.0	1.379	23.9
156	15	780	1.2	1.237	17.3
157	5	785	0.7	1.741	55.1
158	5	790	0.7	1.741	55.1
159	11	801	1.0	1.379	23.9
160	6	807	0.8	1.657	45.4
161	6	813	0.8	1.657	45.4
162	7	820	0.8	1.587	38.6
163	15	835	1.2	1.237	17.3
164	15	850	1.2	1.237	17.3
165	2	852	0.3	2.162	145.1
166	2	854	0.3	2.162	145.1
167	3	857	0.5	1.976	94.6
168	3	860	0.5	1.976	94.6
169	3	863	0.5	1.976	94.6
170	4	867	0.6	1.844	69.8
171	4	871	0.6	1.844	69.8
172	5	876	0.7	1.741	55.1
173	4	880	0.6	1.844	69.8
174	2	882	0.3	2.162	145.1
175	2	884	0.3	2.162	145.1
176	2	886	0.3	2.162	145.1
177	3	889	0.5	1.976	94.6
178	3	892	0.5	1.976	94.6
179	3	895	0.5	1.976	94.6
180	3	898	0.5	1.976	94.6
181	3	901	0.5	1.976	94.6
182	3	904	0.5	1.976	94.6
183	2	906	0.3	2.162	145.1
184	3	909	0.5	1.976	94.6
185	3	912	0.5	1.976	94.6
186	4	916	0.6	1.844	69.8
187	4	920	0.6	1.844	69.8
188	4	924	0.6	1.844	69.8
189	3	927	0.5	1.976	94.6
190	3	930	0.5	1.976	94.6
191	3	933	0.5	1.976	94.6

Zero reading = start depth below ground surface

Zero reading at start of test: 114 (mm)



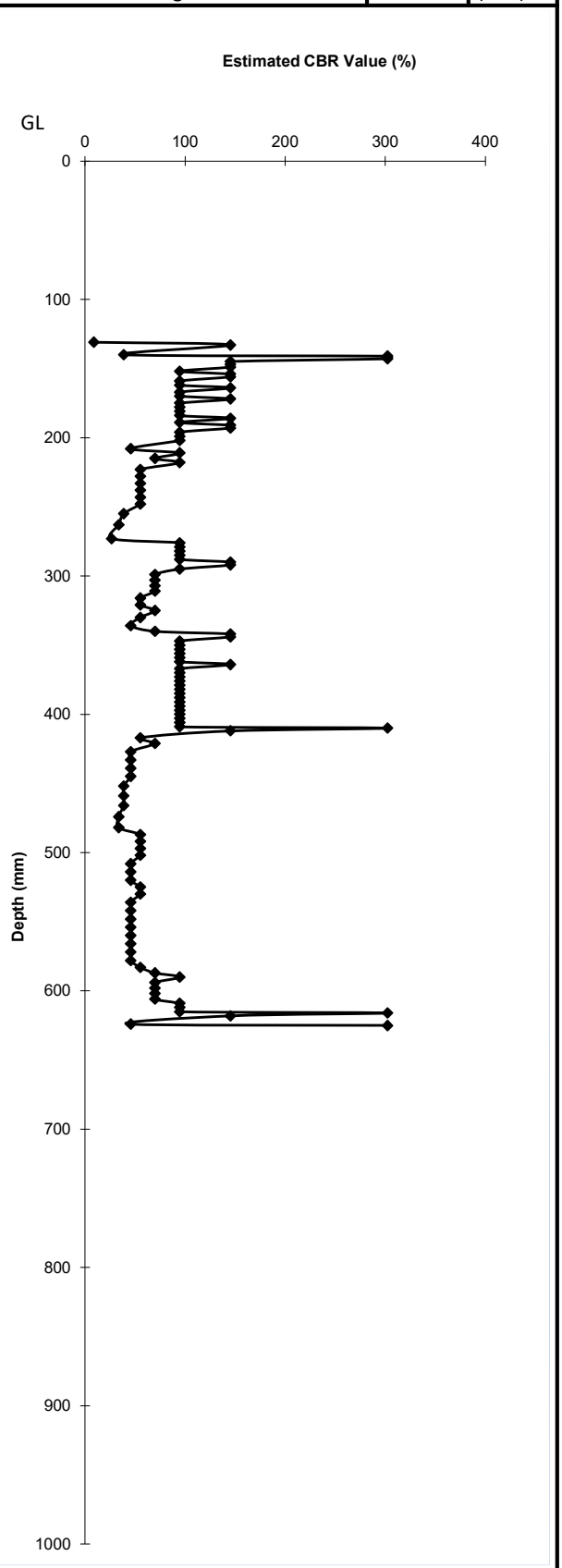
Remarks:	Terminated at target depth	Date:	06/11/2025
Project Number:	700480	Reference:	WS103 (page 2)
Project Title:	Sackville Street, Manchester	Tech/Eng.	Nyemh Johnson

TRC - In situ CBR by DCP Probe

Cumulative Number of Blows	Penetration Per Blow (mm)	Depth from GL (mm)	Log P	2.48-1.057 Log P	CBR Value (%)
0		102			
1	29	131	1.5	0.934	8.6
2	2	133	0.3	2.162	145.1
3	7	140	0.8	1.587	38.6
4	1	141	0.0	2.480	302.0
5	1	142	0.0	2.480	302.0
6	1	143	0.0	2.480	302.0
7	2	145	0.3	2.162	145.1
8	2	147	0.3	2.162	145.1
9	2	149	0.3	2.162	145.1
10	3	152	0.5	1.976	94.6
11	2	154	0.3	2.162	145.1
12	2	156	0.3	2.162	145.1
13	3	159	0.5	1.976	94.6
14	3	162	0.5	1.976	94.6
15	2	164	0.3	2.162	145.1
16	3	167	0.5	1.976	94.6
17	3	170	0.5	1.976	94.6
18	2	172	0.3	2.162	145.1
19	3	175	0.5	1.976	94.6
20	3	178	0.5	1.976	94.6
21	3	181	0.5	1.976	94.6
22	3	184	0.5	1.976	94.6
23	2	186	0.3	2.162	145.1
24	3	189	0.5	1.976	94.6
25	2	191	0.3	2.162	145.1
26	2	193	0.3	2.162	145.1
27	3	196	0.5	1.976	94.6
28	3	199	0.5	1.976	94.6
29	3	202	0.5	1.976	94.6
30	6	208	0.8	1.657	45.4
31	3	211	0.5	1.976	94.6
32	4	215	0.6	1.844	69.8
33	3	218	0.5	1.976	94.6
34	5	223	0.7	1.741	55.1
35	5	228	0.7	1.741	55.1
36	5	233	0.7	1.741	55.1
37	5	238	0.7	1.741	55.1
38	5	243	0.7	1.741	55.1
39	5	248	0.7	1.741	55.1
40	7	255	0.8	1.587	38.6
41	8	263	0.9	1.525	33.5
42	10	273	1.0	1.423	26.5
43	3	276	0.5	1.976	94.6
44	3	279	0.5	1.976	94.6
45	3	282	0.5	1.976	94.6
46	3	285	0.5	1.976	94.6
47	3	288	0.5	1.976	94.6
48	2	290	0.3	2.162	145.1
49	2	292	0.3	2.162	145.1
50	3	295	0.5	1.976	94.6
51	4	299	0.6	1.844	69.8
52	4	303	0.6	1.844	69.8
53	4	307	0.6	1.844	69.8
54	4	311	0.6	1.844	69.8
55	5	316	0.7	1.741	55.1
56	5	321	0.7	1.741	55.1
57	4	325	0.6	1.844	69.8
58	5	330	0.7	1.741	55.1
59	6	336	0.8	1.657	45.4
60	4	340	0.6	1.844	69.8
61	2	342	0.3	2.162	145.1
62	2	344	0.3	2.162	145.1
63	3	347	0.5	1.976	94.6
64	3	350	0.5	1.976	94.6
65	3	353	0.5	1.976	94.6
66	3	356	0.5	1.976	94.6
67	3	359	0.5	1.976	94.6
68	3	362	0.5	1.976	94.6
69	2	364	0.3	2.162	145.1
70	3	367	0.5	1.976	94.6
71	3	370	0.5	1.976	94.6
72	3	373	0.5	1.976	94.6
73	3	376	0.5	1.976	94.6
74	3	379	0.5	1.976	94.6
75	3	382	0.5	1.976	94.6
76	3	385	0.5	1.976	94.6
77	3	388	0.5	1.976	94.6
78	3	391	0.5	1.976	94.6
79	3	394	0.5	1.976	94.6
80	3	397	0.5	1.976	94.6
81	3	400	0.5	1.976	94.6
82	3	403	0.5	1.976	94.6
83	3	406	0.5	1.976	94.6
84	3	409	0.5	1.976	94.6
85	1	410	0.0	2.480	302.0
86	2	412	0.3	2.162	145.1
87	5	417	0.7	1.741	55.1
88	4	421	0.6	1.844	69.8
89	6	427	0.8	1.657	45.4
90	6	433	0.8	1.657	45.4
91	6	439	0.8	1.657	45.4
92	6	445	0.8	1.657	45.4
93	7	452	0.8	1.587	38.6
94	7	459	0.8	1.587	38.6
95	7	466	0.8	1.587	38.6
96	8	474	0.9	1.525	33.5
97	8	482	0.9	1.525	33.5
98	5	487	0.7	1.741	55.1
99	5	492	0.7	1.741	55.1
100	5	497	0.7	1.741	55.1
101	5	502	0.7	1.741	55.1
102	6	508	0.8	1.657	45.4
103	6	514	0.8	1.657	45.4
104	6	520	0.8	1.657	45.4
105	5	525	0.7	1.741	55.1
106	5	530	0.7	1.741	55.1
107	6	536	0.8	1.657	45.4
108	6	542	0.8	1.657	45.4
109	6	548	0.8	1.657	45.4
110	6	554	0.8	1.657	45.4
111	6	560	0.8	1.657	45.4
112	6	566	0.8	1.657	45.4
113	6	572	0.8	1.657	45.4
114	6	578	0.8	1.657	45.4
115	5	583	0.7	1.741	55.1
116	4	587	0.6	1.844	69.8
117	3	590	0.5	1.976	94.6
118	4	594	0.6	1.844	69.8
119	4	598	0.6	1.844	69.8
120	4	602	0.6	1.844	69.8
121	4	606	0.6	1.844	69.8
122	3	609	0.5	1.976	94.6
123	3	612	0.5	1.976	94.6
124	3	615	0.5	1.976	94.6
125	1	616	0.0	2.480	302.0
126	2	618	0.3	2.162	145.1
127	6	624	0.8	1.657	45.4
128	1	625	0.0	2.480	302.0

Zero reading = start depth below ground surface

Zero reading at start of test: 102 (mm)



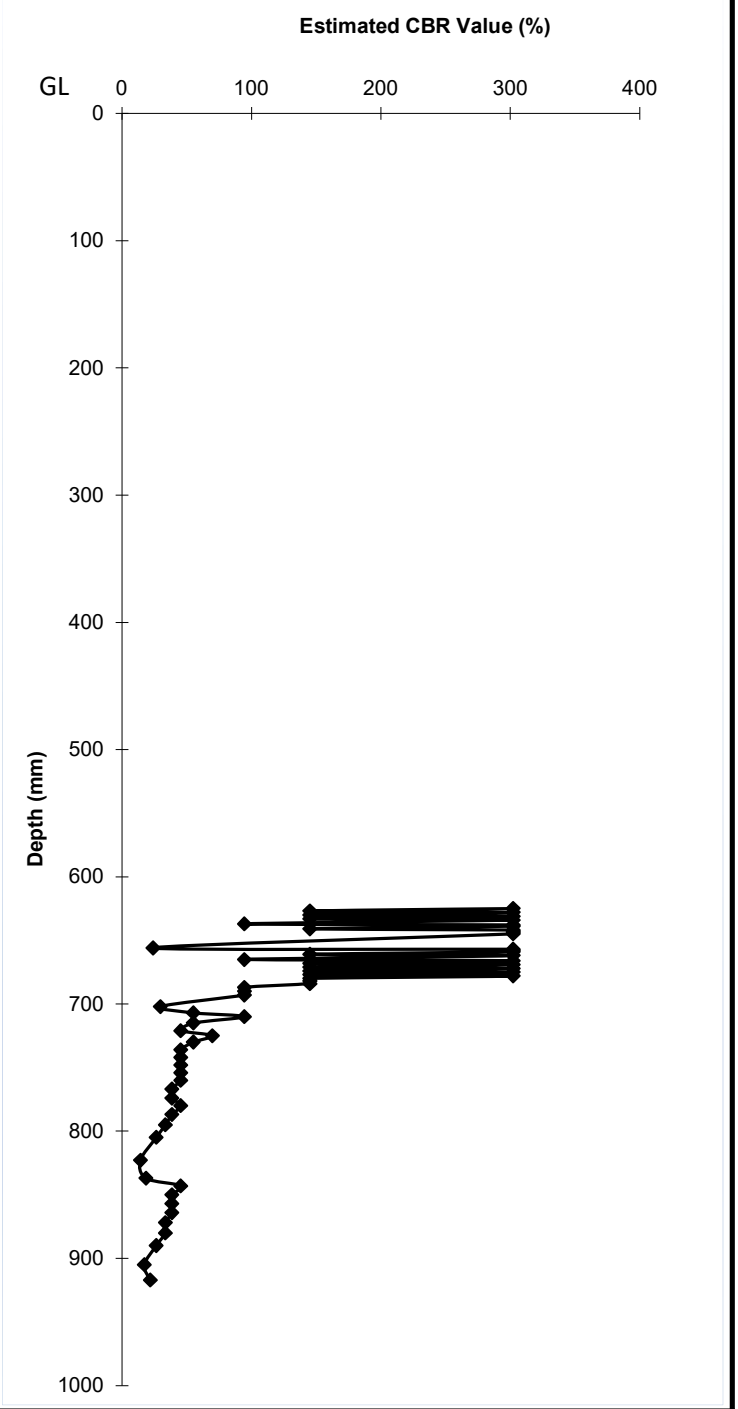
Remarks:	Terminated at target depth.	Date:	06/11/2025
Project Number:	700480	Reference:	WS104 (page 1)
Project Title:	Sackville Street, Manchester	Tech/Eng.	Nyemh Johnson

TRC - In situ CBR by DCP Probe

Cumulative Number of Blows	Penetration Per Blow (mm)	Depth from GL (mm)	Log P	2.48-1.057 Log P	CBR Value (%)
0		102			
128	1	625	0.0	2.480	302.0
129	2	627	0.3	2.162	145.1
130	1	628	0.0	2.480	302.0
131	2	630	0.3	2.162	145.1
132	1	631	0.0	2.480	302.0
133	2	633	0.3	2.162	145.1
134	1	634	0.0	2.480	302.0
135	3	637	0.5	1.976	94.6
136	1	638	0.0	2.480	302.0
137	1	639	0.0	2.480	302.0
138	2	641	0.3	2.162	145.1
139	1	642	0.0	2.480	302.0
140	1	643	0.0	2.480	302.0
141	1	644	0.0	2.480	302.0
142	1	645	0.0	2.480	302.0
143	11	656	1.0	1.379	23.9
144	1	657	0.0	2.480	302.0
145	1	658	0.0	2.480	302.0
146	1	659	0.0	2.480	302.0
147	2	661	0.3	2.162	145.1
148	1	662	0.0	2.480	302.0
149	3	665	0.5	1.976	94.6
150	1	666	0.0	2.480	302.0
151	2	668	0.3	2.162	145.1
152	1	669	0.0	2.480	302.0
153	2	671	0.3	2.162	145.1
154	1	672	0.0	2.480	302.0
155	2	674	0.3	2.162	145.1
156	1	675	0.0	2.480	302.0
157	2	677	0.3	2.162	145.1
158	1	678	0.0	2.480	302.0
159	2	680	0.3	2.162	145.1
160	2	682	0.3	2.162	145.1
161	2	684	0.3	2.162	145.1
162	3	687	0.5	1.976	94.6
163	3	690	0.5	1.976	94.6
164	3	693	0.5	1.976	94.6
165	9	702	1.0	1.471	29.6
166	5	707	0.7	1.741	55.1
167	3	710	0.5	1.976	94.6
168	5	715	0.7	1.741	55.1
169	6	721	0.8	1.657	45.4
170	4	725	0.6	1.844	69.8
171	5	730	0.7	1.741	55.1
172	6	736	0.8	1.657	45.4
173	6	742	0.8	1.657	45.4
174	6	748	0.8	1.657	45.4
175	6	754	0.8	1.657	45.4
176	6	760	0.8	1.657	45.4
177	7	767	0.8	1.587	38.6
178	7	774	0.8	1.587	38.6
179	6	780	0.8	1.657	45.4
180	7	787	0.8	1.587	38.6
181	8	795	0.9	1.525	33.5
182	10	805	1.0	1.423	26.5
183	18	823	1.3	1.153	14.2
184	14	837	1.1	1.269	18.6
185	6	843	0.8	1.657	45.4
186	7	850	0.8	1.587	38.6
187	7	857	0.8	1.587	38.6
188	7	864	0.8	1.587	38.6
189	8	872	0.9	1.525	33.5
190	8	880	0.9	1.525	33.5
191	10	890	1.0	1.423	26.5
192	15	905	1.2	1.237	17.3
193	12	917	1.1	1.339	21.8

Zero reading = start depth below ground surface

Zero reading at start of test: 102 (mm)



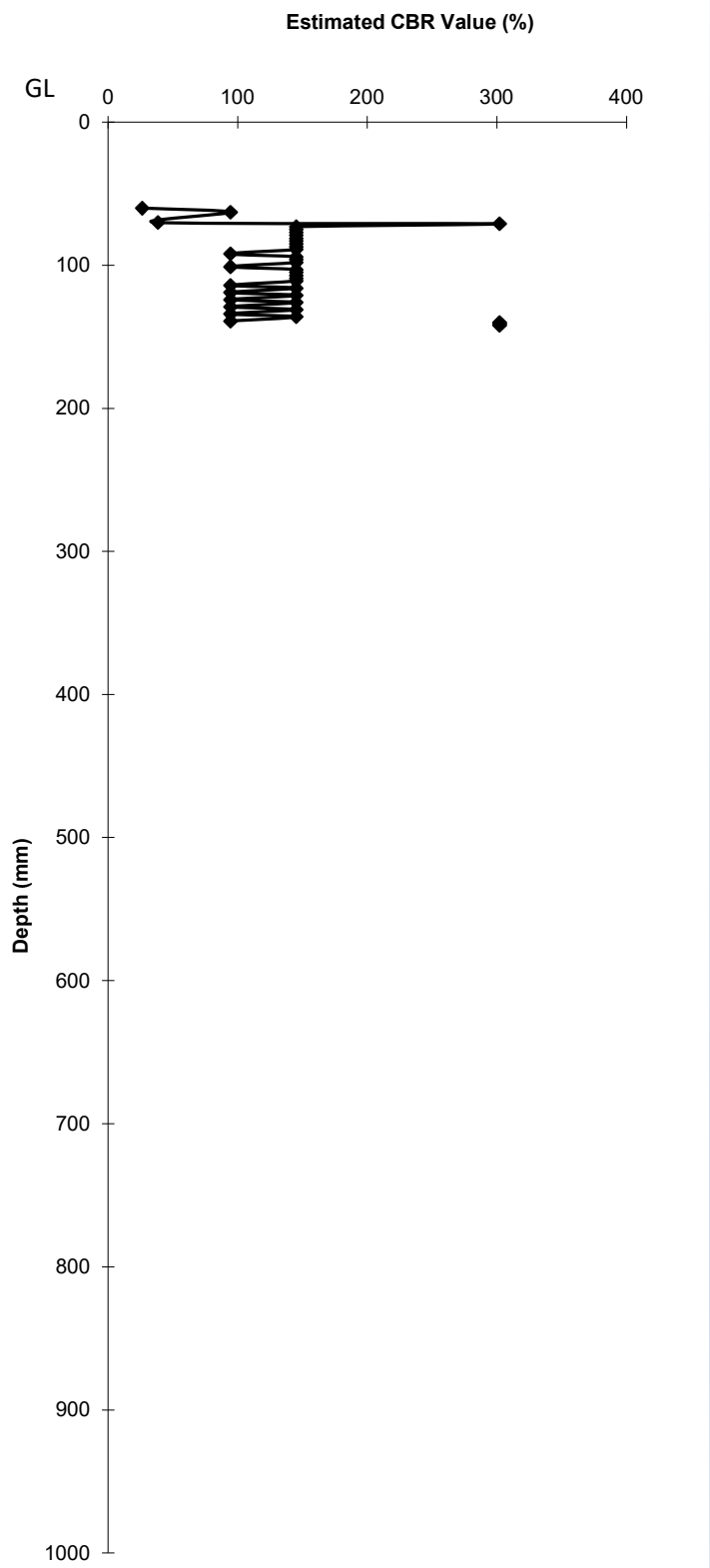
Remarks:	Terminated at target depth.	Date:	06/11/2025
Project Number:	700480	Reference:	WS104 (page 2)
Project Title:	Sackville Street, Manchester	Tech/Eng.	Nyemh Johnson

TRC - In situ CBR by DCP Probe

Cumulative Number of Blows	Penetration Per Blow (mm)	Depth from GL (mm)	Log P	2.48-1.057 Log P	CBR Value (%)
0		50			
1	10	60	1.0	1.423	26.5
2	3	63	0.5	1.976	94.6
3	7	70	0.8	1.587	38.6
4	1	71	0.0	2.480	302.0
5	2	73	0.3	2.162	145.1
6	2	75	0.3	2.162	145.1
7	2	77	0.3	2.162	145.1
8	2	79	0.3	2.162	145.1
9	2	81	0.3	2.162	145.1
10	2	83	0.3	2.162	145.1
11	2	85	0.3	2.162	145.1
12	2	87	0.3	2.162	145.1
13	2	89	0.3	2.162	145.1
14	3	92	0.5	1.976	94.6
15	2	94	0.3	2.162	145.1
16	2	96	0.3	2.162	145.1
17	2	98	0.3	2.162	145.1
18	3	101	0.5	1.976	94.6
19	2	103	0.3	2.162	145.1
20	2	105	0.3	2.162	145.1
21	2	107	0.3	2.162	145.1
22	2	109	0.3	2.162	145.1
23	2	111	0.3	2.162	145.1
24	3	114	0.5	1.976	94.6
25	2	116	0.3	2.162	145.1
26	3	119	0.5	1.976	94.6
27	2	121	0.3	2.162	145.1
28	3	124	0.5	1.976	94.6
29	2	126	0.3	2.162	145.1
30	3	129	0.5	1.976	94.6
31	2	131	0.3	2.162	145.1
32	3	134	0.5	1.976	94.6
33	2	136	0.3	2.162	145.1
34	3	139	0.5	1.976	94.6
35	0	139			
36	0	139			
37	1	140	0.0	2.480	302.0
38	0	140			
39	0	140			
40	0	140			
41	1	141	0.0	2.480	302.0
42	0	141			
43	0	141			
44	1	142	0.0	2.480	302.0
45	0	142			

Zero reading = start depth below ground surface

Zero reading at start of test: 50 (mm)



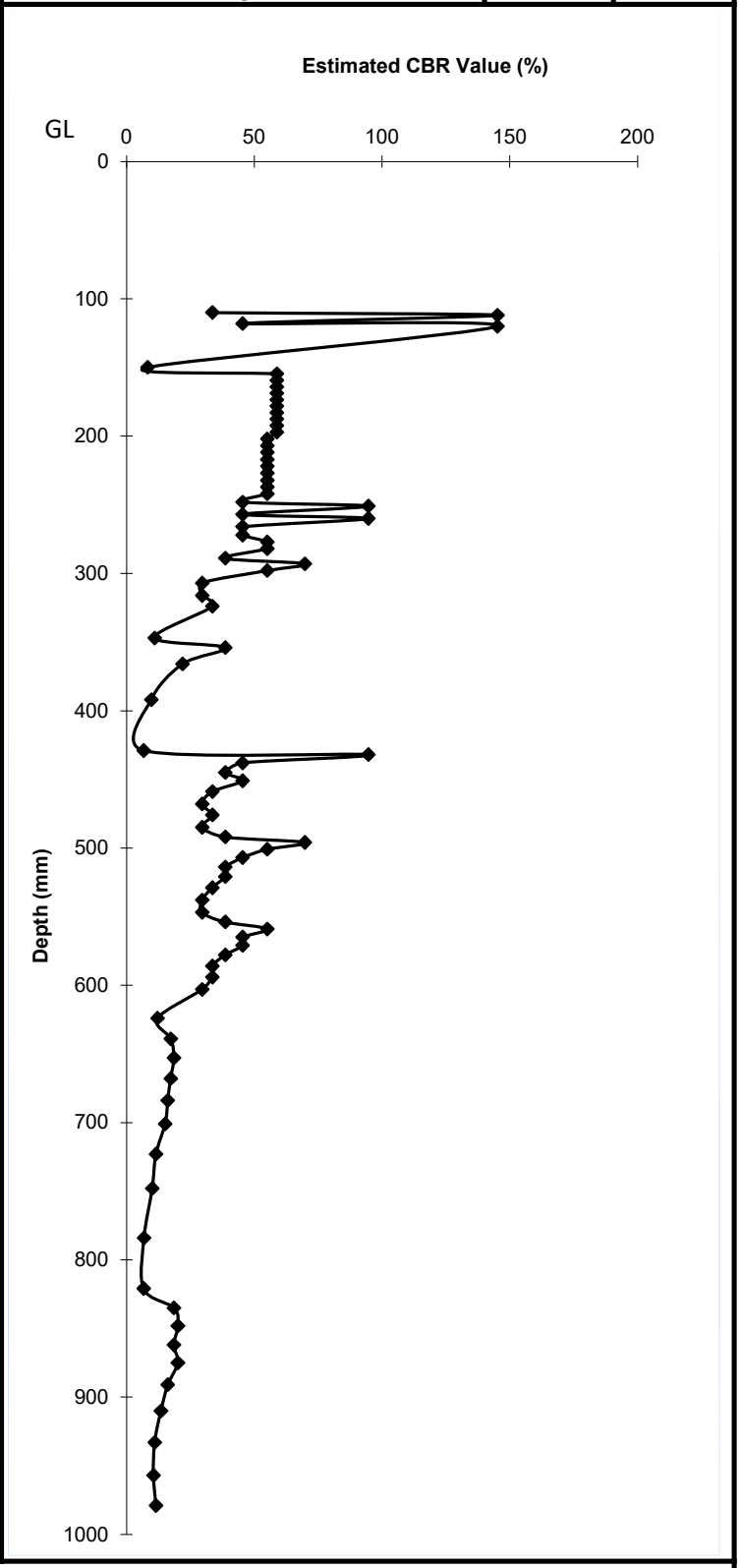
Remarks:	Terminated due to obstruction.	Date:	06/11/2025
Project Number:	700480	Reference:	WS105
Project Title:	Sackville Street, Manchester	Tech/Eng.	Nyemh Johnson

TRC - In situ CBR by DCP Probe

Zero reading = start depth below ground surface

Zero reading at start of test: 102 (mm)

Cumulative Number of Blows	Penetration Per Blow (mm)	Depth from GL (mm)	Log P	2.48-1.057 Log P	CBR Value (%)
0		102			
1	8	110	0.9	1.525	33.5
2	2	112	0.3	2.162	145.1
3	6	118	0.8	1.657	45.4
4	2	120	0.3	2.162	145.1
5	30	150	1.5	0.919	8.3
6	4.7	154.7	0.7	1.770	58.8
7	4.7	159.4	0.7	1.770	58.8
8	4.7	164.1	0.7	1.770	58.8
9	4.7	168.8	0.7	1.770	58.8
10	4.7	173.5	0.7	1.770	58.8
11	4.7	178.2	0.7	1.770	58.8
12	4.7	182.9	0.7	1.770	58.8
13	4.7	187.6	0.7	1.770	58.8
14	4.7	192.3	0.7	1.770	58.8
15	4.7	197	0.7	1.770	58.8
16	5	202	0.7	1.741	55.1
17	5	207	0.7	1.741	55.1
18	5	212	0.7	1.741	55.1
19	5	217	0.7	1.741	55.1
20	5	222	0.7	1.741	55.1
21	5	227	0.7	1.741	55.1
22	5	232	0.7	1.741	55.1
23	5	237	0.7	1.741	55.1
24	5	242	0.7	1.741	55.1
25	6	248	0.8	1.657	45.4
26	3	251	0.5	1.976	94.6
27	6	257	0.8	1.657	45.4
28	3	260	0.5	1.976	94.6
29	6	266	0.8	1.657	45.4
30	6	272	0.8	1.657	45.4
31	5	277	0.7	1.741	55.1
32	5	282	0.7	1.741	55.1
33	7	289	0.8	1.587	38.6
34	4	293	0.6	1.844	69.8
35	5	298	0.7	1.741	55.1
36	9	307	1.0	1.471	29.6
37	9	316	1.0	1.471	29.6
38	8	324	0.9	1.525	33.5
39	23	347	1.4	1.041	11.0
40	7	354	0.8	1.587	38.6
41	12	366	1.1	1.339	21.8
42	26	392	1.4	0.984	9.6
43	37	429	1.6	0.822	6.6
44	3	432	0.5	1.976	94.6
45	6	438	0.8	1.657	45.4
46	7	445	0.8	1.587	38.6
47	6	451	0.8	1.657	45.4
48	8	459	0.9	1.525	33.5
49	9	468	1.0	1.471	29.6
50	8	476	0.9	1.525	33.5
51	9	485	1.0	1.471	29.6
52	7	492	0.8	1.587	38.6
53	4	496	0.6	1.844	69.8
54	5	501	0.7	1.741	55.1
55	6	507	0.8	1.657	45.4
56	7	514	0.8	1.587	38.6
57	7	521	0.8	1.587	38.6
58	8	529	0.9	1.525	33.5
59	9	538	1.0	1.471	29.6
60	9	547	1.0	1.471	29.6
61	7	554	0.8	1.587	38.6
62	5	559	0.7	1.741	55.1
63	6	565	0.8	1.657	45.4
64	6	571	0.8	1.657	45.4
65	7	578	0.8	1.587	38.6
66	8	586	0.9	1.525	33.5
67	8	594	0.9	1.525	33.5
68	9	603	1.0	1.471	29.6
69	21	624	1.3	1.082	12.1
70	15	639	1.2	1.237	17.3
71	14	653	1.1	1.269	18.6
72	15	668	1.2	1.237	17.3
73	16	684	1.2	1.207	16.1
74	17	701	1.2	1.179	15.1
75	22	723	1.3	1.061	11.5
76	25	748	1.4	1.002	10.1
77	36	784	1.6	0.835	6.8
78	37	821	1.6	0.822	6.6
79	14	835	1.1	1.269	18.6
80	13	848	1.1	1.303	20.1
81	14	862	1.1	1.269	18.6
82	13	875	1.1	1.303	20.1
83	16	891	1.2	1.207	16.1
84	19	910	1.3	1.128	13.4
85	23	933	1.4	1.041	11.0
86	24	957	1.4	1.021	10.5
87	22	979	1.3	1.061	11.5



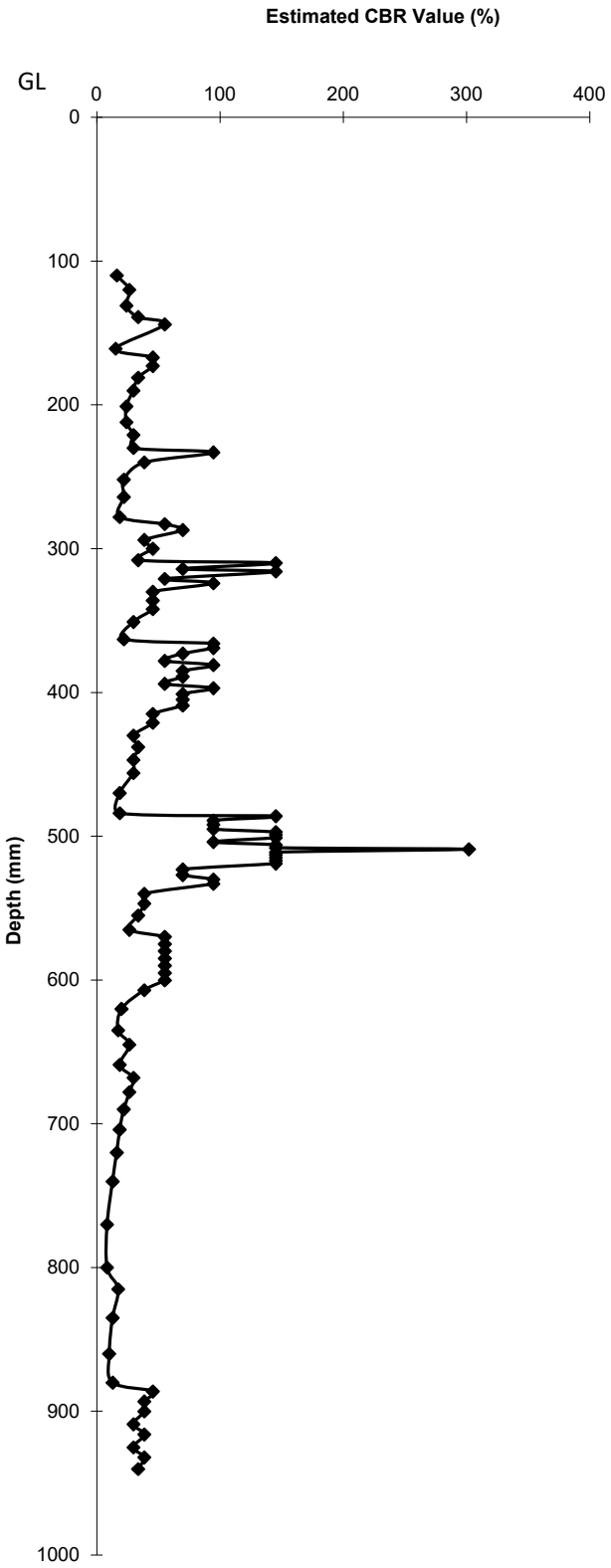
Remarks:	Terminated at target depth	Date:	06/11/2025
Project Number:	700480	Reference:	TRL101
Project Title:	Sackville Street, Manchester	Tech/Eng.	Nyemh Johnson

TRC - In situ CBR by DCP Probe

Zero reading = start depth below ground surface

Zero reading at start of test: 94 (mm)

Cumulative Number of Blows	Penetration Per Blow (mm)	Depth from GL (mm)	Log P	2.48-1.057 Log P	CBR Value (%)
0		94			
1	16	110	1.2	1.207	16.1
2	10	120	1.0	1.423	26.5
3	11	131	1.0	1.379	23.9
4	8	139	0.9	1.525	33.5
5	5	144	0.7	1.741	55.1
6	17	161	1.2	1.179	15.1
7	6	167	0.8	1.657	45.4
8	6	173	0.8	1.657	45.4
9	8	181	0.9	1.525	33.5
10	9	190	1.0	1.471	29.6
11	11	201	1.0	1.379	23.9
12	11	212	1.0	1.379	23.9
13	9	221	1.0	1.471	29.6
14	9	230	1.0	1.471	29.6
15	3	233	0.5	1.976	94.6
16	7	240	0.8	1.587	38.6
17	12	252	1.1	1.339	21.8
18	12	264	1.1	1.339	21.8
19	14	278	1.1	1.269	18.6
20	5	283	0.7	1.741	55.1
21	4	287	0.6	1.844	69.8
22	7	294	0.8	1.587	38.6
23	6	300	0.8	1.657	45.4
24	8	308	0.9	1.525	33.5
25	2	310	0.3	2.162	145.1
26	4	314	0.6	1.844	69.8
27	2	316	0.3	2.162	145.1
28	5	321	0.7	1.741	55.1
29	3	324	0.5	1.976	94.6
30	6	330	0.8	1.657	45.4
31	6	336	0.8	1.657	45.4
32	6	342	0.8	1.657	45.4
33	9	351	1.0	1.471	29.6
34	12	363	1.1	1.339	21.8
35	3	366	0.5	1.976	94.6
36	3	369	0.5	1.976	94.6
37	4	373	0.6	1.844	69.8
38	5	378	0.7	1.741	55.1
39	3	381	0.5	1.976	94.6
40	4	385	0.6	1.844	69.8
41	4	389	0.6	1.844	69.8
42	5	394	0.7	1.741	55.1
43	3	397	0.5	1.976	94.6
44	4	401	0.6	1.844	69.8
45	4	405	0.6	1.844	69.8
46	4	409	0.6	1.844	69.8
47	6	415	0.8	1.657	45.4
48	6	421	0.8	1.657	45.4
49	9	430	1.0	1.471	29.6
50	8	438	0.9	1.525	33.5
51	9	447	1.0	1.471	29.6
52	9	456	1.0	1.471	29.6
53	14	470	1.1	1.269	18.6
54	14	484	1.1	1.269	18.6
55	2	486	0.3	2.162	145.1
56	3	489	0.5	1.976	94.6
57	3	492	0.5	1.976	94.6
58	3	495	0.5	1.976	94.6
59	2	497	0.3	2.162	145.1
60	2	499	0.3	2.162	145.1
61	2	501	0.3	2.162	145.1
62	3	504	0.5	1.976	94.6
63	2	506	0.3	2.162	145.1
64	2	508	0.3	2.162	145.1
65	1	509	0.0	2.480	302.0
66	2	511	0.3	2.162	145.1
67	2	513	0.3	2.162	145.1
68	2	515	0.3	2.162	145.1
69	2	517	0.3	2.162	145.1
70	2	519	0.3	2.162	145.1
71	4	523	0.6	1.844	69.8
72	4	527	0.6	1.844	69.8
73	3	530	0.5	1.976	94.6
74	3	533	0.5	1.976	94.6
75	7	540	0.8	1.587	38.6
76	7	547	0.8	1.587	38.6
77	8	555	0.9	1.525	33.5
78	10	565	1.0	1.423	26.5
79	5	570	0.7	1.741	55.1
80	5	575	0.7	1.741	55.1
81	5	580	0.7	1.741	55.1
82	5	585	0.7	1.741	55.1
83	5	590	0.7	1.741	55.1
84	5	595	0.7	1.741	55.1
85	5	600	0.7	1.741	55.1
86	7	607	0.8	1.587	38.6
87	13	620	1.1	1.303	20.1
88	15	635	1.2	1.237	17.3
89	10	645	1.0	1.423	26.5
90	14	659	1.1	1.269	18.6
91	9	668	1.0	1.471	29.6
92	10	678	1.0	1.423	26.5
93	12	690	1.1	1.339	21.8
94	14	704	1.1	1.269	18.6
95	16	720	1.2	1.207	16.1
96	20	740	1.3	1.105	12.7
97	30	770	1.5	0.919	8.3
98	30	800	1.5	0.919	8.3
99	15	815	1.2	1.237	17.3
100	20	835	1.3	1.105	12.7
101	25	860	1.4	1.002	10.1
102	20	880	1.3	1.105	12.7
103	6	886	0.8	1.657	45.4
104	7	893	0.8	1.587	38.6
105	7	900	0.8	1.587	38.6
106	9	909	1.0	1.471	29.6
107	7	916	0.8	1.587	38.6
108	9	925	1.0	1.471	29.6
109	7	932	0.8	1.587	38.6
110	8	940	0.9	1.525	33.5



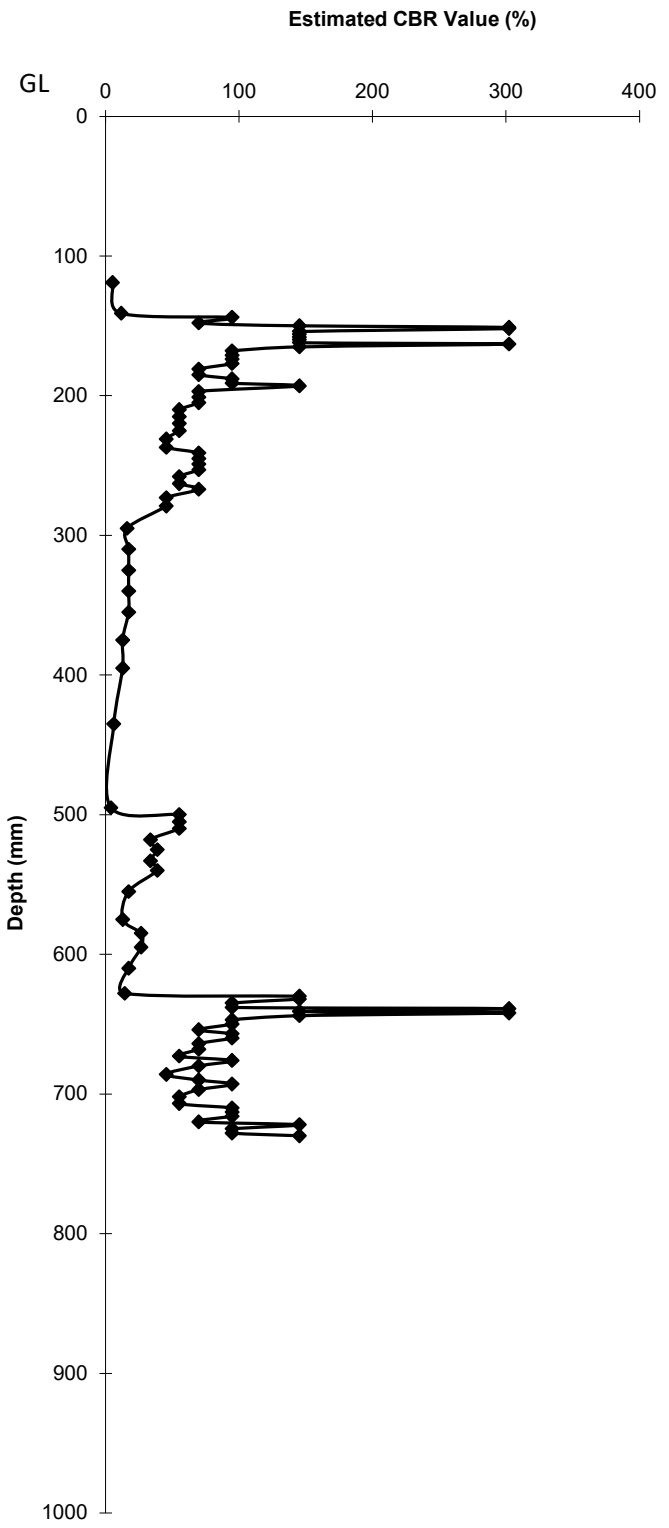
Remarks:	Terminated at target depth	Date:	06/11/2025
Project Number:	700480	Reference:	TRL102
Project Title:	Sackville Street, Manchester	Tech/Eng.	Nyemh Johnson

TRC - In situ CBR by DCP Probe

Cumulative Number of Blows	Penetration Per Blow (mm)	Depth from GL (mm)	Log P	2.48-1.057 Log P	CBR Value (%)
0		72			
1	47	119	1.7	0.713	5.2
2	22	141	1.3	1.061	11.5
3	3	144	0.5	1.976	94.6
4	4	148	0.6	1.844	69.8
5	2	150	0.3	2.162	145.1
6	1	151	0.0	2.480	302.0
7	1	152	0.0	2.480	302.0
8	2	154	0.3	2.162	145.1
9	2	156	0.3	2.162	145.1
10	2	158	0.3	2.162	145.1
11	2	160	0.3	2.162	145.1
12	2	162	0.3	2.162	145.1
13	1	163	0.0	2.480	302.0
14	2	165	0.3	2.162	145.1
15	3	168	0.5	1.976	94.6
16	3	171	0.5	1.976	94.6
17	3	174	0.5	1.976	94.6
18	3	177	0.5	1.976	94.6
19	4	181	0.6	1.844	69.8
20	4	185	0.6	1.844	69.8
21	3	188	0.5	1.976	94.6
22	3	191	0.5	1.976	94.6
23	2	193	0.3	2.162	145.1
24	4	197	0.6	1.844	69.8
25	4	201	0.6	1.844	69.8
26	4	205	0.6	1.844	69.8
27	5	210	0.7	1.741	55.1
28	5	215	0.7	1.741	55.1
29	5	220	0.7	1.741	55.1
30	5	225	0.7	1.741	55.1
31	6	231	0.8	1.657	45.4
32	6	237	0.8	1.657	45.4
33	4	241	0.6	1.844	69.8
34	4	245	0.6	1.844	69.8
35	4	249	0.6	1.844	69.8
36	4	253	0.6	1.844	69.8
37	5	258	0.7	1.741	55.1
38	5	263	0.7	1.741	55.1
39	4	267	0.6	1.844	69.8
40	6	273	0.8	1.657	45.4
41	6	279	0.8	1.657	45.4
42	16	295	1.2	1.207	16.1
43	15	310	1.2	1.237	17.3
44	15	325	1.2	1.237	17.3
45	15	340	1.2	1.237	17.3
46	15	355	1.2	1.237	17.3
47	20	375	1.3	1.105	12.7
48	20	395	1.3	1.105	12.7
49	40	435	1.6	0.787	6.1
50	60	495	1.8	0.600	4.0
51	5	500	0.7	1.741	55.1
52	5	505	0.7	1.741	55.1
53	5	510	0.7	1.741	55.1
54	8	518	0.9	1.525	33.5
55	7	525	0.8	1.587	38.6
56	8	533	0.9	1.525	33.5
57	7	540	0.8	1.587	38.6
58	15	555	1.2	1.237	17.3
59	20	575	1.3	1.105	12.7
60	10	585	1.0	1.423	26.5
61	10	595	1.0	1.423	26.5
62	15	610	1.2	1.237	17.3
63	18	628	1.3	1.153	14.2
64	2	630	0.3	2.162	145.1
65	2	632	0.3	2.162	145.1
66	3	635	0.5	1.976	94.6
67	3	638	0.5	1.976	94.6
68	1	639	0.0	2.480	302.0
69	2	641	0.3	2.162	145.1
70	1	642	0.0	2.480	302.0
71	2	644	0.3	2.162	145.1
72	3	647	0.5	1.976	94.6
73	3	650	0.5	1.976	94.6
74	4	654	0.6	1.844	69.8
75	3	657	0.5	1.976	94.6
76	3	660	0.5	1.976	94.6
77	4	664	0.6	1.844	69.8
78	4	668	0.6	1.844	69.8
79	5	673	0.7	1.741	55.1
80	3	676	0.5	1.976	94.6
81	4	680	0.6	1.844	69.8
82	6	686	0.8	1.657	45.4
83	4	690	0.6	1.844	69.8
84	3	693	0.5	1.976	94.6
85	4	697	0.6	1.844	69.8
86	5	702	0.7	1.741	55.1
87	5	707	0.7	1.741	55.1
88	3	710	0.5	1.976	94.6
89	3	713	0.5	1.976	94.6
90	3	716	0.5	1.976	94.6
91	4	720	0.6	1.844	69.8
92	2	722	0.3	2.162	145.1
93	3	725	0.5	1.976	94.6
94	3	728	0.5	1.976	94.6
95	2	730	0.3	2.162	145.1
96	0	730			

Zero reading = start depth below ground surface

Zero reading at start of test: 72 (mm)



Remarks:	Terminated due to obstruction	Date:	06/11/2025
Project Number:	700480	Reference:	TRL103
Project Title:	Sackville Street, Manchester	Tech/Eng.	Nyemh Johnson

Annex E: Laboratory Geotechnical Data

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with: BS EN ISO 17892-12:2018+A2:2022, cl 5.3 and 5.5, Fall Cone Method, 4 Pt Test, BS 1377-2:2022,cl 5.2 and 6

4041

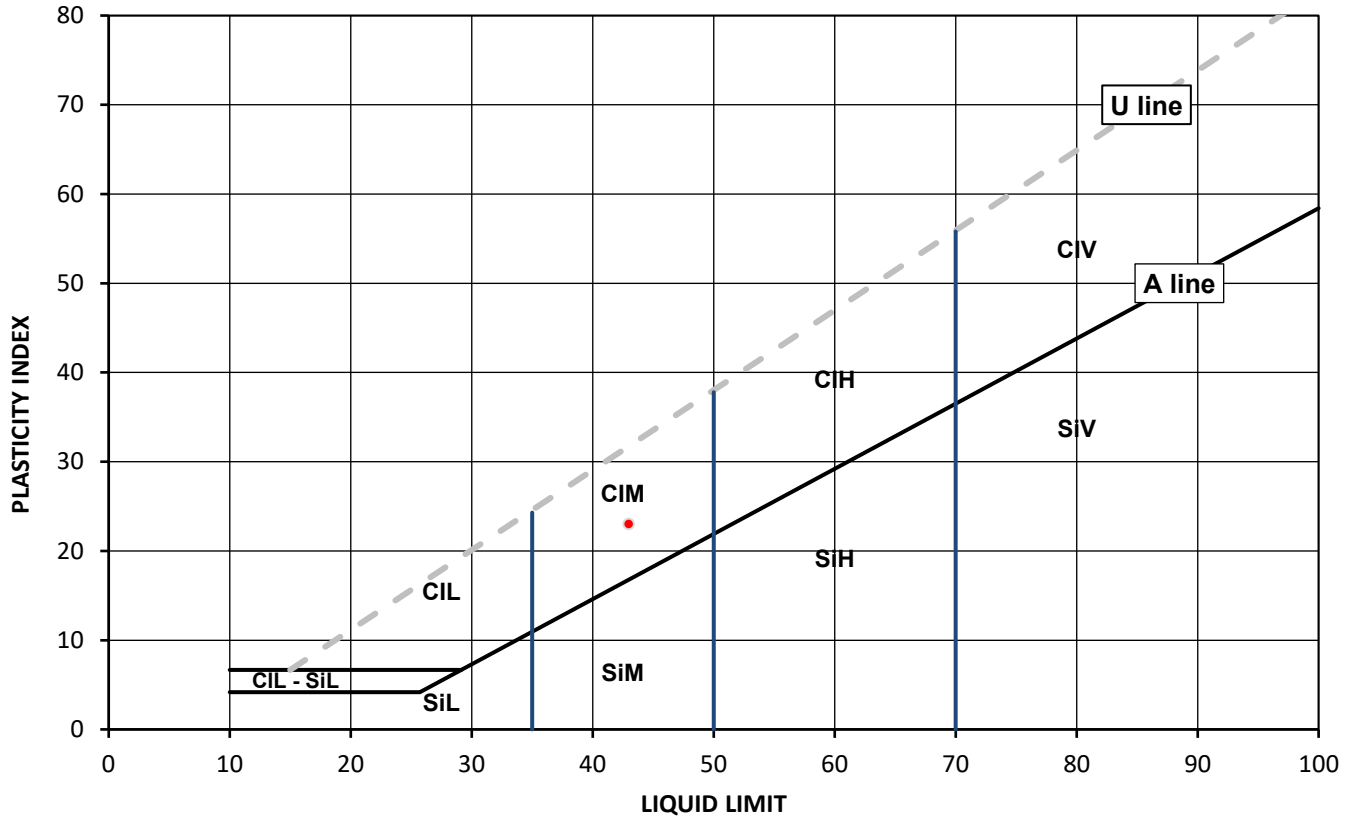
Client:	TRC Companies Ltd	Client Reference:	700480
Client Address:		Job Number:	25-062001-1
	20 Red Lion Street, London, WC1R 4PQ	Date Sampled:	06/11/2025
		Date Received:	12/11/2025
Contact:	Kirsty Paterson	Date Tested:	26/11/2025
Site Address:	Sackville Street Manchester	Sampled By:	Client - KP

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	752089	Depth Top [m]:	2.50
Hole No.:	WS104	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	D
Sample Description:	Brown slightly gravelly sandy CLAY		
Sample Preparation:	Tested after >0.425mm removed by hand; The water content in the sample was increased		
Cone Type:	80g/30deg		

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	Liquidity Index [IL] % #	Consistency Index [IC] % #	% Passing 425µm BS Test Sieve
22.7	43	20	23	0.13	0.87	90



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

		Plasticity		Liquid Limit
Cl	Clay	L	Low	below 35
Si	Silt	M	Medium	35 to 50
		H	High	50 to 70
		V	Very high	exceeding 70
		O	Organic	append to classification for organic material (eg ClHO)

Note: Water Content by BS EN ISO 17892-1:2014+A1:2022, BS 1377-2:2022; # Non accredited

Remarks:

Signed: [redacted]

Katarzyna Koziel
Geotechnical Reporting Team Leader
for and on behalf of i2 Analytical Ltd

Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation. report may not be reproduced other than in full without the prior written approval of the issuing laboratory. The results included within the report relate only to the sample(s) submitted for testing

Date Reported: 03/12/2025

GF 337.16

i2 Analytical Ltd, Unit 8, Harrowden Road, Brackmills Industrial Estate, Northampton, NN4 7EB

SUMMARY REPORT

DETERMINATION OF WATER CONTENT

Tested in Accordance with: BS EN ISO 17892-1:2014+A1:2022, BS 1377-2: 2022, clause 4.1

4041

Client: TRC Companies Ltd

Client Address:

20 Red Lion Street, London, WC1R 4PQ

Contact: Kirsty Paterson

Site Address: Sackville Street Manchester

Client Reference: 700480

Job Number: 25-062001-1

Date Sampled: 06/11/2025

Date Received: 12/11/2025

Date Tested: 21/11 - 26/11/2025

Sampled By: Client - KP

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	WC											
		Reference	Depth Top m	Depth Base m	Type			%											
751012	WS102	Not Given	0.20	Not Given	D	Brown very gravelly SAND		13.5											
752089	WS104	Not Given	2.50	Not Given	D	Brown slightly gravelly sandy CLAY		22.7											

Comments:

Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation. This report may not be reproduced other than in full without the prior written approval of the issuing laboratory. The results included within the report relate only to the sample(s) submitted for testing.

Signed: [redacted]

Katarzyna Koziel
Geotechnical Reporting Team Leader
for and on behalf of i2 Analytical Ltd

Date Reported: 03/12/2025

GF 126.20

i2 Analytical Ltd, Unit 8, Harrowden Road, Brackmills Industrial Estate, Northampton, NN4 7EB

TRC Companies Ltd
20 Red Lion Street, London
WC1R 4PQ

t: [redacted]

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

t: 01923 225404
f: 01923 237404
e: info-i2analytical@normecgroup.com

Analytical Report Number : 25-062002

Project / Site name:	Sackville Street Manchester	**Samples received on:**	12/11/2025
Your job number:	700480	**Samples instructed on/ Analysis started on:**	18/11/2025
Your order number:	700480	**Analysis completed by:**	02/12/2025
Report Issue Number:	1	**Report issued on:**	02/12/2025
Samples Analysed:	3 soil samples		

[redacted]

Signed:

Anna Goc
PL Head of Reporting Team
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
air	- once the analysis is complete

Excel copies of reports are only valid when accompanied by this PDF certificate.

Retention period for records and reports is minimum 6 years from the date of issue of the final report.
Some records may be kept for longer according to other legal/best practice requirements.

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

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 25-062002
Project / Site name: Sackville Street Manchester
Your Order No: 700480

Lab Sample Number				751010	751011	752090
Sample Reference				WS103	WS101	WS104
Sample Number				None Supplied	None Supplied	None Supplied
Water Matrix				N/A	N/A	N/A
Depth (m)				1.00	0.50	2.50
Date Sampled				06/11/2025	06/11/2025	06/11/2025
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status			
Stone Content	%	0.1	NONE	25.9	16.3	< 0.1
Moisture Content	%	0.01	NONE	16	15	13
Total mass of sample received	kg	0.1	NONE	0.6	0.5	1.6
Geotechnical						
Geotechnical Testing - Various		N/A	NONE	See attached	See attached	-
General Inorganics						
pH (L099)	pH Units	N/A	MCERTS	8.1	9.6	7.9
Total Sulphate as SO_4	%	0.005	MCERTS	0.139	0.236	0.03
Water Soluble Sulphate as SO_4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	86	490	86
Water Soluble SO_4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	43.1	246	42.8
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	3.6	8.2	2.4
Total Sulphur	mg/kg	50	MCERTS	800	1100	140
Total Sulphur	%	0.005	MCERTS	0.08	0.115	0.014
Water Soluble Nitrate (2:1) as N (leachate equivalent)	mg/l	2	NONE	-	-	< 2.0
Water Soluble Nitrate (2:1) as NO_3	mg/kg	2	NONE	14	2.4	-
Water Soluble Nitrate (2:1) as NO_3 (leachate equivalent)	mg/l	5	NONE	7	< 5.0	-
Heavy Metals / Metalloids						
Magnesium (leachate equivalent)	mg/l	2.5	NONE	4.5	< 2.5	5.1
Magnesium (water soluble)	mg/kg	5	NONE	8.9	< 5.0	-

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

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

Analytical Report Number : 25-062002
Project / Site name: Sackville Street Manchester

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
751010	WS103	None Supplied	1	Brown gravelly sand with stones
751011	WS101	None Supplied	0.5	Brown sand with gravel and stones
752090	WS104	None Supplied	2.5	Brown clay

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

Analytical Report Number : 25-062002
Project / Site name: Sackville Street Manchester

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight	In-house method based on British Standard Methods and MCERTS requirements.	L019B	D	NONE
Magnesium, water soluble, in soil	Determination of water soluble magnesium by extraction with water followed by ICP-OES	In-house method based on TRL 447	L038B	D	NONE
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES	In-house method	L038B	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Sulphate, water soluble, in soil (16hr extraction)	In-house method	L038B	D	MCERTS
Total Sulphur in soil	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES	In-house method	L038B	D	MCERTS
Water Soluble Nitrate (leachate equivalent)	Determination of nitrate by reaction with sodium salicylate and colorimetry	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08, 2:1 extraction	L078-PL	W	NONE
Nitrate, water soluble, in soil	Determination of nitrate by reaction with sodium salicylate and colorimetry	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08, 2:1 extraction	L078-PL	W	NONE
Chloride, water soluble, in soil	Determination of Chloride colorimetrically by discrete analyser	In-house method	L082B	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099-PL	D	MCERTS
Geotechnical Testing	See attached geotechnical report	See attached geotechnical report	PL		NONE
AGS4 Required (Geotech only)			PL		NONE
Soil Descriptions	Textural classification	In-house method	L019B	W	NONE

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

Analytical Report Number : 25-062002
Project / Site name: Sackville Street Manchester

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Water Soluble Nitrate (2:1) as N in soil	Determination of nitrate by reaction with sodium salicylate and colorimetry	In-house method based on Examination of Water and Wastewater & Polish Standard Method PN-82/C-04579.08, 2:1 extraction	L078-PL	W	NONE

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

Quality control parameter failure associated with individual result applies to calculated sum of individuals.
The result for sum should be interpreted with caution

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

Annex F: Laboratory Chemical Data

TRC Companies Ltd
20 Red Lion Street, London
WC1R 4PQ

t: [redacted]

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

t: 01923 225404
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Analytical Report Number : 25-060677

Project / Site name:	Sackville Street Manchester	**Samples received on:**	07/11/2025
Your job number:	700480	**Samples instructed on/ Analysis started on:**	10/11/2025
Your order number:	700480	**Analysis completed by:**	21/11/2025
Report Issue Number:	1	**Report issued on:**	21/11/2025
Samples Analysed:	4 soil samples - 3 10:1 WAC samples		

[redacted]

Signed:

Anna Goc
PL Head of Reporting Team
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
air	- once the analysis is complete

Excel copies of reports are only valid when accompanied by this PDF certificate.

Retention period for records and reports is minimum 6 years from the date of issue of the final report.
Some records may be kept for longer according to other legal/best practice requirements.

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

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

Analytical Report Number: 25-060677
Project / Site name: Sackville Street Manchester
Your Order No: 700480

Lab Sample Number				744036	744037	744038	744039	744040
Sample Reference				WS103	WS105	WS104	WS104	WS104
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix				N/A	N/A	N/A	N/A	N/A
Depth (m)				0.50	0.60	1.20	2.50	0.80
Date Sampled				06/11/2025	06/11/2025	06/11/2025	06/11/2025	06/11/2025
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status					
Stone Content	%	0.1	NONE	47.9	15.2	25.6	< 0.1	44.5
Moisture Content	%	0.01	NONE	10	12	20	15	14
Total mass of sample received	kg	0.1	NONE	0.8	2	0.7	1.6	2
Asbestos								
Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Detected	Not-detected	Not-detected	-	-
Asbestos Analyst ID	N/A	N/A	N/A	MMI	MMI	MMI	-	-
Analysis completed	N/A	N/A	N/A	17/11/2025	17/11/2025	17/11/2025	-	-
Actinolite detected	Type	N/A	ISO 17025	Not-detected	-	-	-	-
Amosite detected	Type	N/A	ISO 17025	Not-detected	-	-	-	-
Anthophyllite detected	Type	N/A	ISO 17025	Not-detected	-	-	-	-
Chrysotile detected	Type	N/A	ISO 17025	Not-detected	-	-	-	-
Crocidolite detected	Type	N/A	ISO 17025	Detected	-	-	-	-
Tremolite detected	Type	N/A	ISO 17025	Not-detected	-	-	-	-
Asbestos % by hand picking/weighing	%	0.001	ISO 17025	0.002	-	-	-	-
Asbestos Containing Material Types Detected (ACM)	Type	N/A	ISO 17025	Loose Fibrous Debris	-	-	-	-
General Inorganics								
pH (L005B)	pH Units	N/A	MCERTS	-	7.8	-	-	7.9
pH (L099)	pH Units	N/A	MCERTS	10	8.7	7.7	8.1	-
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	-	0.6	-	-	2.9
Loss on Ignition @ 450°C	%	0.2	MCERTS	-	1.4	-	-	9.3
Acid Neutralisation Capacity	+/- mmol/kg	-9999	NONE	-	12	-	-	7.9
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	0.34	0.05	3.8	< 0.05	1.4
Acenaphthylene	mg/kg	0.05	MCERTS	0.09	< 0.05	2.5	< 0.05	0.58
Acenaphthene	mg/kg	0.05	MCERTS	0.3	0.06	31	< 0.05	4.1
Fluorene	mg/kg	0.05	MCERTS	0.24	< 0.05	18	< 0.05	2.4
Phenanthrene	mg/kg	0.05	MCERTS	2.5	0.51	210	0.07	34
Anthracene	mg/kg	0.05	MCERTS	0.59	0.11	50	< 0.05	8.7
Fluoranthene	mg/kg	0.05	MCERTS	6.1	0.59	390	0.05	78
Pyrene	mg/kg	0.05	MCERTS	6.1	0.62	350	0.06	72
Benzo(a)anthracene	mg/kg	0.05	MCERTS	3.4	0.31	170	< 0.05	37
Chrysene	mg/kg	0.05	MCERTS	3.7	0.37	170	< 0.05	35
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	5.2	0.33	250	< 0.05	44
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	2	0.15	77	< 0.05	17
Benzo(a)pyrene	mg/kg	0.05	MCERTS	4	0.28	190	< 0.05	36
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	1.9	0.11	93	< 0.05	19
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.47	< 0.05	17	< 0.05	4.6
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	2.2	0.17	99	< 0.05	24
Coronene	mg/kg	0.05	NONE	-	< 0.05	-	-	6.7
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	39	3.68	2120	< 0.80	-
Total WAC-17 PAHs	mg/kg	0.85	NONE	-	3.68	-	-	424

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Analytical Report Number: 25-060677
Project / Site name: Sackville Street Manchester
Your Order No: 700480

Lab Sample Number				744036	744037	744038	744039	744040
Sample Reference				WS103	WS105	WS104	WS104	WS104
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix				N/A	N/A	N/A	N/A	N/A
Depth (m)				0.50	0.60	1.20	2.50	0.80
Date Sampled				06/11/2025	06/11/2025	06/11/2025	06/11/2025	06/11/2025
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	18	15	40	8.4	-
Boron (water soluble)	mg/kg	0.2	MCERTS	0.7	1	1.1	2.1	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.3	0.3	16	< 0.2	-
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	U/S *U/S g	< 1.8	-
Chromium (III)	mg/kg	1	NONE	140	24	U/S *U/S g	34	-
Chromium (hexavalent) by IC	mg/kg	1.8	NONE	-	-	2.77	-	-
Chromium (III) by IC	mg/kg	1	NONE	-	-	37	-	-
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	140	24	39	34	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	130	40	3400	31	-
Lead (aqua regia extractable)	mg/kg	1	MCERTS	640	2000	4300	15	-
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	2.7	2.3	< 0.3	-
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	24	12	36	39	-
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	2.4	1.3	1.4	< 1.0	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	190	280	1900	70	-
Petroleum Hydrocarbons								
TPHCWG - Aliphatic >EC5 - EC6 $_{HS_1D_AL}$	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010	-
TPHCWG - Aliphatic >EC6 - EC8 $_{HS_1D_AL}$	mg/kg	0.01	MCERTS	< 0.010	< 0.010	0.026	0.026	-
TPHCWG - Aliphatic >EC8 - EC10 $_{HS_1D_AL}$	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010	-
TPHCWG - Aliphatic >EC10 - EC12 $_{EH_CU_1D_AL}$	mg/kg	1	MCERTS	< 1.0	< 1.0	4.8	< 1.0	-
TPHCWG - Aliphatic >EC12 - EC16 $_{EH_CU_1D_AL}$	mg/kg	2	MCERTS	3	< 2.0	62	< 2.0	-
TPHCWG - Aliphatic >EC16 - EC21 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	8.9	< 8.0	110	< 8.0	-
TPHCWG - Aliphatic >EC21 - EC35 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	45	< 8.0	280	< 8.0	-
TPHCWG - Aliphatic >EC35 - EC40 $_{EH_CU_1D_AL}$	mg/kg	10	NONE	< 10	< 10	56	< 10	-
TPHCWG - Aliphatic >EC5 - EC35 $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	57	< 10	450	< 10	-
TPHCWG - Aliphatic >EC5 - EC40 $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	57	< 10	510	< 10	-
TPHCWG - Aromatic >EC5 - EC7 $_{HS_1D_AR}$	mg/kg	0.01	MCERTS	< 0.010	< 0.010	0.012	< 0.010	-
TPHCWG - Aromatic >EC7 - EC8 $_{HS_1D_AR}$	mg/kg	0.01	MCERTS	< 0.010	< 0.010	0.028	0.017	-
TPHCWG - Aromatic >EC8 - EC10 $_{HS_1D_AR}$	mg/kg	0.02	MCERTS	< 0.020	< 0.020	< 0.020	< 0.020	-
TPHCWG - Aromatic >EC10 - EC12 $_{EH_CU_1D_AR}$	mg/kg	1	MCERTS	< 1.0	< 1.0	6	< 1.0	-
TPHCWG - Aromatic >EC12 - EC16 $_{EH_CU_1D_AR}$	mg/kg	2	MCERTS	3.7	< 2.0	290	< 2.0	-
TPHCWG - Aromatic >EC16 - EC21 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	32	< 10	2000	< 10	-
TPHCWG - Aromatic >EC21 - EC35 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	110	< 10	3200	< 10	-
TPHCWG - Aromatic >EC35 - EC40 $_{EH_CU_1D_AR}$	mg/kg	10	NONE	14	< 10	280	< 10	-
TPHCWG - Aromatic >EC5 - EC35 $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	140	< 10	5500	< 10	-
TPHCWG - Aromatic >EC5 - EC40 $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	160	< 10	5800	< 10	-
TPH Total >EC5 - EC40 $_{EH_CU+HS_1D_TOTAL}$	mg/kg	10	NONE	210	< 10	6300	< 10	-
Mineral Oil (EC10 - EC40) $_{EH_CU_1D_AL}$	mg/kg	10	NONE	-	< 10	-	-	97

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Analytical Report Number: 25-060677
Project / Site name: Sackville Street Manchester
Your Order No: 700480

Lab Sample Number				744036	744037	744038	744039	744040
Sample Reference				WS103	WS105	WS104	WS104	WS104
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix				N/A	N/A	N/A	N/A	N/A
Depth (m)				0.50	0.60	1.20	2.50	0.80
Date Sampled				06/11/2025	06/11/2025	06/11/2025	06/11/2025	06/11/2025
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status					
VOCs								
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	-
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	10	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0	27	17	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
p & m-Xylene	µg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
o-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total BTEX	µg/kg	10	MCERTS	-	< 10	-	-	< 10
PCBs by GC-MS								
PCB Congener 28	mg/kg	0.001	MCERTS	-	< 0.001	-	-	< 0.001
PCB Congener 52	mg/kg	0.001	MCERTS	-	0.033	-	-	< 0.001
PCB Congener 101	mg/kg	0.001	MCERTS	-	1.2	-	-	< 0.001
PCB Congener 118	mg/kg	0.001	MCERTS	-	0.18	-	-	< 0.001
PCB Congener 138	mg/kg	0.001	MCERTS	-	6.4 $	-	-	< 0.001
PCB Congener 153	mg/kg	0.001	MCERTS	-	9.1 $	-	-	< 0.001
PCB Congener 180	mg/kg	0.001	MCERTS	-	13 $	-	-	< 0.001
Total PCBs	mg/kg	0.007	MCERTS	-	30	-	-	< 0.007

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

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Analytical Report Number: 25-060677
Project / Site name: Sackville Street Manchester
Your Order No: 700480

Lab Sample Number				744041	744042
Sample Reference				WS102	WS101
Sample Number				None Supplied	None Supplied
Water Matrix				N/A	N/A
Depth (m)				0.20	0.50
Date Sampled				06/11/2025	06/11/2025
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status		
Stone Content	%	0.1	NONE	21.2	15.5
Moisture Content	%	0.01	NONE	11	9.8
Total mass of sample received	kg	0.1	NONE	2	0.7

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	Detected
Asbestos Analyst ID	N/A	N/A	N/A	MMI	MMI
Analysis completed	N/A	N/A	N/A	17/11/2025	17/11/2025
Actinolite detected	Type	N/A	ISO 17025	-	Not-detected
Amosite detected	Type	N/A	ISO 17025	-	Not-detected
Anthophyllite detected	Type	N/A	ISO 17025	-	Not-detected
Chrysotile detected	Type	N/A	ISO 17025	-	Detected
Crocidolite detected	Type	N/A	ISO 17025	-	Not-detected
Tremolite detected	Type	N/A	ISO 17025	-	Not-detected
Asbestos % by hand picking/weighing	%	0.001	ISO 17025	-	0.002
Asbestos Containing Material Types Detected (ACM)	Type	N/A	ISO 17025	-	Loose Fibrous Debris

General Inorganics

pH (L005B)	pH Units	N/A	MCERTS	8.1	-
pH (L099)	pH Units	N/A	MCERTS	9.7	11.6
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	1.4	-
Loss on Ignition @ 450°C	%	0.2	MCERTS	2.6	-
Acid Neutralisation Capacity	+/- mmol/kg	-9999	NONE	29	-

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.23	4.2
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	0.4
Acenaphthene	mg/kg	0.05	MCERTS	0.15	2.3
Fluorene	mg/kg	0.05	MCERTS	0.19	1.9
Phenanthrene	mg/kg	0.05	MCERTS	1.2	17
Anthracene	mg/kg	0.05	MCERTS	0.35	4
Fluoranthene	mg/kg	0.05	MCERTS	3.3	25
Pyrene	mg/kg	0.05	MCERTS	3.4	23
Benzo(a)anthracene	mg/kg	0.05	MCERTS	2.1	12
Chrysene	mg/kg	0.05	MCERTS	2	13
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	2.9	16
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.98	5.6
Benzo(a)pyrene	mg/kg	0.05	MCERTS	2.2	12
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	1.2	5.6
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.22	1.3
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	1.5	6.7
Coronene	mg/kg	0.05	NONE	0.38	-

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	21.9	150
Total WAC-17 PAHs	mg/kg	0.85	NONE	22.3	-

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Analytical Report Number: 25-060677
Project / Site name: Sackville Street Manchester
Your Order No: 700480

Lab Sample Number				744041	744042
Sample Reference				WS102	WS101
Sample Number				None Supplied	None Supplied
Water Matrix				N/A	N/A
Depth (m)				0.20	0.50
Date Sampled				06/11/2025	06/11/2025
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status		
Heavy Metals / Metalloids					
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	12	19
Boron (water soluble)	mg/kg	0.2	MCERTS	1.2	1.2
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.4	0.9
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8
Chromium (III)	mg/kg	1	NONE	18	18
Chromium (hexavalent) by IC	mg/kg	1.8	NONE	-	-
Chromium (III) by IC	mg/kg	1	NONE	-	-
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	18	18
Copper (aqua regia extractable)	mg/kg	1	MCERTS	50	250
Lead (aqua regia extractable)	mg/kg	1	MCERTS	350	1500
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	23	31
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	140	250
Petroleum Hydrocarbons					
TPHCWG - Aliphatic >EC5 - EC6 $_{HS_1D_AL}$	mg/kg	0.01	MCERTS	< 0.010	< 0.010
TPHCWG - Aliphatic >EC6 - EC8 $_{HS_1D_AL}$	mg/kg	0.01	MCERTS	< 0.010	< 0.010
TPHCWG - Aliphatic >EC8 - EC10 $_{HS_1D_AL}$	mg/kg	0.01	MCERTS	< 0.010	< 0.010
TPHCWG - Aliphatic >EC10 - EC12 $_{EH_CU_1D_AL}$	mg/kg	1	MCERTS	< 1.0	2.9
TPHCWG - Aliphatic >EC12 - EC16 $_{EH_CU_1D_AL}$	mg/kg	2	MCERTS	3.6	6.2
TPHCWG - Aliphatic >EC16 - EC21 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	13	12
TPHCWG - Aliphatic >EC21 - EC35 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	76	53
TPHCWG - Aliphatic >EC35 - EC40 $_{EH_CU_1D_AL}$	mg/kg	10	NONE	41	23
TPHCWG - Aliphatic >EC5 - EC35 $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	92	74
TPHCWG - Aliphatic >EC5 - EC40 $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	130	97
TPHCWG - Aromatic >EC5 - EC7 $_{HS_1D_AR}$	mg/kg	0.01	MCERTS	< 0.010	< 0.010
TPHCWG - Aromatic >EC7 - EC8 $_{HS_1D_AR}$	mg/kg	0.01	MCERTS	< 0.010	< 0.010
TPHCWG - Aromatic >EC8 - EC10 $_{HS_1D_AR}$	mg/kg	0.02	MCERTS	< 0.020	< 0.020
TPHCWG - Aromatic >EC10 - EC12 $_{EH_CU_1D_AR}$	mg/kg	1	MCERTS	2.6	3.8
TPHCWG - Aromatic >EC12 - EC16 $_{EH_CU_1D_AR}$	mg/kg	2	MCERTS	8.3	16
TPHCWG - Aromatic >EC16 - EC21 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	30	110
TPHCWG - Aromatic >EC21 - EC35 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	170	220
TPHCWG - Aromatic >EC35 - EC40 $_{EH_CU_1D_AR}$	mg/kg	10	NONE	54	24
TPHCWG - Aromatic >EC5 - EC35 $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	210	350
TPHCWG - Aromatic >EC5 - EC40 $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	270	370
TPH Total >EC5 - EC40 $_{EH_CU+HS_1D_TOTAL}$	mg/kg	10	NONE	400	470
Mineral Oil (EC10 - EC40) $_{EH_CU_1D_AL}$	mg/kg	10	NONE	130	-

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Analytical Report Number: 25-060677
Project / Site name: Sackville Street Manchester
Your Order No: 700480

Lab Sample Number				744041	744042
Sample Reference				WS102	WS101
Sample Number				None Supplied	None Supplied
Water Matrix				N/A	N/A
Depth (m)				0.20	0.50
Date Sampled				06/11/2025	06/11/2025
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status		
VOCs					
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	MCERTS	< 5.0	< 5.0
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	9.1
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0
p & m-Xylene	µg/kg	8	MCERTS	< 8.0	< 8.0
o-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0
Total BTEX	µg/kg	10	MCERTS	< 10	-
PCBs by GC-MS					
PCB Congener 28	mg/kg	0.001	MCERTS	< 0.001	-
PCB Congener 52	mg/kg	0.001	MCERTS	< 0.001	-
PCB Congener 101	mg/kg	0.001	MCERTS	< 0.001	-
PCB Congener 118	mg/kg	0.001	MCERTS	< 0.001	-
PCB Congener 138	mg/kg	0.001	MCERTS	0.007	-
PCB Congener 153	mg/kg	0.001	MCERTS	0.008	-
PCB Congener 180	mg/kg	0.001	MCERTS	0.021	-
Total PCBs	mg/kg	0.007	MCERTS	0.035	-

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

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Analytical Report Number: **25-060677**
Project / Site name: **Sackville Street Manchester**
Your Order No: **700480**

Certificate of Analysis - Asbestos Quantification

Methods:

Qualitative Analysis

The samples were analysed qualitatively for asbestos by polarising light and dispersion staining as described by the Health and Safety Executive in HSG 248.

Quantitative Analysis

The analysis was carried out using our documented in-house method A006 based on HSE Contract Research Report No: 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies et al, 1996) and HSG 248. Our method includes initial examination of the entire representative sample, then fractionation and detailed analysis of each fraction, with quantification by hand picking and weighing.

The limit of detection (reporting limit) of this method is 0.001 %.

The method has been validated using samples of at least 100 g, results for samples smaller than this should be interpreted with caution.

Both Qualitative and Quantitative Analyses are UKAS accredited.

Sample Number	Sample ID	Sample Depth (m)	Sample Weight (g)	Asbestos Containing Material Types Detected (ACM)	PLM Results	Asbestos by hand picking/weighing (%)	Total % Asbestos in Sample	Analysis completed	Analyst ID
744036	WS103	0.50-	199	Loose Fibrous Debris	**Crocidolite**	0.002	**0.002**	17/11/2025	MMI
744042	WS101	0.50-	167	Loose Fibrous Debris	**Chrysotile**	0.002	**0.002**	17/11/2025	MMI

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

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Waste Acceptance Criteria Analytical Results

Report No:	**25-060677**						
					Client:	**TRC Companies Ltd**	
Location	**Sackville Street Manchester**						
Lab Reference (Sample Number)	744037				**Landfill Waste Acceptance Criteria Limits**		
Sampling Date	06/11/2025				Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	WS105						
Depth (m)	0.60						
Solid Waste Analysis							
TOC (%)**	0.6				3%	5%	6%
Loss on Ignition (%) **	1.4				--	--	10%
BTEX (µg/kg) **	< 10				6000	--	--
Sum of PCBs (mg/kg) **	30				1	--	--
Mineral Oil (mg/kg) EH_1D_CU_AL	< 10				500	--	--
Total PAH (WAC-17) (mg/kg)	3.68				100	--	--
pH (units)**	7.8				--	>6	--
Acid Neutralisation Capacity (mmol / kg)	12				--	To be evaluated	To be evaluated
Eluate Analysis	10:1			10:1	Limit values for compliance leaching test		
(BS EN 12457 - 2 preparation utilising end over end leaching procedure)	mg/l			mg/kg	using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
Arsenic *	0.00422			0.0422	0.5	2	25
Barium *	0.032			0.32	20	100	300
Cadmium *	< 0.000100			< 0.00100	0.04	1	5
Chromium *	0.0087			0.087	0.5	10	70
Copper *	0.013			0.13	2	50	100
Mercury *	0.000797			0.00797	0.01	0.2	2
Molybdenum *	0.00118			0.0118	0.5	10	30
Nickel *	< 0.00030			< 0.0030	0.4	10	40
Lead *	0.0099			0.099	0.5	10	50
Antimony *	< 0.0017			< 0.017	0.06	0.7	5
Selenium *	< 0.0040			< 0.040	0.1	0.5	7
Zinc *	0.0043			0.043	4	50	200
Chloride *	4.6			46	800	15000	25000
Fluoride*	0.32			3.2	10	150	500
Sulphate *	36			360	1000	20000	50000
TDS*	85			850	4000	60000	100000
Phenol Index (Monohydric Phenols) *	< 0.010			< 0.10	1	-	-
DOC	2.45			24.5	500	800	1000
Leach Test Information							
Stone Content (%)	15.2						
Sample Mass (kg)	2						
Dry Matter (%)	88						
Moisture (%)	12						

Results are expressed on a dry weight basis, after correction for moisture content where applicable.

*= UKAS accredited (liquid eluate analysis only)

Stated limits are for guidance only and i2 cannot be held responsible for any discrepancies with current legislation

** = MCERTS accredited

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes as defined by the Waste (England and Wales) Regulations 2011 (as amended) and EA Guidance WM3. This analysis is only applicable for landfill acceptance criteria (The Environmental Permitting (England and Wales) Regulations) and does not give any indication as to whether a waste may be hazardous or non-hazardous.

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Waste Acceptance Criteria Analytical Results

Report No:	25-060677						
					Client:	TRC Companies Ltd	
Location	Sackville Street Manchester						
Lab Reference (Sample Number)	744040				Landfill Waste Acceptance Criteria Limits		
Sampling Date	06/11/2025				Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	WS104						
Depth (m)	0.80						
Solid Waste Analysis							
TOC (%)**	2.9				3%	5%	6%
Loss on Ignition (%) **	9.3				--	--	10%
BTEX (µg/kg) **	< 10				6000	--	--
Sum of PCBs (mg/kg) **	< 0.007				1	--	--
Mineral Oil (mg/kg) EH_1D_CU_AL	97				500	--	--
Total PAH (WAC-17) (mg/kg)	424				100	--	--
pH (units)**	7.9				--	>6	--
Acid Neutralisation Capacity (mmol / kg)	7.9				--	To be evaluated	To be evaluated
Eluate Analysis (BS EN 12457 - 2 preparation utilising end over end leaching procedure)	10:1 mg/l			10:1 mg/kg	Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
Arsenic *	0.00871			0.0871	0.5	2	25
Barium *	0.0712			0.712	20	100	300
Cadmium *	< 0.000100			< 0.00100	0.04	1	5
Chromium *	0.0023			0.023	0.5	10	70
Copper *	0.014			0.14	2	50	100
Mercury *	< 0.000500			< 0.00500	0.01	0.2	2
Molybdenum *	0.000718			0.00718	0.5	10	30
Nickel *	0.00036			0.0036	0.4	10	40
Lead *	0.017			0.17	0.5	10	50
Antimony *	< 0.0017			< 0.017	0.06	0.7	5
Selenium *	< 0.0040			< 0.040	0.1	0.5	7
Zinc *	0.0097			0.097	4	50	200
Chloride *	1.9			19	800	15000	25000
Fluoride*	0.33			3.3	10	150	500
Sulphate *	7.1			71	1000	20000	50000
TDS*	53			530	4000	60000	100000
Phenol Index (Monohydric Phenols) *	< 0.010			< 0.10	1	-	-
DOC	3.9			38.9	500	800	1000
Leach Test Information							
Stone Content (%)	44.5						
Sample Mass (kg)	2						
Dry Matter (%)	86						
Moisture (%)	14						

Results are expressed on a dry weight basis, after correction for moisture content where applicable.

*= UKAS accredited (liquid eluate analysis only)

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Waste Acceptance Criteria Analytical Results

Report No:	**25-060677**						
					Client:	**TRC Companies Ltd**	
Location	**Sackville Street Manchester**						
Lab Reference (Sample Number)	744041				**Landfill Waste Acceptance Criteria Limits**		
Sampling Date	06/11/2025				Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	WS102						
Depth (m)	0.20						
Solid Waste Analysis							
TOC (%)	1.4				3%	5%	6%
Loss on Ignition (%)	2.6				--	--	10%
BTEX (µg/kg)	< 10				6000	--	--
Sum of PCBs (mg/kg)	0.035				1	--	--
Mineral Oil (mg/kg) EH_1D_CU_AL	130				500	--	--
Total PAH (WAC-17) (mg/kg)	22.3				100	--	--
pH (units)	8.1				--	>6	--
Acid Neutralisation Capacity (mmol / kg)	29				--	To be evaluated	To be evaluated
Eluate Analysis	10:1			10:1	Limit values for compliance leaching test		
(BS EN 12457 - 2 preparation utilising end over end leaching procedure)	mg/l			mg/kg	using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
Arsenic *	0.00642			0.0642	0.5	2	25
Barium *	0.0314			0.314	20	100	300
Cadmium *	< 0.000100			< 0.00100	0.04	1	5
Chromium *	0.0014			0.014	0.5	10	70
Copper *	0.018			0.18	2	50	100
Mercury *	< 0.000500			< 0.00500	0.01	0.2	2
Molybdenum *	< 0.000400			< 0.00400	0.5	10	30
Nickel *	0.00042			0.0042	0.4	10	40
Lead *	0.0099			0.099	0.5	10	50
Antimony *	< 0.0017			< 0.017	0.06	0.7	5
Selenium *	< 0.0040			< 0.040	0.1	0.5	7
Zinc *	0.0054			0.054	4	50	200
Chloride *	2.5			25	800	15000	25000
Fluoride*	0.26			2.6	10	150	500
Sulphate *	11			110	1000	20000	50000
TDS*	54			540	4000	60000	100000
Phenol Index (Monohydric Phenols) *	< 0.010			< 0.10	1	-	-
DOC	4.24			42.4	500	800	1000
Leach Test Information							
Stone Content (%)	21.2						
Sample Mass (kg)	2						
Dry Matter (%)	89						
Moisture (%)	11						

Results are expressed on a dry weight basis, after correction for moisture content where applicable.

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Analytical Report Number : 25-060677
Project / Site name: Sackville Street Manchester

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
744036	WS103	None Supplied	0.5	Brown sand with stones and brick
744037	WS105	None Supplied	0.6	Brown sand with gravel and stones
744038	WS104	None Supplied	1.2	Brown clay and sand with gravel and stones
744039	WS104	None Supplied	2.5	Brown clay
744040	WS104	None Supplied	0.8	Brown sand with gravel and vegetation
744041	WS102	None Supplied	0.2	Brown gravelly sand with vegetation and stones
744042	WS101	None Supplied	0.5	Brown sand with gravel and stones

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Analytical Report Number : 25-060677
Project / Site name: Sackville Street Manchester

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in Soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques	In-house method based on HSG 248, 2021	A001B	D	ISO 17025
Asbestos Quantification - Gravimetric	Asbestos quantification by gravimetric method - in house method based on references	HSE Report No: 83/1996, HSG 248 (2021), HSG 264 (2012) & SCA Blue Book (draft)	A006B	D	ISO 17025
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight	In-house method based on British Standard Methods and MCERTS requirements.	L019B	D	NONE
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L038B	D	MCERTS
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES	In-house method based on Second Site Properties version 3	L038B	D	MCERTS
Speciated PAHs and/or Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds (including PAH) in soil by extraction in dichloromethane and hexane followed by GC-MS	In-house method based on USEPA 8270	L064B	D	MCERTS
BTEX and/or Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS	In-house method based on USEPA 8260	L073B	W	MCERTS
Total petroleum hydrocarbons with carbon banding by GC-FID in soil	Determination of total petroleum hydrocarbons in soil by GC-FID with carbon banding aliphatic and aromatic	In-house method	L076B	D	MCERTS
Total petroleum hydrocarbons with carbon banding by GC-FID/GC-MS HS in soil (Summed Bands)	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS with carbon banding aliphatic and aromatic (Summed Bands).	Calculation	L076B/L088-PL	D/W	NONE
Chromium III in soil	In-house method by calculation from total Cr and Cr VI	In-house method by calculation	L080-PL/L130B	W	NONE
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry	In-house method	L080-PL	W	MCERTS
Total petroleum hydrocarbons with carbon banding by HS-GC/MS in soil	Determination of total petroleum hydrocarbons in soil by HS-GC/MS with carbon banding aliphatic and aromatic	In-house method	L088-PL	W	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099-PL	D	MCERTS
Soil Descriptions	Textural classification	In-house method	L019B	W	NONE
pH at 20°C in soil	Determination of pH in soil by addition of water followed by electrometric measurement	In-house method	L005B	W	MCERTS

Analytical Report Number : 25-060677
Project / Site name: Sackville Street Manchester

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L009B	D	MCERTS
PCB's By GC-MS in soil	Determination of PCB by extraction with hexane followed by GC-MS	In-house method based on USEPA 8082	L027B	D	MCERTS
Total dissolved solids 10:1 WAC	Determination of total dissolved solids in water by electrometric measurement	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L031B	W	ISO 17025
Fluoride 10:1 WAC	Determination of fluoride in leachate by 1:1ratio with a buffer solution followed by Ion Selective Electrode	In-house method based on Use of Total Ionic Strength Adjustment Buffer for Electrode Determination	L033B	W	ISO 17025
Dissolved organic carbon 10:1 WAC	Determination of dissolved organic carbon in leachate by TOC/DOC NDIR Analyser	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037B	W	NONE
Metals in leachate by ICP-OES	Determination of metals in leachate by acidification followed by ICP-OES	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L039B	W	ISO 17025
One stage WAC 10:1 leachate preparation	One stage batch test at a liquid to solid ratio of 10 L/kg	BS EN 12457-2-2002	L043B	W	ISO 17025
Acid neutralisation capacity of soil	Determination of acid neutralisation capacity by addition of acid or alkali followed by electronic probe	In-house method based on Guidance an Sampling and Testing of Wastes to Meet Landfill Waste Acceptance	L046B	W	NONE
Loss on ignition of soil @ 450°C	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	In-house method	L047-PL	D	MCERTS
Total petroleum hydrocarbons by GC-FID in soil	Determination of total petroleum hydrocarbons in soil by GC-FID	In-house method	L076B	D	NONE
Monohydric phenols 10:1 WAC	Determination of phenols in leachate by distillation followed by colorimetry	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	ISO 17025
Chloride 10:1 WAC	Determination of Chloride colorimetrically by discrete analyser	In-house based on MEWAM Method ISBN 0117516260	L082B	W	ISO 17025
Hexavalent chromium in soil by Ion Chromatography	Determination of hexavalent chromium in alkaline soil extract by use of ion chromatography with spectrophotometric detection	In-house method	L130B	W	NONE

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

Quality control parameter failure associated with individual result applies to calculated sum of individuals.
The result for sum should be interpreted with caution

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Analytical Report Number : 25-060677
Project / Site name: Sackville Street Manchester

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status

*U/S g- Unsuitable for analysis due to high colour intensity.
$- Concentration has been determined by extrapolated calibration as analyte concentration is above the concentration range for the procedure after dilution. The result should be considered as deviating and should be interpreted with caution. The result is not accredited.

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Analytical Report Number : 25-060677

Project / Site name: Sackville Street Manchester

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis.Please note that the associated result(s) may be unreliable and should be interpreted with care.

Key: a - No sampling date b - Incorrect container/Insufficient material provided c - Holding time d - Headspace e - Temperature

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
WS102	N/A	L	744041	b	One stage WAC 10:1 leachate preparation	L043B	b
WS104	N/A	L	744040	b	One stage WAC 10:1 leachate preparation	L043B	b
WS104	N/A	S	744040	b	BTEX and/or Volatile organic compounds in soil	L073B	b
WS104	N/A	S	744040	b	PCB's By GC-MS in soil	L027B	b
WS104	N/A	S	744040	b	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	b
WS104	N/A	S	744040	b	Total petroleum hydrocarbons by GC-FID in soil	L076B	b
WS105	N/A	L	744037	b	One stage WAC 10:1 leachate preparation	L043B	b

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Annex G: Screened Data

Human Health Generic Assessment Criteria

Contaminant of Concern	Units	Generic Assessment Criteria (mg/kg)				Source
		Residential (wHP)	Residential (woHP)	POS (Residential)	Commercial	
Heavy Metals						
Arsenic	mg/kg	37	40	79	640	S4UL
Boron	mg/kg	290	11000	21000	240000	S4UL
Cadmium	mg/kg	11	85	120	190	S4UL
Chromium (hexavalent)	mg/kg	6	6	7.7	33	S4UL
Chromium (III)	mg/kg	910	910	1500	8600	S4UL
Chromium	mg/kg	910	910	1500	8600	S4UL
Copper	mg/kg	2400	7100	12000	68000	S4UL
Lead	mg/kg	200	310	630	2330	C4SL
Mercury	mg/kg	40	56	120	1100	S4UL
Nickel	mg/kg	180	180	230	980	S4UL
Selenium	mg/kg	250	430	1100	12000	S4UL
Zinc	mg/kg	3700	40000	81000	730000	S4UL
Polycyclic Aromatic Hydrocarbons (PAHs)						
Naphthalene	mg/kg	2.3	2.3	4900	190	S4UL
Acenaphthylene	mg/kg	170	2900	15000	83000	S4UL
Acenaphthene	mg/kg	210	3000	15000	84000	S4UL
Fluorene	mg/kg	170	2800	9900	63000	S4UL
Phenanthrene	mg/kg	95	1300	3100	22000	S4UL
Anthracene	mg/kg	2400	31000	74000	520000	S4UL
Fluoranthene	mg/kg	280	1500	3100	23000	S4UL
Pyrene	mg/kg	620	3700	7400	54000	S4UL
Benzo(a)anthracene	mg/kg	7.2	11	29	170	S4UL
Chrysene	mg/kg	15	30	57	350	S4UL
Benzo(b)fluoranthene	mg/kg	2.6	3.9	7.1	44	S4UL
Benzo(k)fluoranthene	mg/kg	77	110	190	1200	S4UL
Benzo(a)pyrene	mg/kg	2.2	3.2	5.7	35	S4UL
Indeno(1,2,3-cd) pyrene	mg/kg	27	45	82	500	S4UL
Dibenz(a,h)anthracene	mg/kg	0.24	0.31	0.57	3.5	S4UL
Benzo(ghi)perylene	mg/kg	320	360	640	3900	S4UL
Monoaromatics						
Benzene	µg/kg	87	380	72000	27000	S4UL
Toluene	µg/kg	130000	880000	56000000	56000000	S4UL
Ethylbenzene	µg/kg	47000	83000	24000000	5700000	S4UL
p & m-xylene	µg/kg	56000	79000	41000000	5900000	S4UL
o-xylene	µg/kg	60000	88000	41000000	6600000	S4UL
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	49000	73000	-	7900000	EIC/AGS/CL:AIRE
Petroleum Hydrocarbons (Aliphatic)						
TPH-CWG – Aliphatic >EC5 – EC6	mg/kg	42	42	570000	3200	S4UL
TPH-CWG – Aliphatic >EC6 – EC 8	mg/kg	100	100	600000	7800	S4UL
TPH-CWG – Aliphatic >EC8 – EC10	mg/kg	27	27	13000	2000	S4UL
TPH-CWG – Aliphatic >EC10 – EC12	mg/kg	130	130	13000	9700	S4UL
TPH-CWG – Aliphatic >EC12 – EC16	mg/kg	1100	1100	13000	59000	S4UL
TPH-CWG – Aliphatic >EC16 – EC21	mg/kg	65000	65000	250000	1600000	S4UL

TPH-CWG – Aliphatic >EC21 – EC35	mg/kg	65000	65000	250000	1600000	S4UL
Petroleum Hydrocarbons (Aromatic)						
TPH-CWG – Aromatic >EC5 – EC7	mg/kg	70	370	56000	26000	S4UL
TPH-CWG – Aromatic >EC7 – EC8	mg/kg	130	860	56000	56000	S4UL
TPH-CWG – Aromatic >EC8 – EC10	mg/kg	34	47	5000	3500	S4UL
TPH-CWG – Aromatic >EC10 – EC12	mg/kg	74	250	5000	16000	S4UL
TPH-CWG – Aromatic >EC12 – EC16	mg/kg	140	1800	5100	36000	S4UL
TPH-CWG – Aromatic >EC16 – EC21	mg/kg	260	1900	3800	28000	S4UL
TPH-CWG – Aromatic >EC21 – EC35	mg/kg	1100	1900	3800	28000	S4UL
Volatile Organic Compounds (VOCs)						
Chloromethane	µg/kg	8.3	8.5	-	1000	EIC/AGS/CL:AIRE
Chloroethane	µg/kg	8300	8400	-	960000	EIC/AGS/CL:AIRE
Bromomethane	µg/kg	-	-	-	-	-
Vinyl Chloride	µg/kg	0.64	0.77	3500	59	S4UL
Trichlorofluoromethane	µg/kg	-	-	-	-	-
1,1-Dichloroethene	µg/kg	230	230	-	26000	EIC/AGS/CL:AIRE
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	-	-	-	-	-
Cis-1,2-dichloroethene	µg/kg	110	120	-	14000	EIC/AGS/CL:AIRE
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	49000	73000	-	7900000	EIC/AGS/CL:AIRE
1,1-Dichloroethane	µg/kg	2400	2500	-	280000	EIC/AGS/CL:AIRE
2,2-Dichloropropane	µg/kg	-	-	-	-	-
Trichloromethane	µg/kg	910	1200	2500000	99000	S4UL
1,1,1-Trichloroethane	µg/kg	8800	9000	140000000	660000	S4UL
1,2-Dichloroethane	µg/kg	7.1	9.2	29000	670	S4UL
1,1-Dichloropropene	µg/kg	-	-	-	-	-
Trans-1,2-dichloroethene	µg/kg	190	190	-	22000	EIC/AGS/CL:AIRE
Benzene	µg/kg	87	380	72000	27000	S4UL
Tetrachloromethane	µg/kg	26	26	890000	2900	S4UL
1,2-Dichloropropane	µg/kg	24	24	-	3300	EIC/AGS/CL:AIRE
Trichloroethene	µg/kg	16	17	120000	1200	S4UL
Dibromomethane	µg/kg	-	-	-	-	-
Bromodichloromethane	µg/kg	16	19	-	2100	EIC/AGS/CL:AIRE
Cis-1,3-dichloropropene	µg/kg	-	-	-	-	-
Trans-1,3-dichloropropene	µg/kg	-	-	-	-	-
Toluene	µg/kg	130000	880000	56000000	56000000	S4UL
1,1,2-Trichloroethane	µg/kg	600	880	-	94000	EIC/AGS/CL:AIRE
1,3-Dichloropropane	µg/kg	-	-	-	-	-
Dibromochloromethane	µg/kg	-	-	-	-	-
Tetrachloroethene	µg/kg	180	180	1400000	19000	S4UL
1,2-Dibromoethane	µg/kg	-	-	-	-	-
Chlorobenzene	µg/kg	460	460	11000000	56000	S4UL
1,1,1,2-Tetrachloroethane	µg/kg	1200	1500	1400000	110000	S4UL
Ethylbenzene	µg/kg	47000	83000	24000000	5700000	S4UL
p & m-Xylene	µg/kg	56000	79000	41000000	5900000	S4UL
Styrene	µg/kg	8100	35000	-	3300000	EIC/AGS/CL:AIRE
Tribromomethane	µg/kg	-	-	-	-	-
o-Xylene	µg/kg	60000	88000	41000000	6600000	S4UL

1,1,2,2-Tetrachloroethane	µg/kg	1600	3900	1400000	270000	S4UL
Isopropylbenzene	µg/kg	11000	12000	-	1400000	EIC/AGS/CL:AIRE
Bromobenzene	µg/kg	870	910	-	97000	EIC/AGS/CL:AIRE
n-Propylbenzene	µg/kg	34000	40000	-	4100000	EIC/AGS/CL:AIRE
2-Chlorotoluene	µg/kg	-	-	-	-	-
4-Chlorotoluene	µg/kg	-	-	-	-	-
1,3,5-Trimethylbenzene	µg/kg	-	-	-	-	-
tert-Butylbenzene	µg/kg	-	-	-	-	-
1,2,4-Trimethylbenzene	µg/kg	350	410	-	42000	EIC/AGS/CL:AIRE
sec-Butylbenzene	µg/kg	-	-	-	-	-
1,3-Dichlorobenzene	µg/kg	400	440	300000	30000	S4UL
p-Isopropyltoluene	µg/kg	-	-	-	-	-
1,2-Dichlorobenzene	µg/kg	23000	24000	90000000	2000000	S4UL
1,4-Dichlorobenzene	µg/kg	61000	61000	17000000	4400000	S4UL
Butylbenzene	µg/kg	-	-	-	-	-
1,2-Dibromo-3-chloropropane	µg/kg	-	-	-	-	-
1,2,4-Trichlorobenzene	µg/kg	2600	2600	15000000	220000	S4UL
Hexachlorobutadiene	µg/kg	290	320	25000	31000	S4UL
1,2,3-Trichlorobenzene	µg/kg	1500	1500	1800000	102000	S4UL
Semi Volatile Organic Compounds (SVOCs)						
Aniline	mg/kg	-	-	-	-	-
Phenol	mg/kg	120	440	440	440	S4UL
2-Chlorophenol	mg/kg	0.87	94	620	3500	S4UL
Bis(2-chloroethyl)ether	mg/kg	-	-	-	-	-
1,3-Dichlorobenzene	mg/kg	0.4	0.44	300	30	S4UL
1,2-Dichlorobenzene	mg/kg	23	24	90000	2000	S4UL
1,4-Dichlorobenzene	mg/kg	61	61	17000	4400	S4UL
Bis(2-chloroisopropyl)ether	mg/kg	-	-	-	-	-
2-Methylphenol	mg/kg	80	3700	-	160000	EIC/AGS/CL:AIRE
Hexachloroethane	mg/kg	0.2	0.22	-	22	EIC/AGS/CL:AIRE
Nitrobenzene	mg/kg	-	-	-	-	-
4-Methylphenol	mg/kg	80	3700	-	160000	EIC/AGS/CL:AIRE
Isophorone	mg/kg	-	-	-	-	-
2-Nitrophenol	mg/kg	-	-	-	-	-
2,4-Dimethylphenol	mg/kg	19	210	-	16000	EIC/AGS/CL:AIRE
Bis(2-chloroethoxy)methane	mg/kg	-	-	-	-	-
1,2,4-Trichlorobenzene	mg/kg	2.6	2.6	15000	220	S4UL
2,4-Dichlorophenol	mg/kg	-	-	-	-	-
4-Chloroaniline	mg/kg	-	-	-	-	-
Hexachlorobutadiene	mg/kg	0.29	0.32	25	31	S4UL
4-Chloro-3-methylphenol	mg/kg	-	-	-	-	-
2,4,6-Trichlorophenol	mg/kg	-	-	-	-	-
2,4,5-Trichlorophenol	mg/kg	-	-	-	-	-
2-Methylnaphthalene	mg/kg	-	-	-	-	-
2-Chloronaphthalene	mg/kg	3.7	3.8	-	390	EIC/AGS/CL:AIRE
Dimethylphthalate	mg/kg	-	-	-	-	-
2,6-Dinitrotoluene	mg/kg	0.78	78	-	1900	EIC/AGS/CL:AIRE

2,4-Dinitrotoluene	mg/kg	1.5	170	-	3700	EIC/AGS/CL:AIRE
Dibenzofuran	mg/kg	-	-	-	-	-
4-Chlorophenyl phenyl ether	mg/kg	-	-	-	-	-
Diethyl phthalate	mg/kg	120	1800	-	150000	EIC/AGS/CL:AIRE
4-Nitroaniline	mg/kg	-	-	-	-	-
Azobenzene	mg/kg	-	-	-	-	-
Bromophenyl phenyl ether	mg/kg	-	-	-	-	-
Hexachlorobenzene	mg/kg	1.8	4.1	16	110	S4UL
Carbazole	mg/kg	-	-	-	-	-
Dibutyl phthalate	mg/kg	13	450	-	15000	EIC/AGS/CL:AIRE
Anthraquinone	mg/kg	-	-	-	-	-
Butyl benzyl phthalate	mg/kg	1400	42000	-	940000	EIC/AGS/CL:AIRE
Polychlorinated biphenyls (PCBs)						
PCB (sum)	mg/kg	8	8	-	240	SGV

Key	
Source Reference	**Document**
S4UL	Nathanail, CP et al (2015) The LQM/CIEH S4ULs for human health risk assessment.
C4SL	Department for Environment, Food and Rural Affairs (2014) SP1010: Development of category 4 screening levels for assessment of land affected by contamination – policy companion document.
EIC/AGS/CL:AIRE	Environmental Industries Commission, The Association of Geotechnical and Geoenvironmental Specialists and Contaminated Land: Applications in Real Environments (2009) The EIC/AGS/CL:AIRE soil generic assessment criteria for human health risk assessment.
SGV	Environment Agency (2009) Soil guideline values for dioxins, furans and dioxin-like PCBs in soil. Science report SC050021/Dioxins SGV.

Notes:

The above GAC are for guidance only when assessing risk to human health receptors for specific development scenarios.

The absence of GAC for a substance does not necessarily imply there is no risk.

Some substances may be known by alternative names.

GAC given for organic compounds are based on the assumption of 1% soil organic matter with the exception of PCBs which assumes 6% soil organic matter.

Abbreviations:

GAC	Generic Assessment Criiteria
wHP	With homegrown produce
woHP	Without homegrown produce
POS	Public open space